

Open Source Used In AppDynamics_Cluster_Agent 25.3.0

Cisco Systems, Inc.
www.cisco.com

Cisco has more than 200 offices worldwide.
Addresses, phone numbers, and fax numbers
are listed on the Cisco website at
www.cisco.com/go/offices.

Text Part Number: 78EE117C99-2391308448

This document contains licenses and notices for open source software used in this product. With respect to the free/open source software listed in this document, if you have any questions or wish to receive a copy of any source code to which you may be entitled under the applicable free/open source license(s) (such as the GNU Lesser/General Public License), please submit this form.

In your requests please include the following reference number 78EE117C99-2391308448

Contents

1.1 flowrate 0.0.0-20140419014527-cca7078d478f
- 1.1.1 Available under license

1.2 iniparse 0.4
- 1.2.1 Available under license

1.3 decorator 4.4.2
- 1.3.1 Available under license

1.4 packaging 20.4
- 1.4.1 Available under license

1.5 inf 0.9.1
- 1.5.1 Available under license

1.6 go-yaml 2.4.0
- 1.6.1 Available under license

1.7 berkeley-db 5.3.28
- 1.7.1 Available under license

1.8 bridgeutils 1.7.1
- 1.8.1 Available under license

1.9 urllib3 1.26.5
- 1.9.1 Notifications
- 1.9.2 Available under license

1.10 python-requests 2.26.0
- 1.10.1 Available under license

1.11 msgpack 1.0.2
- 1.11.1 Available under license

1.12 urllib3 1.26.7
- 1.12.1 Available under license

1.13 modern-go-concurrent 0.0.0-20180306012644-bacd9c7ef1dd

1.13.1 Available under license
1.14 goautoneg 0.0.0-20191010083416-a7dc8b61c822
1.14.1 Available under license
1.15 hcl 1.0.0
1.15.1 Available under license
1.16 intern 1.0.0
1.16.1 Available under license
1.17 json-iterator-go 1.1.12
1.17.1 Available under license
1.18 go-flowrate 0.0.0-20140419014527-cca7078d478f
1.18.1 Available under license
1.19 fdisk 2.37.4
1.19.1 Available under license
1.20 readline 8.1
1.20.1 Available under license
1.21 t-tomalak-logrus-easy-formatter 0.0.0-20190827215021-c074f06c5816
1.21.1 Available under license
1.22 lumberjack 2.0.0+incompatible
1.22.1 Available under license
1.23 six 1.15.0
1.23.1 Available under license
1.24 python-certifi 2021.05.30
1.24.1 Available under license
1.25 html5lib 1.1
1.25.1 Available under license
1.26 pep517 0.12.0
1.26.1 Available under license
1.27 github.com/t-tomalak/logrus-easy-formatter 0.0.0-20190827215021-c074f06c5816
1.27.1 Available under license
1.28 python3-decorator 4.4.2-6.el9
1.28.1 Available under license
1.29 langpacks-core-en 3.0-16.el9
1.29.1 Available under license
1.30 python3-gobject-base-noarch 3.40.1-6.el9
1.30.1 Available under license
1.31 libxcrypt 4.4.18-3.el9
1.31.1 Available under license
1.32 gpg-pubkey 5a6340b3-6229229e

1.32.1 Available under license
1.33 langpacks-core-font-en 3.0-16.el9
1.33.1 Available under license
1.34 python-chardet 4.0.0-5.el9
1.34.1 Available under license
1.35 rootfiles 8.1-31.el9
1.35.1 Available under license
1.36 readline 8.1-4.el9
1.36.1 Available under license
1.37 gawk 5.1.0-6.el9
1.37.1 Available under license
1.38 dbus-broker 28-7.el9
1.38.1 Available under license
1.39 python3-gobject-base 3.40.1-6.el9
1.39.1 Available under license
1.40 libmodulemd 2.13.0-2.el9
1.40.1 Available under license
1.41 dejavu-sans-fonts 2.37-18.el9
1.41.1 Available under license
1.42 fonts-filesystem 2.0.5-7.el9.1
1.42.1 Available under license
1.43 libutempter 1.2.1-6.el9
1.43.1 Available under license
1.44 libassuan 2.5.5-3.el9
1.44.1 Available under license
1.45 libyaml 0.2.5-7.el9
1.45.1 Available under license
1.46 libsigsegv 2.13-4.el9
1.46.1 Available under license
1.47 libseccomp 2.5.2-2.el9
1.47.1 Available under license
1.48 libverto 0.3.2-3.el9
1.48.1 Available under license
1.49 lz4 1.9.3-5.el9
1.49.1 Available under license
1.50 libreport-filesystem 2.15.2-6.el9
1.50.1 Available under license
1.51 json-c 0.14-11.el9
1.51.1 Available under license

1.52 python3-pysocks 1.7.1-12.el9
1.52.1 Available under license
1.53 libidn 2.3.0-7.el9
1.53.1 Available under license
1.54 python-six 1.15.0-9.el9
1.54.1 Available under license
1.55 python3-gpg 1.15.1-6.el9
1.55.1 Available under license
1.56 gzip 1.12-1.el9
1.56.1 Available under license
1.57 python3-inotify 0.9.6-25.el9
1.57.1 Available under license
1.58 libgpg-error 1.42-5.el9
1.58.1 Available under license
1.59 python3-iniparse 0.4-45.el9
1.59.1 Available under license
1.60 gpg-pubkey fd431d51-4ae0493b
1.60.1 Available under license
1.61 libcomps 0.1.18-1.el9
1.61.1 Available under license
1.62 psmisc 23.4-3.el9
1.62.1 Available under license
1.63 githubcommitchellhmapstructure 1.5.0
1.63.1 Available under license
1.64 subscription-manager-rhsm-certificates 20220623-1.el9
1.64.1 Available under license
1.65 python3-libcomps 0.1.18-1.el9
1.65.1 Available under license
1.66 passwd 0.80-12.el9
1.66.1 Available under license
1.67 libzstd 1.5.1-2.el9
1.67.1 Available under license
1.68 langpacks-en 3.0-16.el9
1.68.1 Available under license
1.69 github.com/x448/float16 0.8.4
1.69.1 Available under license
1.70 tre 0.8.0-r2
1.70.1 Available under license
1.71 iconv 2.34

1.71.1 Available under license
1.72 attr 2.5.1-3.el9
1.72.1 Available under license
1.73 libcap-ng 0.8.2-7.el9
1.73.1 Available under license
1.74 sed 4.8-9.el9
1.74.1 Available under license
1.75 libunistring 0.9.10-15.el9
1.75.1 Available under license
1.76 python-inotify 0.9.6-25.el9
1.76.1 Available under license
1.77 json-glib 1.6.6-1.el9
1.77.1 Available under license
1.78 mpfr 4.1.0-7.el9
1.78.1 Available under license
1.79 libpwquality 1.4.4-8.el9
1.79.1 Available under license
1.80 python-decorator 4.4.2-6.el9
1.80.1 Available under license
1.81 dbus-python 1.2.18-2.el9
1.81.1 Available under license
1.82 python-pysocks 1.7.1-12.el9
1.82.1 Available under license
1.83 gmp 4.3.4
1.83.1 Available under license
1.84 popt 1.18-8.el9
1.84.1 Available under license
1.85 rpm 4.16.1.3-17.ph4
1.85.1 Available under license
1.86 langpacks 3.0-16.el9
1.86.1 Available under license
1.87 dejavu-fonts 2.37-18.el9
1.87.1 Available under license
1.88 libtasn 4.16.0-8.el9_1
1.88.1 Available under license
1.89 grep 3.6-5.el9
1.89.1 Available under license
1.90 pygobject 3.40.1-6.el9
1.90.1 Available under license

1.91 python-iniparse 0.4-45.el9
1.91.1 Available under license
1.92 gpgme 1.15.1-6.el9
1.92.1 Available under license
1.93 npth 1.6-8.el9
1.93.1 Available under license
1.94 cracklib 2.9.6-27.el9
1.94.1 Available under license
1.95 xz 5.2.5-8.el9_0
1.95.1 Available under license
1.96 zstd 1.5.1-2.el9
1.96.1 Available under license
1.97 gobject-introspection 1.68.0-11.el9
1.97.1 Available under license
1.98 keyutils 1.6.3-1.el9
1.98.1 Available under license
1.99 cyrus-sasl 2.1.27-21.el9
1.99.1 Available under license
1.100 keyutils-libs 1.6.3-1.el9
1.100.1 Available under license
1.101 libarchive 3.5.3-4.el9
1.101.1 Available under license
1.102 gopkg-in-yaml-v2 2.4.0
1.102.1 Available under license
1.103 gotenv 1.6.0
1.103.1 Available under license
1.104 libcap 2.48-9.el9_2
1.104.1 Available under license
1.105 lua-libs 5.4.4-4.el9
1.105.1 Available under license
1.106 dbus-libs 1.12.20-8.el9
1.106.1 Available under license
1.107 dbus-common 1.12.20-8.el9
1.107.1 Available under license
1.108 python-pip 21.3.1
1.108.1 Available under license
1.109 python-setuptools 53.0.0
1.109.1 Available under license
1.110 github.com/sagikazarmark/slog-shim 0.1.0

1.110.1 Available under license
1.111 python-requests 2.25.1
1.111.1 Available under license
1.112 rpm 4.16.1.3
1.112.1 Available under license
1.113 basesystem 11-13.el9
1.113.1 Available under license
1.114 python-dbus 1.2.18-2.el9
1.114.1 Available under license
1.115 d-bus 1.12.20-8.el9
1.115.1 Available under license
1.116 gmp 6.2.0-13.el9
1.116.1 Available under license
1.117 ncurses 6.2-10.20210508.el9
1.117.1 Available under license
1.118 python-dateutil 2.8.1-7.el9
1.118.1 Available under license
1.119 which 2.21-29.el9
1.119.1 Available under license
1.120 gnupg 2.3.3-4.el9
1.120.1 Available under license
1.121 libffi 3.4.2-8.el9
1.121.1 Available under license
1.122 zlib 1.2.11-40.el9
1.122.1 Available under license
1.123 lua 5.4.4-4.el9
1.123.1 Available under license
1.124 xz-libs 5.2.5-8.el9_0
1.124.1 Available under license
1.125 ncurses-libs 6.2-10.20210508.el9
1.125.1 Available under license
1.126 mux 1.8.1
1.126.1 Available under license
1.127 sigs-k8s-io-yaml 1.4.0
1.127.1 Available under license
1.128 afero 1.11.0
1.128.1 Available under license
1.129 spf13-cast 1.6.0
1.129.1 Available under license

1.130 spf13-afero 1.11.0
1.130.1 Available under license
1.131 properties 1.8.7
1.131.1 Available under license
1.132 spew 1.1.2-0.20180830191138-d8f796af33cc
1.132.1 Available under license
1.133 sqlite 3.34.1-7.el9_3
1.133.1 Available under license
1.134 uuid 1.6.0
1.134.1 Available under license
1.135 google-uuid 1.6.0
1.135.1 Available under license
1.136 libcom-err 1.46.5-5.el9
1.136.1 Available under license
1.137 githubcomgolangprotobuf 1.5.4
1.137.1 Available under license
1.138 githubcomgoopenapijsonpointer 0.21.0
1.138.1 Available under license
1.139 githubcomgoopenapijsonreference 0.21.0
1.139.1 Available under license
1.140 go-openapi-jsonpointer 0.21.0
1.140.1 Available under license
1.141 githubcomgoopenapiswag 0.23.0
1.141.1 Available under license
1.142 ini 1.67.0
1.142.1 Available under license
1.143 githubcommagiconairproperties 1.8.7
1.143.1 Available under license
1.144 githubcommoderngoconcurrent 0.0.0-20180306012644-bacd9c7ef1dd
1.144.1 Available under license
1.145 githubcommoderngoreflect2 1.0.2
1.145.1 Available under license
1.146 githubcomhashicorphcl 1.0.0
1.146.1 Available under license
1.147 go-spew 1.1.2-0.20180830191138-d8f796af33cc
1.147.1 Available under license
1.148 githubcomgooglegofuzz 1.2.0
1.148.1 Available under license
1.149 gopkgin 0.9.1

1.149.1 Available under license
1.150 gopkg.in/ini.v1 1.67.0
1.150.1 Available under license
1.151 json iterator go 1.1.12
1.151.1 Available under license
1.152 sirupsen-logrus 1.9.3
1.152.1 Available under license
1.153 yaml 3.0.1
1.153.1 Available under license
1.154 python-requests 2.25.1-8.el9
1.154.1 Available under license
1.155 file 5.39-16.el9
1.155.1 Available under license
1.156 acl 2.3.1-4.el9
1.156.1 Available under license
1.157 setup 2.13.7-10.el9
1.157.1 Available under license
1.158 selinux 3.6-1.el9
1.158.1 Available under license
1.159 python3-librepo 1.14.5-2.el9
1.159.1 Available under license
1.160 e2fsprogs 1.46.5-5.el9
1.160.1 Available under license
1.161 bash 5.1.8-9.el9
1.161.1 Available under license
1.162 iproute 6.2.0-6.el9_4
1.162.1 Available under license
1.163 librepo 1.14.5-2.el9
1.163.1 Available under license
1.164 libsepol 3.6-1.el9
1.164.1 Available under license
1.165 libnettle6 3.9.1-1.el9
1.165.1 Available under license
1.166 gnutls 3.8.3-4.el9_4
1.166.1 Available under license
1.167 open-ldap 2.6.6-3.el9
1.167.1 Available under license
1.168 python-dateutil 2.8.1
1.168.1 Available under license

1.169 mitchellh-mapstructure 1.5.0
1.169.1 Available under license
1.170 pyinotify 0.9.6
1.170.1 Available under license
1.171 systemd-python 234-8.el8
1.171.1 Available under license
1.172 gopkg.in/evanphx/json-patch.v4 4.12.0
1.172.1 Available under license
1.173 go-toml 2.2.2
1.173.1 Available under license
1.174 viper 1.19.0
1.174.1 Available under license
1.175 go-restful 3.12.1
1.175.1 Available under license
1.176 python3-idna 2.10-7.el9_4.1
1.176.1 Available under license
1.177 python-idna 2.10-7.el9_4.1
1.177.1 Available under license
1.178 kubernetes-klog 2.130.1
1.178.1 Available under license
1.179 spf13-viper 1.19.0
1.179.1 Available under license
1.180 cast 1.6.0
1.180.1 Available under license
1.181 gofuzz 1.2.0
1.181.1 Available under license
1.182 klog 2.130.1
1.182.1 Available under license
1.183 github.com/pelletier/go-toml/v2 2.2.2
1.183.1 Available under license
1.184 websocket 1.5.3
1.184.1 Available under license
1.185 github.com/fxamacker/cbor/v2 2.7.0
1.185.1 Available under license
1.186 alpine-keys 2.5-r0
1.186.1 Available under license
1.187 unzip 6.0-r15
1.187.1 Available under license
1.188 logrus 1.9.3

1.188.1 Available under license

1.189 ca-certificates 2024.2.69_v8.0.303-91.4.el9_4

1.189.1 Available under license

1.190 libevent 2.1.12-8.el9_4

1.190.1 Available under license

1.191 libmnl 1.0.4-16.el9_4

1.191.1 Available under license

1.192 glib 2.68.4-14.el9_4.1

1.192.1 Available under license

1.193 zlib 1.3.1-r2

1.193.1 Available under license

1.194 gnupg 1.15.1

1.194.1 Available under license

1.195 pax-utils 1.3.8-r1

1.195.1 Available under license

1.196 kmod-libs 28-10.el9

1.196.1 Available under license

1.197 audit-lib 3.1.5-1.el9

1.197.1 Available under license

1.198 libnghttp2 1.43.0-6.el9

1.198.1 Available under license

1.199 python3-systemd 234-19.el9

1.199.1 Available under license

1.200 python3-libdnf 0.69.0-12.el9

1.200.1 Available under license

1.201 pcre2-syntax 10.40-6.el9

1.201.1 Available under license

1.202 rpm-libs 4.16.1.3-34.el9

1.202.1 Available under license

1.203 libcurl 7.76.1-31.el9

1.203.1 Available under license

1.204 rpm-sign-libs 4.16.1.3-34.el9

1.204.1 Available under license

1.205 util-linux-core 2.37.4-20.el9

1.205.1 Available under license

1.206 file-system 3.16-5.el9

1.206.1 Available under license

1.207 libuuid 2.37.4-20.el9

1.207.1 Available under license

1.208 libmount 2.37.4-20.el9
1.208.1 Available under license
1.209 dnf-data 4.14.0-17.el9
1.209.1 Available under license
1.210 python 4.16.1.3-34.el9
1.210.1 Available under license
1.211 gdbm-libs 1.23-1.el9
1.211.1 Available under license
1.212 python3-setuptools-wheel 53.0.0-13.el9
1.212.1 Available under license
1.213 rpm-plugin-selinux 4.16.1.3-34.el9
1.213.1 Available under license
1.214 python3-dnf 4.14.0-17.el9
1.214.1 Available under license
1.215 fdisk 2.37.4-20.el9
1.215.1 Available under license
1.216 python3-hawkey 0.69.0-12.el9
1.216.1 Available under license
1.217 python3-dnf-plugins-core 4.3.0-16.el9
1.217.1 Available under license
1.218 fsnotify 1.8.0
1.218.1 Available under license
1.219 tpm2-tss-tcti 3.2.3-1.el9
1.219.1 Available under license
1.220 chkconfig 1.24-1.el9_5.1
1.220.1 Available under license
1.221 systemd 252-46.el9_5.2
1.221.1 Available under license
1.222 pythonurllib 1.26.5-6.el9
1.222.1 Notifications
1.222.2 Available under license
1.223 coreutils 8.32-36.el9
1.223.1 Available under license
1.224 tar 1.34-7.el9
1.224.1 Available under license
1.225 pcre 8.44-4.el9
1.225.1 Available under license
1.226 systemd-libs 252-46.el9_5.2
1.226.1 Available under license

1.227 usermode 1.114-5.el9

1.227.1 Available under license

1.228 util-linux 2.37.4-20.el9

1.228.1 Available under license

1.229 nghttp2 1.43.0-6.el9

1.229.1 Available under license

1.230 dnf 4.14.0-17.el9

1.230.1 Available under license

1.231 libksba 1.5.1-7.el9

1.231.1 Available under license

1.232 dmidecode 3.6-1.el9

1.232.1 Available under license

1.233 ima-evm-utils 1.5-2.el9

1.233.1 Available under license

1.234 libdnf-plugin-subscription-manager 1.29.42-1.el9

1.234.1 Available under license

1.235 subscription-manager 1.29.42-1.el9

1.235.1 Available under license

1.236 gdb 14.2-3.el9

1.236.1 Available under license

1.237 libeconf 0.4.1-4.el9

1.237.1 Available under license

1.238 yum 4.14.0-17.el9

1.238.1 Available under license

1.239 python3-cloud-what 1.29.42-1.el9

1.239.1 Available under license

1.240 subscription-manager 1.29.42

1.240.1 Available under license

1.241 pcre 10.40-6.el9

1.241.1 Available under license

1.242 selinux-policy-targeted 38.1.45-3.el9_5

1.242.1 Available under license

1.243 python-setuptools 53.0.0-13.el9

1.243.1 Available under license

1.244 gdbm 1.23-1.el9

1.244.1 Available under license

1.245 crypto-policies 20240828-2.git626aa59.el9_5

1.245.1 Available under license

1.246 python-systemd 234-19.el9

1.246.1 Available under license

1.247 curl-minimal 7.76.1-31.el9

1.247.1 Available under license

1.248 curl 7.76.1-31.el9

1.248.1 Available under license

1.249 audit 3.1.5-1.el9

1.249.1 Available under license

1.250 redhatrelease 9.5-0.6.el9

1.250.1 Available under license

1.251 openssl-fips-provider-so 3.0.7-6.el9_5

1.251.1 Available under license

1.252 selinux-policy 38.1.45-3.el9_5

1.252.1 Available under license

1.253 openssl-fips-provider 3.0.7-6.el9_5

1.253.1 Available under license

1.254 librhsm 0.0.3-9.el9

1.254.1 Available under license

1.255 systemd-pam 252-46.el9_5.2

1.255.1 Available under license

1.256 alternatives 1.24-1.el9_5.1

1.256.1 Available under license

1.257 python-pip 21.3.1-1.el9

1.257.1 Available under license

1.258 elfutils 0.191-4.el9

1.258.1 Available under license

1.259 libbpf 1.4.0-1.el9

1.259.1 Available under license

1.260 findutils 4.8.0-7.el9

1.260.1 Available under license

1.261 libuser 0.63-15.el9

1.261.1 Available under license

1.262 rpm 4.16.1.3-34.el9

1.262.1 Available under license

1.263 libgcrypt 1.10.0-11.el9

1.263.1 Available under license

1.264 virt-what 1.25-10.el9

1.264.1 Available under license

1.265 dnf-plugins-core 4.3.0-16.el9

1.265.1 Available under license

1.266 kmod 28-10.el9

1.266.1 Available under license

1.267 python3-subscription-manager-rhsm 1.29.42-1.el9

1.267.1 Available under license

1.268 libsolv 0.7.24-3.el9

1.268.1 Available under license

1.269 gdb-gdbserver 14.2-3.el9

1.269.1 Available under license

1.270 systemd-rpm-macros 252-46.el9_5.2

1.270.1 Available under license

1.271 libdnf 0.69.0-12.el9

1.271.1 Available under license

1.272 berkeley-db 5.3.28-54.el9

1.272.1 Available under license

1.273 kerberos 1.21.1-4.el9_5

1.273.1 Available under license

1.274 crypto-policies-scripts 20240828-2.git626aa59.el9_5

1.274.1 Available under license

1.275 expat 2.5.0-3.el9_5.1

1.275.1 Available under license

1.276 vim 8.2.2637-21.el9

1.276.1 Available under license

1.277 pam 1.5.1-22.el9_5

1.277.1 Available under license

1.278 python 3.9.21-1.el9_5

1.278.1 Available under license

1.279 libsemanage-common 3.6-2.1.el9_5

1.279.1 Available under license

1.280 libpkit 0.25.3-3.el9_5

1.280.1 Available under license

1.281 scanelf 1.3.8-r1

1.281.1 Available under license

1.282 githubcomfsnotifyfsnotify 1.8.0

1.282.1 Available under license

1.283 sigs.k8s.io/json 0.0.0-20241014173422-cfa47c3a1cc8

1.283.1 Available under license

1.284 github.com/moby/spdystream 0.5.0

1.284.1 Available under license

1.285 structured-merge-diff 4.5.0

1.285.1 Available under license

1.286 kube-openapi 0.0.0-20241212222426-2c72e554b1e7

1.286.1 Available under license

1.287 utils 0.0.0-20241210054802-24370beab758

1.287.1 Available under license

1.288 easyjson 0.9.0

1.288.1 Available under license

1.289 alpine-baselayout 3.6.8-r1

1.289.1 Available under license

1.290 musl 1.2.5-r9

1.290.1 Available under license

1.291 reflect2 1.0.2

1.291.1 Available under license

1.292 float16 0.8.4

1.292.1 Available under license

1.293 kubernetes-yaml 1.4.0

1.293.1 Available under license

1.294 cbor 2.7.0

1.294.1 Available under license

1.295 jsonpatch 4.12.0

1.295.1 Available under license

1.296 protobuf 1.5.4

1.296.1 Available under license

1.297 pysocks 1.7.1

1.297.1 Available under license

1.298 chardet 4.0.0

1.298.1 Available under license

1.299 colorama 0.4.4

1.299.1 Available under license

1.300 platformdirs 2.4.0

1.300.1 Available under license

1.301 slog-shim 0.1.0

1.301.1 Available under license

1.302 packaging 21.0

1.302.1 Available under license

1.303 tenacity 7.0.0

1.303.1 Available under license

1.304 distlib 0.3.3

1.304.1 Available under license

1.305 jsonreference 0.21.0

1.305.1 Available under license

1.306 swag 0.23.0

1.306.1 Available under license

1.307 idna 2.10

1.307.1 Available under license

1.308 spdystream 0.5.0

1.308.1 Available under license

1.309 ca-certificates 20241121-r1

1.309.1 Available under license

1.310 json 0.0.0-20241014173422-cfa47c3a1cc8

1.310.1 Available under license

1.311 gnostic-models 0.6.9

1.311.1 Available under license

1.312 kubernetes-utils 0.0.0-20241210054802-24370beab758

1.312.1 Available under license

1.313 k8s-io-kube-openapi 0.0.0-20241212222426-2c72e554b1e7

1.313.1 Available under license

1.314 githubcommailrueasyjson 0.9.0

1.314.1 Available under license

1.315 github.com/google/gnostic-models 0.6.9

1.315.1 Available under license

1.316 futures Child component of Python 3.9

1.316.1 Available under license

1.317 kubernetes-csi-api 0.5.0

1.317.1 Available under license

1.318 busybox 1.37.0-r12

1.318.1 Available under license

1.319 ssl-client 1.37.0-r12

1.319.1 Available under license

1.320 ca-certificates-bundle 20241121-r1

1.320.1 Available under license

1.321 alpine-baselayout-data 3.6.8-r1

1.321.1 Available under license

1.322 gorilla-mux 1.8.1

1.322.1 Available under license

1.323 gorilla-websocket 1.5.3

1.323.1 Available under license

1.324 libcomps 0.1.18

1.324.1 Available under license

1.325 bzip2 1.0.8-10.el9_5

1.325.1 Available under license

1.326 spf13-pflag 1.0.6

1.326.1 Available under license

1.327 tzdata 2025a-1.el9

1.327.1 Available under license

1.328 x-time 0.10.0

1.328.1 Available under license

1.329 protobuf-go 1.36.5

1.329.1 Available under license

1.330 protobuf 1.36.5

1.330.1 Available under license

1.331 x-time-rate 0.10.0

1.331.1 Available under license

1.332 openssl 3.3.3-r0

1.332.1 Available under license

1.333 libcrypto3 3.3.3-r0

1.333.1 Available under license

1.334 libssl3 3.3.3-r0

1.334.1 Available under license

1.335 openssl 3.2.2-6.el9_5.1

1.335.1 Available under license

1.336 alpine-base 3.21.3-r0

1.336.1 Available under license

1.337 musl-utils 1.2.5-r9

1.337.1 Available under license

1.338 apk-tools 2.14.6-r3

1.338.1 Available under license

1.339 file 5.39-16.el9

1.339.1 Available under license

1.340 errors 0.9.1

1.340.1 Available under license

1.341 gogo-protobuf 1.3.2

1.341.1 Available under license

1.342 logr 1.4.2

1.342.1 Available under license

1.343 cpp 11.5.0-5.el9_5

1.343.1 Available under license

1.344 libxml2 2.9.13-6.el9_5.1
1.344.1 Available under license
1.345 libgcc 11.5.0-5.el9_5
1.345.1 Available under license
1.346 libstdc++ 11.5.0-5.el9_5
1.346.1 Available under license
1.347 libgomp 11.5.0-5.el9_5
1.347.1 Available under license
1.348 kubernetes-api 0.32.2
1.348.1 Available under license
1.349 kubernetes-apimachinery 0.32.2
1.349.1 Available under license
1.350 kubernetes-client 0.32.2
1.350.1 Available under license
1.351 alpine-release 3.21.3-r0
1.351.1 Available under license
1.352 github.com/openshift/client-go 0.0.0-20250131180035-f7ec47e2d87a
1.352.1 Available under license
1.353 openshift-client-go 0.0.0-20250131180035-f7ec47e2d87a
1.353.1 Available under license
1.354 kubernetes-metrics 0.32.2
1.354.1 Available under license
1.355 k8s-io-api 0.32.2
1.355.1 Available under license
1.356 k8s-io-client-go 0.32.2
1.356.1 Available under license
1.357 k8s-io-apimachinery 0.32.2
1.357.1 Available under license
1.358 kubernetes/metrics 0.32.2
1.358.1 Available under license
1.359 klauspost-compress v1.17.2
1.359.1 Available under license
1.360 google-go-cmp 0.7.0
1.360.1 Available under license
1.361 x-sys 0.31.0
1.361.1 Available under license
1.362 golang 1.24.1
1.362.1 Notifications
1.362.2 Available under license

1.363 stdlib go1.24.1
1.363.1 Notifications
1.363.2 Available under license
1.364 glibc 2.34-125.el9_5.3
1.364.1 Available under license
1.365 glibc-common 2.34-125.el9_5.3
1.365.1 Available under license
1.366 glibc-minimal-langpack 2.34-125.el9_5.3
1.366.1 Available under license
1.367 x-net 0.37.0
1.367.1 Available under license
1.368 term 0.30.0
1.368.1 Available under license
1.369 x-text 0.23.0
1.369.1 Available under license
1.370 x-term 0.30.0
1.370.1 Available under license
1.371 openshift-api 0.0.0-20250305225826-b8da3bfeaf77
1.371.1 Available under license
1.372 x-oauth2 0.28.0
1.372.1 Available under license
1.373 grpc-go 2.4.0
1.373.1 Available under license
1.374 x-crypto v0.36.0
1.374.1 Available under license
1.375 systemd-python 234
1.375.1 Available under license
1.376 dbus-python 1.2.18
1.376.1 Available under license
1.377 spew 1.1.2-0.20180830191138-d8f796af33cc
1.377.1 Available under license
1.378 logrus 1.9.3
1.378.1 Available under license
1.379 gofuzz 1.2.0
1.379.1 Available under license
1.380 pygobject 3.40.1
1.380.1 Available under license
1.381 github.com/google/uuid 1.6.0
1.381.1 Available under license

1.1 flowrate 0.0.0-20140419014527-cca7078d478f

1.1.1 Available under license :

Copyright (c) 2014 The Go-FlowRate Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of the go-flowrate project nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN
NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.2 iniparse 0.4

1.2.1 Available under license :

Copyright (c) 2001, 2002, 2003 Python Software Foundation
Copyright (c) 2004-2008 Paramjit Oberoi <param.cs.wisc.edu>
Copyright (c) 2007 Tim Lauridsen <tla@rasmil.dk>
All Rights Reserved.

iniparse/compat.py and tests/test_compat.py contain code derived from

lib/python-2.3/ConfigParser.py and lib/python-2.3/test/test_cfgparse.py
respectively. Other code may contain small snippets from those two files
as well. The Python license (LICENSE-PSF) applies to that code.

The MIT License

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The
above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL
THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see http://www.zope.com). In 2001, the Python Software
Foundation (PSF, see http://www.python.org/psf/) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member
of
the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

PSF LICENSE AGREEMENT FOR PYTHON 2.3

---

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 2.3 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 2.3 alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright (c) 2001, 2002, 2003 Python Software Foundation; All Rights Reserved" are retained in Python 2.3 alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 2.3 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 2.3.

4. PSF is making Python 2.3 available to Licensee on an "AS IS" basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 2.3 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 2.3 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 2.3, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 2.3, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an
office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee")
accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and
otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE
OR ANY OTHER USERS OF THE
SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS
AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY
DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all
respects by the law of the State of California, excluding conflict of
law provisions. Nothing in this License Agreement shall be deemed to
create any relationship of agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant
permission to use BeOpen trademarks or trade names in a trademark
sense to endorse or promote products or services of Licensee, or any

third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the permissions granted on that web page.

7.
By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c) 1995-2001 Corporation for National Research Initiatives;
All Rights
Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis.
CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS

FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding
the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission to use CNRI trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright
(c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam, The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Stichting Mathematisch

Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE
OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.3 decorator 4.4.2

1.3.1 Available under license :

BSD-style without advertising clause
Copyright (c) 2005-2018, Michele Simionato
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
Redistributions in bytecode form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

1.4 packaging 20.4

1.4.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This software is made available under the terms of *either* of the licenses
found in LICENSE.APACHE or LICENSE.BSD. Contributions to this software is made
under the terms of *both* these licenses.

Copyright (c) Donald Stufft and individual contributors.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
   this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.5 inf 0.9.1

1.5.1 Available under license :

Copyright (c) 2012 Pter Surnyi. Portions Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.6 go-yaml 2.4.0

1.6.1 Available under license :

Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.7 berkeley-db 5.3.28

1.7.1 Available under license :

Copyright (c) 1996, 2013 Oracle and/or its affiliates. All rights reserved.
See the file LICENSE for redistribution information.
This software is copyrighted by Christian Werner <chw@ch-werner.de>
and other authors. The following terms apply to all files associated
with the software unless explicitly disclaimed in individual files.

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

IN NO EVENT SHALL THE AUTHORS OR DISTRIBUTORS BE LIABLE TO ANY PARTY
FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES
ARISING OUT OF THE USE OF THIS SOFTWARE, ITS DOCUMENTATION, OR ANY
DERIVATIVES
 THEREOF, EVEN IF THE AUTHORS HAVE BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

THE AUTHORS AND DISTRIBUTORS SPECIFICALLY DISCLAIM ANY WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. THIS SOFTWARE
IS PROVIDED ON AN "AS IS" BASIS, AND THE AUTHORS AND DISTRIBUTORS HAVE
NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR
MODIFICATIONS.
This software is copyrighted by Christian Werner <chw@ch-werner.de> and others.
The following terms apply to all files associated with the software
unless explicitly disclaimed in individual files.

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

IN NO EVENT SHALL THE AUTHORS OR DISTRIBUTORS BE LIABLE TO ANY PARTY

FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES
ARISING OUT OF THE USE OF THIS SOFTWARE, ITS DOCUMENTATION, OR ANY
DERIVATIVES THEREOF,
EVEN IF THE AUTHORS HAVE BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

THE AUTHORS AND DISTRIBUTORS SPECIFICALLY DISCLAIM ANY WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. THIS SOFTWARE
IS PROVIDED ON AN "AS IS" BASIS, AND THE AUTHORS AND DISTRIBUTORS HAVE
NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR
MODIFICATIONS.
/*-
* Id
*/

The following is the license that applies to this copy of the Berkeley DB
software. For a license to use the Berkeley DB software under conditions
other than those described here, or to purchase support for this software,
please contact Oracle at berkeleydb-info_us@oracle.com.

=-=
/*
* Copyright (c) 1990, 2013 Oracle and/or its affiliates. All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
* documentation and/or other materials provided with the distribution.
* 3. Redistributions in any form must be accompanied by information
on
* how to obtain complete source code for the DB software and any
* accompanying software that uses the DB software. The source code
* must either be included in the distribution or be available for no
* more than the cost of distribution plus a nominal fee, and must be
* freely redistributable under reasonable conditions. For an
* executable file, complete source code means the source code for all
* modules it contains. It does not include source code for modules or
* files that typically accompany the major components of the operating
* system on which the executable file runs.
*
* THIS SOFTWARE IS PROVIDED BY ORACLE ``AS IS'' AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
* WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR

* NON-INFRINGEMENT, ARE DISCLAIMED. IN NO EVENT SHALL ORACLE BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
* CONSEQUENTIAL
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
* SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
* BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
* WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE
* OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
* IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/
/*
* Copyright (c) 1990, 1993, 1994, 1995
* The Regents of the University of California. All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with
 the distribution.
* 3. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*   without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
/*
 * Copyright (c) 1995, 1996
* The President and Fellows of Harvard University. All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.

* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*   without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY HARVARD AND ITS CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY
 AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL HARVARD OR ITS CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
=-=-=-

* CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
* ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF
* THE POSSIBILITY OF SUCH DAMAGE.
*/
NOTE

The license is based on the zlib/libpng license. For more details see
http://www.opensource.org/licenses/zlib-license.html. The intent of the
license is to:

- keep the license as simple as possible
- encourage the use of CuTest in both free and commercial applications
 and libraries
- keep the source code together
- give credit to the CuTest contributors for their work

If you ship CuTest in source form with your source distribution, the
following license document must be included with it in unaltered form.
If you find CuTest useful we would like to hear about it.

LICENSE

Copyright (c) 2003 Asim Jalis

This software is provided 'as-is', without any express or implied
warranty. In no event will the authors be held liable for any damages
arising from the use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin
 of this software must not be misrepresented; you must not
claim that you wrote the original software. If you use this software in
a product, an acknowledgment in the product documentation would be
appreciated but is not required.

2. Altered source versions must be plainly marked as such, and must not
be misrepresented as being the original software.

3. This notice may not be removed or altered from any source
distribution.
This package was debianized by Sam Clegg <samo@debian.org> on
Tue, 25 Jul 2006 11:43:45 +0100.

It was downloaded from <http://www.ch-werner.de/sqliteodbc/>

Upstream Author: Christian Werner <chw@ch-werner.de>

Copyright: Copyright (c) 2001-2011 Christian Werner <chw@ch-werner.de>
OS/2 Port Copyright (c) 2004 Lorne R. Sunley <lsunley@mb.sympatico.ca>

License:

This software is copyrighted by Christian Werner <chw@ch-werner.de>
and other authors. The following terms apply to all files associated
with the software unless explicitly disclaimed in individual files.

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and
need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

IN NO EVENT SHALL THE AUTHORS OR DISTRIBUTORS BE LIABLE TO ANY PARTY
FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES
ARISING OUT OF THE USE OF THIS SOFTWARE, ITS DOCUMENTATION, OR ANY
DERIVATIVES THEREOF, EVEN IF THE AUTHORS HAVE BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

THE AUTHORS AND DISTRIBUTORS SPECIFICALLY DISCLAIM ANY WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. THIS SOFTWARE
IS PROVIDED ON AN "AS IS" BASIS, AND THE AUTHORS AND DISTRIBUTORS HAVE
NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR
MODIFICATIONS.

The Debian packaging is (C) 2006, Sam Clegg <samo@debian.org> and
is licensed under the GPL-3, see `/usr/share/common-licenses/GPL-3'.

1.8 bridgeutils 1.7.1

1.8.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies

of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the

program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or
in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your

cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time

you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates

the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your

school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.9 urllib3 1.26.5

1.9.1 Notifications :

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
This product includes software written by Tim Hudson (tjh@cryptsoft.com).
This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit
(http://www.openssl.org/)

1.9.2 Available under license :

Contributions to the urllib3 project

Creator & Maintainer

* Andrey Petrov <andrey.petrov@shazow.net>

Contributors

In chronological order:

* victor.vde <http://code.google.com/u/victor.vde/>
 * HTTPS patch (which inspired HTTPSConnectionPool)

* erikcederstrand <http://code.google.com/u/erikcederstrand/>
 * NTLM-authenticated HTTPSConnectionPool
 * Basic-authenticated HTTPSConnectionPool (merged into make_headers)

* niphlod <niphlod@gmail.com>
 * Client-verified SSL certificates for HTTPSConnectionPool
 * Response gzip and deflate encoding support
 * Better unicode support for filepost using StringIO buffers

* btoconnor <brian@btoconnor.net>

* Non-multipart encoding for POST requests

* p.dobrogost <http://code.google.com/u/@WBRSRlBZDhBFXQB6/>
* Code review, PEP8 compliance, benchmark fix

* kennethreitz <me@kennethreitz.com>
* Bugfixes, suggestions, Requests integration

* georgemarshall <https://github.com/georgemarshall>
* Bugfixes, Improvements and Test
coverage

* Thomas Kluyver <thomas@kluyver.me.uk>
* Python 3 support

* brandon-rhodes <http://rhodesmill.org/brandon>
* Design review, bugfixes, test coverage.

* studer <theo.studer@gmail.com>
* IPv6 url support and test coverage

* Shivaram Lingamneni <slingamn@cs.stanford.edu>
* Support for explicitly closing pooled connections

* hartator <hartator@gmail.com>
* Corrected multipart behavior for params

* Thomas Weischuh <thomas@t-8ch.de>
* Support for TLS SNI
* API unification of ssl_version/cert_reqs
* SSL fingerprint and alternative hostname verification
* Bugfixes in testsuite

* Sune Kirkeby <mig@ibofobi.dk>
* Optional SNI-support for Python 2 via PyOpenSSL.

* Marc Schlaich <marc.schlaich@gmail.com>
* Various bugfixes and test improvements.

* Bryce Boe <bbzbryce@gmail.com>
* Correct six.moves conflict
* Fixed pickle support of some exceptions

* Boris Figovsky <boris.figovsky@ravellosystems.com>
* Allowed to skip SSL hostname verification

* Cory Benfield

<https://lukasa.co.uk/about/>
 * Stream method for Response objects.
 * Return native strings in header values.
 * Generate 'Host' header when using proxies.

* Jason Robinson <jaywink@basshero.org>
 * Add missing WrappedSocket.fileno method in PyOpenSSL

* Audrius Butkevicius <audrius.butkevicius@elastichosts.com>
 * Fixed a race condition

* Stanislav Vitkovskiy <stas.vitkovsky@gmail.com>
 * Added HTTPS (CONNECT) proxy support

* Stephen Holsapple <sholsapp@gmail.com>
 * Added abstraction for granular control of request fields

* Martin von Gagern <Martin.vGagern@gmx.net>
 * Support for non-ASCII header parameters

* Kevin Burke <kev@inburke.com> and Pavel Kirichenko <juanych@yandex-team.ru>
 * Support for separate connect and request timeouts

* Peter Waller <p@pwaller.net>
 * HTTPResponse.tell() for determining amount received over the wire

* Nipunn Koorapati <nipunn1313@gmail.com>
 * Ignore default ports when comparing hosts for equality

* Danilo @dbrgn <https://dbrgn.ch/>
  * Disabled TLS compression by default on Python 3.2+
 * Disabled TLS compression in pyopenssl contrib module
 * Configurable cipher suites in pyopenssl contrib module

* Roman Bogorodskiy <roman.bogorodskiy@ericsson.com>
 * Account retries on proxy errors

* Nicolas Delaby <nicolas.delaby@ezeep.com>
 * Use the platform-specific CA certificate locations

* Josh Schneier <https://github.com/jschneier>
 * HTTPHeaderDict and associated tests and docs
 * Bugfixes, docs, test coverage

* Tahia Khan <http://tahia.tk/>
 * Added Timeout examples in docs

* Arthur Grunseid <https://grunseid.com>

* source_address support and tests (with https://github.com/bui)

* Ian Cordasco <graffatcolmingov@gmail.com>
* PEP8 Compliance and Linting
* Add ability to pass socket options to an HTTP Connection

* Erik Tollerud <erik.tollerud@gmail.com>
* Support for standard library io module.

* Krishna Prasad <kprasad.iitd@gmail.com>
* Google App Engine documentation

* Aaron Meurer
<asmeurer@gmail.com>
* Added Url.url, which unparses a Url

* Evgeny Kapun <abacabadabacaba@gmail.com>
* Bugfixes

* Benjamen Meyer <bm_witness@yahoo.com>
* Security Warning Documentation update for proper capture

* Shivan Sornarajah <github@sornars.com>
* Support for using ConnectionPool and PoolManager as context managers.

* Alex Gaynor <alex.gaynor@gmail.com>
* Updates to the default SSL configuration

* Tomas Tomecek <ttomecek@redhat.com>
* Implemented generator for getting chunks from chunked responses.

* tlynn <https://github.com/tlynn>
* Respect the warning preferences at import.

* David D. Riddle <ddriddle@illinois.edu>
* IPv6 bugfixes in testsuite

* Thea Flowers <magicalgirl@google.com>
* App Engine environment tests.
* Documentation re-write.

* John Krauss <https://github.com/talos>
* Clues to debugging problems with `cryptography` dependency in docs

* Disassem <https://github.com/Disassem>
* Fix pool-default headers not applying for url-encoded
requests like GET.

* James Atherfold <jlatherfold@hotmail.com>
 * Bugfixes relating to cleanup of connections during errors.

* Christian Pedersen <https://github.com/chripede>
 * IPv6 HTTPS proxy bugfix

* Jordan Moldow <https://github.com/jmoldow>
 * Fix low-level exceptions leaking from ``HTTPResponse.stream()``.
 * Bugfix for ``ConnectionPool.urlopen(release_conn=False)``.
 * Creation of ``HTTPConnectionPool.ResponseCls``.

* Predrag Gruevski <https://github.com/obi1kenobi>
 * Made cert digest comparison use a constant-time algorithm.

* Adam Talsma <https://github.com/a-tal>
 * Bugfix to ca_cert file paths.

* Evan Meagher <https://evanmeagher.net>
 * Bugfix related to `memoryview` usage in PyOpenSSL adapter

* John Vandenberg <jayvdb@gmail.com>
 * Python 2.6 fixes; pyflakes and pep8 compliance

* Andy Caldwell <andy.m.caldwell@googlemail.com>
 * Bugfix related to reusing connections in indeterminate states.

* Ville Skytt <ville.skytta@iki.fi>
 * Logging efficiency
 improvements, spelling fixes, Travis config.

* Shige Takeda <smtakeda@gmail.com>
 * Started Recipes documentation and added a recipe about handling concatenated gzip data in HTTP response

* Jess Shapiro <jesse@jesseshapiro.net>
 * Various character-encoding fixes/tweaks
 * Disabling IPv6 DNS when IPv6 connections not supported

* David Foster <http://dafoster.net/>
 * Ensure order of request and response headers are preserved.

* Jeremy Cline <jeremy@jcline.org>
 * Added connection pool keys by scheme

* Aviv Palivoda <palaviv@gmail.com>
 * History list to Retry object.
 * HTTPResponse contains the last Retry object.

* Nate Prewitt <nate.prewitt@gmail.com>

 * Ensure timeouts are not booleans and greater than zero.
 * Fixed infinite loop in ``stream`` when amt=None.
 * Added length_remaining to determine remaining data to be read.
 * Added enforce_content_length to raise exception when incorrect content-length received.

* Seth Michael Larson <sethmichaellarson@protonmail.com>
 * Created selectors backport that supports PEP 475.

* Alexandre Dias <alex.dias@smarkets.com>
 * Don't retry on timeout if method not in whitelist

* Moinuddin Quadri <moin18@gmail.com>
 * Lazily load idna package

* Tom White <s6yg1ez3@mail2tor.com>
 * Made SOCKS handler differentiate socks5h from socks5 and socks4a from socks4.

* Tim Burke <tim.burke@gmail.com>
 * Stop buffering entire deflate-encoded responses.

* Tuukka Mustonen <tuukka.mustonen@gmail.com>
 * Add counter for status_forcelist retries.

* Erik Rose <erik@mozilla.com>
 * Bugfix to pyopenssl vendoring

* Wolfgang Richter <wolfgang.richter@gmail.com>
 * Bugfix related to loading full certificate chains with PyOpenSSL backend.

* Mike Miller <github@mikeage.net>
 * Logging improvements to include the HTTP(S) port when opening a new connection

* Ioannis Tziakos <mail@itziakos.gr>
 * Fix ``util.selectors._fileobj_to_fd`` to accept ``long``.
 * Update appveyor tox setup to use the 64bit python.

* Akamai
 (through Jess Shapiro) <jshapiro@akamai.com>
 * Ongoing maintenance; 2017-2018

* Dominique Leuenberger <dimstar@opensuse.org>
 * Minor fixes in the test suite

* Will Bond <will@wbond.net>
 * Add Python 2.6 support to ``contrib.securetransport``

* Aleksei Alekseev <alekseev.yeskela@gmail.com>
 * using auth info for socks proxy

* Chris Wilcox <git@crwilcox.com>
 * Improve contribution guide
 * Add ``HTTPResponse.geturl`` method to provide ``urllib2.urlopen().geturl()`` behavior

* Bruce Merry <https://www.brucemerry.org.za>
 * Fix leaking exceptions when system calls are interrupted with zero timeout

* Hugo van Kemenade <https://github.com/hugovk>
 * Drop support for EOL Python 2.6

* Tim Bell <https://github.com/timb07>
 * Bugfix for responses with Content-Type: message/* logging warnings

* Justin Bramley <https://github.com/jbramleycl>
 * Add ability to handle multiple Content-Encodings

* Katsuhiko YOSHIDA <https://github.com/kyoshidajp>
 * Remove Authorization header
 regardless of case when redirecting to cross-site

* James Meickle <https://permadeath.com/>
 * Improve handling of Retry-After header

* Chris Jerdonek <chris.jerdonek@gmail.com>
 * Remove a spurious TypeError from the exception chain inside
   HTTPConnectionPool._make_request(), also for BaseExceptions.

* Jorge Lopez Silva <https://github.com/jalopezsilva>
 * Added support for forwarding requests through HTTPS proxies.

* Benno Rice <benno@jeamland.net>
 * Allow cadata parameter to be passed to underlying ``SSLContext.load_verify_locations()``.

* Keiichi Kobayashi <abok.1k@gmail.com>
 * Rename VerifiedHTTPSConnection to HTTPSConnection

* Himanshu Garg <garg_himanshu@outlook.com>
 * DOC & LICENSE Update

* Hod Bin Noon <bin.noon.hod@gmail.com>
 * Test improvements

* Chris Olufson <tycarac@gmail.com>
 * Fix for connection not being released on HTTP redirect and response not preloaded

* [Bastiaan Bakker] <https://github.com/bastiaanb>
 * Support for logging session keys

via environment variable ``SSLKEYLOGFILE`` (Python 3.8+)

* [Ezzeri Esa] <https://github.com/savarin>
 * Ports and extends on types from typeshed

* [Your name or handle] <[email or website]>
 * [Brief summary of your changes]
MIT License

Copyright (c) 2008-2020 Andrey Petrov and contributors (see CONTRIBUTORS.txt)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
 OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.10 python-requests 2.26.0

1.10.1 Available under license :

Apache License 2.0
Requests
Copyright 2019 Kenneth Reitz

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions

of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

1.11 msgpack 1.0.2

1.11.1 Available under license :

Apache License 2.0
Copyright (C) 2008-2011 INADA Naoki <songofacandy@gmail.com>

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.12 urllib3 1.26.7

1.12.1 Available under license :

MIT License

Copyright (c) 2008-2020 Andrey Petrov and contributors (see CONTRIBUTORS.txt)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT

1.13 modern-go-concurrent 0.0.0-20180306012644-bacd9c7ef1dd

1.13.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any

risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.14 goautoneg 0.0.0-20191010083416-a7dc8b61c822

1.14.1 Available under license :

Copyright (c) 2011, Open Knowledge Foundation Ltd.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

Neither the name of the Open Knowledge Foundation Ltd. nor the
names of its contributors may be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.15 hcl 1.0.0

1.15.1 Available under license :

Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but
not also under the terms of a
Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable
by such Contributor that
would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b)

ownership of more than fifty percent (50%) of the
outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3.
Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent
Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute,
must be under the
terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all

distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis,
if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user
license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation

of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License
may be brought only in the courts of
a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license

steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses
If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the
notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain one at http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then
You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible With Secondary Licenses, as defined by the Mozilla Public License, v. 2.0.

1.16 intern 1.0.0

1.16.1 Available under license :

Copyright 2005-2012, The Dojo Foundation
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this

list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the Dojo Foundation nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN
NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
New BSD License

20122013 Colin Snover http://zetafleet.com
2013 SitePen, Inc. http://sitepen.com
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
* Neither the name of The Intern nor the names of its contributors may
be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE LISTED COPYRIGHT HOLDERS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Released under [Dojo Foundation CLA](http://dojofoundation.org/about/cla).
BSD-3-Clause
MIT
UNRECOGNIZED LICENSE; MD5 sum: 5e4d59e3c157354fe02610ef281f37b6
License Disclaimer:

All contents of this directory are Copyright (c) the Dojo Foundation, with the
following exceptions:
---

dojo.css:
 * parts Copyright (c) 2007, Yahoo! Inc. All rights reserved.
   Distributed under the terms of the BSD License

The Program includes all or portions of the following software which was obtained under the terms and conditions of the BSD License.

http://developer.yahoo.com/yui/license.html

Copyright (c) 2007, Yahoo! Inc.
All rights reserved.
Redistribution and use of this software in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the
documentation
 and/or other materials provided with the distribution.
* Neither the name of Yahoo! Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without
specific prior written permission of Yahoo! Inc.
THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY,
OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF

SUCH DAMAGE.
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/,
and http://www.unicode.org/cldr/data/ . Unicode Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.
NOTICE TO USER: Carefully read the following legal agreement. BY DOWNLOADING, INSTALLING, COPYING OR
OTHERWISE USING UNICODE INC.'S DATA FILES ("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU
UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS
AGREEMENT. IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE
Copyright 1991-2007 Unicode, Inc. All rights reserved. Distributed under the Terms of Use in http://www.unicode.org/copyright.html.

Permission
is hereby granted, free of charge, to any person obtaining a copy of the Unicode data files and any associated documentation (the "Data Files") or Unicode software and any associated documentation (the "Software") to deal in the Data
Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell
copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided
that (a) the above copyright notice(s) and this permission notice appear with all copies of the Data Files or Software, (b) both the
above copyright notice(s) and this permission notice appear in associated documentation, and (c) there is clear notice in each modified Data File
or in the Software as well as in the documentation associated with the Data File(s) or Software that the data or software has been modified.
THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED,
INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE
AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS
INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES,
OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF
CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR

PERFORMANCE OF THE DATA FILES OR SOFTWARE.
Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other
dealings in these Data Files or Software without prior written authorization of the copyright holder.

1.17 json-iterator-go 1.1.12

1.17.1 Available under license :

MIT License

Copyright (c) 2016 json-iterator

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.18 go-flowrate 0.0.0-20140419014527-cca7078d478f

1.18.1 Available under license :

Copyright (c) 2014 The Go-FlowRate Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright

notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the
distribution.

* Neither the name of the go-flowrate project nor the names of its
contributors may be used to endorse or promote products derived
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN
NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.19 fdisk 2.37.4

1.19.1 Available under license :

NR START END SECTORS SIZE NAME UUID
1 32 7679 7648 3.7M 8f8378c0-01
2 7680 16383 8704 4.3M 8f8378c0-02
5 7936 12799 4864 2.4M
6 12544 16127 3584 1.8M

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be

consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and

modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any

warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library

creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the

user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise

permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by

all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is

copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to

your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below,

refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but

does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source

code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software

Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this

is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains

that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to

control those activities. However, it does not include the work's
System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source
includes interface definition files associated with source files for
the work, and the source code for shared libraries and dynamically
linked subprograms that the work is specifically designed to require,
such as by intimate data communication or control flow between those
subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is
covered by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological

measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not

invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or

specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly

provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that

transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this

License, through a
publicly available network server or other readily accessible means,
then you must either (1) cause the Corresponding Source to be so
available, or (2) arrange to deprive yourself of the benefit of the
patent license for this particular work, or (3) arrange, in a manner
consistent with the requirements of this License, to extend the patent
license to downstream recipients. "Knowingly relying" means you have
actual knowledge that, but for the patent license, your conveying the
covered work in a country, or your recipient's use of the covered work
in a country, would infringe one or more identifiable patents in that
country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or
arrangement, you convey, or propagate by procuring conveyance of, a
covered work, and grant a patent license to some of the parties
receiving the covered work authorizing them to use, propagate, modify
or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may

not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT

HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify

it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
WEV @@ WEV[B "1
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
x ?"U@,5 @mISmIN<GimCN7g1u|E
43mI,5WEV @@ WEV @mImImIAmImImI0mImImI*mImI
A0mImImI...
lost+found...

;9GimCN7g

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~WEV @@
WEV[B "1
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR

ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)

* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/

1.20 readline 8.1

1.20.1 Available under license :

@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
 must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License

principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The ``Document'', below, refers
to any such manual or work. Any member of the public is a licensee, and is addressed as ``you''. You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A ``Modified Version'' of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political
position regarding
them.

The ``Invariant Sections'' are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document

straightforwardly with generic text editors or (for
images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain
@sc{ascii} without markup, Texinfo input format, La@TeX{} input
format, @acronym{SGML} or @acronym{XML} using a publicly available
@acronym{DTD}, and standard-conforming simple @acronym{HTML},
PostScript or @acronym{PDF} designed for human modification. Examples
of transparent image formats include @acronym{PNG}, @acronym{XCF} and
@acronym{JPG}. Opaque formats
include proprietary formats that can be
read and edited only by proprietary word processors, @acronym{SGML} or
@acronym{XML} for which the @acronym{DTD} and/or processing tools are
not generally available, and the machine-generated @acronym{HTML},
PostScript or @acronym{PDF} produced by some word processors for
output purposes only.

The ``Title Page'' means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, ``Title Page'' means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies
of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in
another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'',
``Dedications'', ``Endorsements'', or ``History''.) To ``Preserve the Title''
of such a section when you modify the Document means that it remains a
section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which
states that this License applies to the Document. These Warranty
Disclaimers are considered to be included by reference in this
License, but only as regards disclaiming warranties: any other

implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever
to those of this License. You may not use
technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible.
You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material.

If you use the latter option, you must take reasonably prudent steps,
when you begin distribution of Opaque copies in quantity, to ensure
that
this Transparent copy will remain thus accessible at the stated
location until at least one year after the last time you distribute an
Opaque copy (directly or through your agents or retailers) of that
edition to the public.

It is requested, but not required, that you contact the authors of the
Document well before redistributing any large number of copies, to give
them a chance to provide you with an updated version of the Document.

@item
MODIFICATIONS

You may copy and distribute a Modified Version of the Document under
the conditions of sections 2 and 3 above, provided that you release
the Modified Version under precisely this License, with the Modified
Version filling the role of the Document, thus licensing distribution
and modification of the Modified Version to whoever possesses a copy
of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item
Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from
those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities
responsible for authorship of the modifications in the Modified
Version, together with at least five of the principal authors of the
Document (all of its principal authors, if it has fewer than five),
unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the
Modified Version, as the publisher.

@item
Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications
adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice
giving the public permission to use the Modified Version under the
terms of this License, in the form shown in
the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the Document's license notice.

@item
Include an unaltered copy of this License.

@item
Preserve the section Entitled ``History'', Preserve its Title, and add
to it an item stating at least the title, year, new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled ``History'' in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.

@item
Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the ``History'' section.
You may omit a network location for a work that was published at
least
four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document,
 you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements'', provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf
 of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and

multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of
 each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History''
in the various original documents, forming one section Entitled
``History''; likewise combine any sections Entitled ``Acknowledgements'',
and any sections Entitled ``Dedications''. You must delete all
sections Entitled ``Endorsements.''

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents
released under this License, and replace the individual copies of this
License in the various documents with a single copy that is included in
the collection, provided that you follow the rules of this License for
verbatim copying of each of the documents in all other respects.

You may extract
 a single document from such a collection, and distribute
it individually under this License, provided you insert a copy of this
License into the extracted document, and follow this License in all
other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an ``aggregate'' if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these
copies of the Document, then if the Document is less than one half of
the entire aggregate, the Document's Cover Texts may
 be placed on
covers that bracket the Document within the aggregate, or the
electronic equivalent of covers if the Document is in electronic form.

Otherwise they must appear on printed covers that bracket the whole aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original
version will prevail.

If a section in the Document is Entitled ``Acknowledgements'', ``Dedications'', or ``History'', the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, or distribute it is void, and will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies
you of the
violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See
@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that
 a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'')
 contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or

in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the
 MMC is eligible for relicensing.

@end enumerate

@page
@heading ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group
 Copyright (C) @var{year} @var{your name}.
 Permission is granted to copy, distribute and/or modify this document
 under the terms of the GNU Free Documentation License, Version 1.3
 or any later version published by the Free Software Foundation;
 with no Invariant Sections, no Front-Cover Texts, and no Back-Cover
 Texts. A copy of the license is included in the section entitled ``GNU
 Free Documentation License''.
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts.'' line with this:

@smallexample
@group
   with the Invariant Sections being @var{list their titles}, with
   the Front-Cover
 Texts being @var{list}, and with the Back-Cover Texts
   being @var{list}.
@end group
@end smallexample

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the

situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they

know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is
not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

"Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section

4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,

procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of

it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting

any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so

that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by

modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED

TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.21 t-tomalak-logrus-easy-formatter 0.0.0-20190827215021-c074f06c5816

1.21.1 Available under license :

MIT License

Copyright (c) 2018 Tomasz Tomalak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.22 lumberjack 2.0.0+incompatible

1.22.1 Available under license :

Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: lumberjack
Source: https://github.com/natefinch/lumberjack

Files: *
Copyright: 2014 Nate Finch
License: Expat

Files: debian/*
Copyright: 2015 Tim Potter <tpot@hpe.com>
License: Expat
Comment: Debian packaging is licensed under the same terms as upstream

License: Expat
The MIT License (MIT)
.
Copyright (c) 2014 Nate Finch
.
Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:
.
The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.
.
THE
SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Nate Finch

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.23 six 1.15.0

1.23.1 Available under license :

The primary author and maintainer of six is Benjamin Peterson. He would like to
acknowledge the following people who submitted bug reports, pull requests, and
otherwise worked to improve six:

Marc Abramowitz
immerrr again
Alexander Artemenko
Aymeric Augustin
Lee Ball
Ben Bariteau
Ned Batchelder
Wouter Bolsterlee
Brett Cannon
Jason R. Coombs
Julien Danjou
Ben Darnell
Ben Davis
Jon Dufresne
Tim Graham
Thomas Grainger
Max Grender-Jones
Joshua Harlow
Toshiki Kataoka
Hugo van Kemenade
Anselm Kruis
Ivan Levkivskyi

Alexander Lukanin
James Mills
Jordan Moldow
Berker Peksag
Sridhar Ratnakumar
Erik Rose
Mirko Rossini
Peter Ruibal
Miroslav Shubernetskiy
Eli Schwartz
Anthony Sottile
Jonathan Vanasco
Lucas Wiman
Jingxin Zhu

If you think you belong on this list, please let me know! --Benjamin
Copyright (c) 2010-2020 Benjamin Peterson

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.24 python-certifi 2021.05.30

1.24.1 Available under license :

This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:

http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

***** BEGIN LICENSE BLOCK *****
This Source Code Form is subject to the terms of the Mozilla Public License,
v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain
one at http://mozilla.org/MPL/2.0/.

***** END LICENSE BLOCK *****
@(#) $RCSfile: certdata.txt,v $
$Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $

1.25 html5lib 1.1

1.25.1 Available under license :

Copyright (c) 2006-2013 James Graham, Geoffrey Sneddon, and
other contributors

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT
Copyright (c) 2006-2013 James Graham and other contributors

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,

distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.26 pep517 0.12.0

1.26.1 Available under license :

The MIT License (MIT)

Copyright (c) 2017 Thomas Kluyver

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
MIT

1.27 github.com/t-tomalak/logrus-easy-formatter 0.0.0-20190827215021-c074f06c5816

1.27.1 Available under license :

MIT License

Copyright (c) 2018 Tomasz Tomalak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.28 python3-decorator 4.4.2-6.el9

1.28.1 Available under license :

BSD-style without advertising clause
Copyright (c) 2005-2018, Michele Simionato
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
Redistributions in bytecode form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,

INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.29 langpacks-core-en 3.0-16.el9

1.29.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPLv2+

Found in path(s):
* /langpacks-3.0-16.el9.src.rpm-cosi-expand-archive-GXujUUbe/langpacks.spec

1.30 python3-gobject-base-noarch 3.40.1-6.el9

1.30.1 Available under license :

pygobject.svg and pygobject-small.svg are based on the GTK logo, created by
Andreas Nilsson, licensed under CC BY-SA 3.0. For more info see
https://commons.wikimedia.org/wiki/File:GTK%2B_logo.svg
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a

"work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License
to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be
distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the

library". The executable is therefore covered
by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any
executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood

that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our

decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.31 libxcrypt 4.4.18-3.el9

1.31.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your

freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot

effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run

that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,

provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be
reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a

work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever

changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the

Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse

you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by

the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively

convey
the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.32 gpg-pubkey 5a6340b3-6229229e

1.32.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further

restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will

be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program

`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
The accompanying Red Hat Enterprise Linux @@VERSION@@ release includes
copyrighted software that is licensed under the GNU General Public
License and other licenses. You may obtain the complete
machine-readable source code corresponding to portions of this release
by sending a check or money order in the amount of US $5.00 to:

VP, Legal - Products & Technologies
Red Hat, Inc.
100 East Davie Street
Raleigh, NC 27601 USA

Please write "source for RHEL @@VERSION@@" in the memo line of your
payment.

This offer is valid to anyone in receipt of this information and shall
expire three years following the date of the final distribution of
this release by Red Hat, Inc.
END USER LICENSE AGREEMENT
RED HAT(R) ENTERPRISE LINUX(R) AND RED HAT APPLICATIONS

This end user license agreement ("EULA") governs the use of any Red
Hat software application that includes or refers to this license and
any related updates, source code, appearance, structure and
organization (the "Programs"), regardless of the delivery mechanism.

1. License Grant. Subject to the following terms, Red Hat, Inc. ("Red
Hat") grants to you a perpetual, worldwide license to the Programs
(each of which may include multiple software components) pursuant
to the GNU General Public License v.2
(https://www.gnu.org/licenses/oldlicenses/gpl-2.0.en.html). With
the exception of certain image files identified in Section 2
below, each software component is governed by a license located in
the software component's source code that permits you to run, copy,
modify, and redistribute (subject to certain obligations in some
cases) the software component. The license rights for

the binary
only firmware components are located with the components themselves. This EULA pertains solely to the Programs and does not limit your rights under, or grant you rights that supersede, the license terms of any particular component.

2. Intellectual Property Rights. The Programs and each of their components are owned by Red Hat and other licensors and are protected under copyright law and other laws as applicable. Title to the Programs and any component, or to any copy or modification shall remain with Red Hat and other licensors, subject to the applicable license. The "Red Hat" mark, the individual Program marks, and the "Red Hat" logo are trademarks or registered trademarks of Red Hat and its affiliates in the U.S. and other countries. This EULA does not permit you to distribute the Programs using Red Hat's trademarks, regardless of whether the Programs have been modified. You may make a commercial redistribution of the Programs
only if (a) permitted under a
separate written agreement with Red Hat authorizing such commercial redistribution or (b) you remove and replace all occurrences of Red Hat trademarks and logos. Modifications to the software may corrupt the Programs. You should read the information found at
http://www.redhat.com/about/corporate/trademark/ before distributing a copy of the Programs.

3. Limited Warranty. Except as specifically stated in this Section 3, a separate agreement with Red Hat, or a license for a particular component, to the maximum extent permitted under applicable law, the Programs and the components are provided and licensed "as is" without warranty of any kind, express or implied, including the implied warranties of merchantability, non-infringement or fitness for a particular purpose. Red Hat warrants that the media on which the Programs and the components are provided will be free from defects in materials and manufacture under normal
use for a period
of 30 days from the date of delivery to you. Neither Red Hat nor its affiliates warrant that the functions contained in the Programs will meet your requirements or that the operation of the Programs will be entirely error free, appear or perform precisely as described in the accompanying documentation, or comply with regulatory requirements. This warranty extends only to the party that purchases subscription services for the Programs from Red Hat and/or its affiliates or a Red Hat authorized distributor.

4. Limitation of Remedies and Liability. To the maximum extent permitted by applicable law, your exclusive remedy under this EULA

is to return any defective media within 30 days of delivery along with a copy of your payment receipt and Red Hat, at its option, will replace it or refund the money you paid for the media. To the maximum extent permitted under applicable law, under no circumstances will Red Hat, its affiliates, any Red Hat authorized distributor, or the licensor of any component provided to you under this EULA be liable to you for any incidental or consequential damages, including lost profits or lost savings arising out of the use or inability to use the Programs or any component, even if Red Hat, its affiliates, an authorized distributor, and/or licensor has been advised of the possibility of such damages. In no event shall Red Hat's or its affiliates' liability, an authorized distributor's liability or the liability of the licensor of a component provided to you under this EULA exceed the amount that you paid to Red Hat for the media under this EULA.

5. Export Control. You understand that countries, including the U.S., may restrict the import, use, export, re-export or transfer of encryption products and other controlled materials (which may include the Programs or related technical information licensed hereunder) ("Controlled Materials"). As required by U.S. law, you represent and warrant that you: (a) understand that certain of the Controlled Materials are of U.S. origin and subject to export controls under the U.S. Export Administration Regulations (the "EAR"); (b) are not located in (or owned or controlled by any person or entity located in) any country listed in Country Group E:1 in Supplement No. 1 to part 740 of the EAR; or by any person or entity listed on the U.S. Department of Treasury Office of Foreign Assets Control ("OFAC") list of Specially Designated Nationals and Blocked Persons ("SDNs") (and are not 50% or more owned or controlled by any one or more persons or entities identified on the SDN list); (c) will not export, re-export or transfer the Controlled Materials to (1) any prohibited destination, (2) anyone who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government or (3) any end user who you know or have reason to know will use them in the design, development or production of nuclear, chemical or biological weapons, or rocket systems, space launch vehicles, or sounding rockets, or unmanned air vehicle systems or any other prohibited use under the EAR; and (d) understand and agree that if you are in the United States and export, re-export or transfer the Controlled Materials to eligible end users, you will, to the extent required by EAR Section 740.17(e), submit semi-annual reports to the U.S. Commerce Department's Bureau of Industry and Security, that include the name and address (including country) of

each transferee.

6. Third Party Software. The Programs may be provided with third party software that are not part of the Programs. These third party software are not required to run the Programs, are provided as a convenience to you, and are subject to their own license terms. The license terms either accompany the third party software or can be viewed at http://www.redhat.com/licenses/thirdparty/eula.html. If you do not agree to abide by the applicable license terms for the third party software, then you may not install them. If you wish to install the third party software on more than one system or transfer the third party software to another party, then you must contact the licensor of the applicable third party software.

7. General. If any provision of this EULA is held to be unenforceable, the enforceability of the remaining provisions shall not be affected. Any claim, controversy or dispute arising under or relating to this EULA shall be governed by the laws of the State of New York and of the United States, without regard to any conflict of laws provisions. The rights and obligations of the parties to this EULA shall not be governed by the United Nations Convention on the International Sale of Goods.

Copyright (C) 2019 Red Hat, Inc. All rights reserved. The Program marks, "Red Hat"
mark and the Red Hat logo are trademarks or
registered trademarks of Red Hat, Inc. All other trademarks are the property of their respective owners.

1.33 langpacks-core-font-en 3.0-16.el9

1.33.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPLv2+

Found in path(s):
* /langpacks-3.0-16.el9.src.rpm-cosi-expand-archive-4zImGCnN/langpacks.spec

1.34 python-chardet 4.0.0-5.el9

1.34.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use

the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square

root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to
a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed
under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the

Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on

which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further

restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many people
have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public

License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of
all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.35 rootfiles 8.1-31.el9

1.35.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: Public Domain

Found in path(s):
* /rootfiles-8.1-31.el9.src.rpm-cosi-expand-archive-WRDqrIdn/rootfiles.spec

1.36 readline 8.1-4.el9

1.36.1 Available under license :

@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
 must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free

software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to use that
work under the conditions stated herein. The ``Document'', below,
refers
 to any such manual or work. Any member of the public is a
licensee, and is addressed as ``you''. You accept the license if you
copy, modify or distribute the work in a way requiring permission
under copyright law.

A ``Modified Version'' of the Document means any work containing the
Document or a portion of it, either copied verbatim, or with
modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section
of the Document that deals exclusively with the relationship of the
publishers or authors of the Document to the Document's overall
subject (or to related matters) and contains nothing that could fall
directly within that overall subject. (Thus, if the Document is in
part a textbook of mathematics, a Secondary Section may not explain
any mathematics.) The relationship could be a matter of historical
connection with the subject or with related matters, or of legal,
commercial, philosophical, ethical or political
 position regarding
them.

The ``Invariant Sections'' are certain Secondary Sections whose titles
are designated, as being those of Invariant Sections, in the notice
that says that the Document is released under this License. If a
section does not fit the above definition of Secondary then it is not
allowed to be designated as Invariant. The Document may contain zero
Invariant Sections. If the Document does not identify any Invariant
Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed,
as Front-Cover Texts or Back-Cover Texts, in the notice that says that
the Document is released under this License. A Front-Cover Text may

be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy,
represented in a format whose specification is available to the
general public, that is suitable for revising the document
straightforwardly with generic text editors or (for
 images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain
@sc{ascii} without markup, Texinfo input format, La@TeX{} input
format, @acronym{SGML} or @acronym{XML} using a publicly available
@acronym{DTD}, and standard-conforming simple @acronym{HTML},
PostScript or @acronym{PDF} designed for human modification. Examples
of transparent image formats include @acronym{PNG}, @acronym{XCF} and
@acronym{JPG}. Opaque formats
 include proprietary formats that can be
read and edited only by proprietary word processors, @acronym{SGML} or
@acronym{XML} for which the @acronym{DTD} and/or processing tools are
not generally available, and the machine-generated @acronym{HTML},
PostScript or @acronym{PDF} produced by some word processors for
output purposes only.

The ``Title Page'' means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, ``Title Page'' means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies
of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in
 another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'',
``Dedications'', ``Endorsements'', or ``History''.)  To ``Preserve the Title''
of such a section when you modify the Document means that it remains a
section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever
to those of this License. You may not use
technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible.
You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering

more than 100, you must either include a machine-readable Transparent
copy along with each Opaque copy, or state in or with each Opaque copy
a computer-network location from which the general network-using
public has access to download using public-standard network protocols
a complete Transparent copy of the Document, free of added material.
If you use the latter option, you must take reasonably prudent steps,
when you begin distribution of Opaque copies in quantity, to ensure
that
 this Transparent copy will remain thus accessible at the stated
location until at least one year after the last time you distribute an
Opaque copy (directly or through your agents or retailers) of that
edition to the public.

It is requested, but not required, that you contact the authors of the
Document well before redistributing any large number of copies, to give
them a chance to provide you with an updated version of the Document.

@item
MODIFICATIONS

You may copy and distribute a Modified Version of the Document under
the conditions of sections 2 and 3 above, provided that you release
the Modified Version under precisely this License, with the Modified
Version filling the role of the Document, thus licensing distribution
and modification of the Modified Version to whoever possesses a copy
of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item
Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from
 those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities
responsible for authorship of the modifications in the Modified
Version, together with at least five of the principal authors of the
Document (all of its principal authors, if it has fewer than five),
unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the
Modified Version, as the publisher.

@item

Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications
adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice
giving the public permission to use the Modified Version under the
terms of this License, in the form shown in
the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the Document's license notice.

@item
Include an unaltered copy of this License.

@item
Preserve the section Entitled ``History'', Preserve its Title, and add
to it an item stating at least the title, year, new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled ``History'' in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.

@item
Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the ``History'' section.
You may omit a network location for a work that was published at
least
four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document,
 you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements'', provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf
 of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the

Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of
 each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History''
in the various original documents, forming one section Entitled
``History''; likewise combine any sections Entitled ``Acknowledgements'',
and any sections Entitled ``Dedications''. You must delete all
sections Entitled ``Endorsements.''

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents
released under this License, and replace the individual copies of this
License in the various documents with a single copy that is included in
the collection, provided that you follow the rules of this License for
verbatim copying of each of the documents in all other respects.

You may extract
 a single document from such a collection, and distribute
it individually under this License, provided you insert a copy of this
License into the extracted document, and follow this License in all
other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an ``aggregate'' if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these

copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled ``Acknowledgements'', ``Dedications'', or ``History'', the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, or distribute it is void, and will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies

you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See
@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that
a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'')
contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons Attribution-Share Alike 3.0

license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or
in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the
 MMC is eligible for relicensing.

@end enumerate

@page
@heading ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group
 Copyright (C) @var{year} @var{your name}.
 Permission is granted to copy, distribute and/or modify this document
 under the terms of the GNU Free Documentation License, Version 1.3
 or any later version published by the Free Software Foundation;
 with no Invariant Sections, no Front-Cover Texts, and no Back-Cover
 Texts. A copy of the license is included in the section entitled ``GNU
 Free Documentation License''.
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts.'' line with this:

@smallexample
@group
   with the Invariant Sections being @var{list their titles}, with
   the Front-Cover

Texts being @var{list}, and with the Back-Cover Texts
being @var{list}.
@end group
@end smallexample

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have

certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of
packaging a Major Component, but which is not part of that Major
Component, and (b) serves only to enable use of the work with that
Major Component, or to implement a Standard Interface for which an
implementation is available to the public in source code form. A
"Major Component", in this context, means a major essential component
(kernel, window system, and so on) of the specific operating system
(if any) on which the executable work runs, or a compiler used to
produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all
the source code needed to generate, install, and (for an executable
work) run the object code and to modify the work, including scripts to
control those activities. However, it does not include the work's
System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source
includes interface definition files associated with source files for
the work, and the source code for shared libraries and dynamically
linked subprograms that the work is specifically designed to require,
such as by intimate data communication or control flow between those
subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you

with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years

and valid for as
long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user

actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions

apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does

not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or

modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that

contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you

may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read <http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute

and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such

parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through

any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.37 gawk 5.1.0-6.el9

1.37.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or

otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions

either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may

consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source

code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into

another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that,

in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of

the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these

materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if

you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the

library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Copyright (c) 1983, 1993
The Regents of the University of California. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the <ORGANIZATION> nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change

free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library

General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed
under these terms. A "work based on the
Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent
of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must
itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this
function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition,
mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public

License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the
Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative
work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not

signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for
copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute
the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system;
it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to

be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each
version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY
IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY

AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR
LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year>
<name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if

necessary.
Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they

know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

"Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section

4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,

procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of

it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting

any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.38 dbus-broker 28-7.el9

1.38.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall
mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications

represent, as a whole, an original
work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the
Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to
make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients
of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along
with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following

boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The
text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.39 python3-gobject-base 3.40.1-6.el9

1.39.1 Available under license :

pygobject.svg and pygobject-small.svg are based on the GTK logo, created by
Andreas Nilsson, licensed under CC BY-SA 3.0. For more info see
https://commons.wikimedia.org/wiki/File:GTK%2B_logo.svg
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we
suggest you first think carefully about whether
this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the
recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be

consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and

modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the

Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest

your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it

contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified

executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then

the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free

Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
 should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!

1.40 libmodulemd 2.13.0-2.el9

1.40.1 Available under license :

MIT License

Copyright (c) 2017-2018 Stephen Gallagher <sgallagh@redhat.com>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A

PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.41 dejavu-sans-fonts 2.37-18.el9

1.41.1 Available under license :

Fonts are (c) Bitstream (see below). DejaVu changes are in public domain.
Glyphs imported from Arev fonts are (c) Tavmjong Bah (see below)

Bitstream Vera Fonts Copyright

Copyright (c) 2003 by Bitstream, Inc. All Rights Reserved. Bitstream Vera is a trademark of Bitstream, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of the fonts accompanying this license ("Fonts") and associated documentation files (the "Font Software"), to reproduce and distribute the Font Software, including without limitation the rights to use, copy, merge, publish, distribute, and/or sell copies of the Font Software, and to permit persons to whom the Font Software is furnished to do so, subject to the following conditions:

The above copyright and trademark notices and this permission notice shall be included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular the
designs of glyphs or characters in the Fonts may be modified and additional glyphs or characters may be added to the Fonts, only if the fonts are renamed to names not containing either the words "Bitstream" or the word "Vera".

This License becomes null and void to the extent applicable to Fonts or Font Software that has been modified and is distributed under the "Bitstream Vera" names.

The Font Software may be sold as part of a larger software package but no copy of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT,

TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL BITSTREAM OR THE GNOME FOUNDATION BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the names of Gnome, the Gnome Foundation, and Bitstream Inc., shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Font Software without prior written authorization from the Gnome Foundation or Bitstream Inc., respectively. For further information, contact: fonts at gnome dot org.

Arev Fonts Copyright

Copyright (c) 2006 by Tavmjong Bah. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of the fonts accompanying this license ("Fonts") and associated documentation files (the "Font Software"), to reproduce and distribute the modifications to the Bitstream Vera Font Software, including without limitation the rights to use, copy, merge, publish, distribute, and/or sell copies of the Font
Software, and to permit
persons to whom the Font Software is furnished to do so, subject to the following conditions:

The above copyright and trademark notices and this permission notice shall be included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular the designs of glyphs or characters in the Fonts may be modified and additional glyphs or characters may be added to the Fonts, only if the fonts are renamed to names not containing either the words "Tavmjong Bah" or the word "Arev".

This License becomes null and void to the extent applicable to Fonts or Font Software that has been modified and is distributed under the "Tavmjong Bah Arev" names.

The Font Software may be sold as part of a larger software package but no copy of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT
NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL TAVMJONG BAH BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the name of Tavmjong Bah shall not
be used in advertising or otherwise to promote the sale, use or other
dealings in this Font Software without prior written authorization
from Tavmjong Bah. For further information, contact: tavmjong @ free
. fr.

TeX Gyre DJV Math

Fonts are (c) Bitstream (see below). DejaVu changes are in public domain.

Math extensions done by B. Jackowski, P. Strzelczyk and P. Pianowski
(on behalf of TeX users groups) are in public domain.

Letters
imported from Euler Fraktur from AMSfonts are (c) American
Mathematical Society (see below).
Bitstream Vera Fonts Copyright
Copyright (c) 2003 by Bitstream, Inc. All Rights Reserved. Bitstream Vera
is a trademark of Bitstream, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of the fonts accompanying this license (Fonts) and associated
documentation
files (the Font Software), to reproduce and distribute the Font Software,
including without limitation the rights to use, copy, merge, publish,
distribute,
and/or sell copies of the Font Software, and to permit persons to whom
the Font Software is furnished to do so, subject to the following
conditions:

The above copyright and trademark notices and this permission notice
shall be
included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular
the designs of glyphs or characters in the Fonts may be modified and
additional

glyphs
or characters may be added to the Fonts, only if the fonts are
renamed
to names not containing either the words Bitstream or the word Vera.

This License becomes null and void to the extent applicable to Fonts or
Font Software
that has been modified and is distributed under the Bitstream Vera
names.

The Font Software may be sold as part of a larger software package but
no copy
of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED AS IS, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL BITSTREAM OR THE GNOME FOUNDATION
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR
INABILITY TO
USE
THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.
Except as contained in this notice, the names of GNOME, the GNOME
Foundation,
and Bitstream Inc., shall not be used in advertising or otherwise to promote
the sale, use or other dealings in this Font Software without prior written
authorization from the GNOME Foundation or Bitstream Inc., respectively.
For further information, contact: fonts at gnome dot org.

AMSFonts (v. 2.2) copyright

The PostScript Type 1 implementation of the AMSFonts produced by and
previously distributed by Blue Sky Research and Y&Y, Inc. are now freely
available for general use. This has been accomplished through the
cooperation
of a consortium of scientific publishers with Blue Sky Research and Y&Y.
Members of this consortium include:

Elsevier Science IBM Corporation Society for Industrial and Applied
Mathematics (SIAM) Springer-Verlag American Mathematical Society (AMS)

In order to assure the authenticity of these fonts, copyright will be
held

by
the American Mathematical Society. This is not meant to restrict in any way the legitimate use of the fonts, such as (but not limited to) electronic distribution of documents containing these fonts, inclusion of these fonts into other public domain or commercial font collections or computer applications, use of the outline data to create derivative fonts and/or faces, etc. However, the AMS does require that the AMS copyright notice be removed from any derivative versions of the fonts which have been altered in any way. In addition, to ensure the fidelity of TeX documents using Computer Modern fonts, Professor Donald Knuth, creator of the Computer Modern faces, has requested that any alterations which yield different font metrics be given a different name.

Id

1.42 fonts-filesystem 2.0.5-7.el9.1

1.42.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that

is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of
packaging a Major Component, but which is not part of that Major
Component, and (b) serves only to enable use of the work with that
Major Component, or to implement a Standard Interface for which an
implementation is available to the public in source code form. A
"Major Component", in this context, means a major essential component
(kernel, window system, and so on) of the specific operating system
(if any) on which the executable work runs, or a compiler used to
produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all
the source code needed to generate, install, and (for an executable
work) run the object code and to modify the work, including scripts to
control those activities. However, it does not include the work's
System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source
includes interface definition files associated with source files for
the work, and the source code for shared libraries and dynamically
linked subprograms that the work is specifically designed to require,
such as by intimate data communication or control flow between those
subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains

in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the

terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a

typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the

entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders of
that material) supplement the terms of this License with terms:

a) Disclaiming warranty or
limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains

a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work

occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant

patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory

patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the

GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
MIT License

Copyright 2019 Nicolas Mailhot <nim@fedoraproject.org>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the Software), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice (including the next paragraph) shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED AS IS, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT
OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.43 libutempter 1.2.1-6.el9

1.43.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your

freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software

patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the
free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the

users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control
compilation and installation of the library.

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's

complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms
of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably
considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based

on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or

linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the

work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly
with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply, and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by

the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will
be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file to most
effectively
convey the exclusion of warranty; and each file should
have at least the "copyright" line and a pointer to where the full
notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.44 libassuan 2.5.5-3.el9

1.44.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this

case, there is little to gain by limiting the
free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated

interface definition files, plus the scripts used to control
compilation and installation of the library.

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's
complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms
of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the

application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding

machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse

engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the
work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly
with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is

normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you
do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the

Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will
be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright on the software, and (2) offer
you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains
in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To
"modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate
Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than
the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all

the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users'

Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep
intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license
the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7

additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This

alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge.
You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object
code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute
modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because

modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you

add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional
terms are considered "further
restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may
not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your
receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time
you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not
impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control"
includes the right to grant
patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED,
INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer
of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief

idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software: you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation, either version 3 of the License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

 If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

  <program> Copyright (C) <year> <name of author>
  This program comes with
 ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But first,
 please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.45 libyaml 0.2.5-7.el9

1.45.1 Available under license :

Copyright (c) 2017-2020 Ingy dt Net
Copyright (c) 2006-2016 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.46 libsigsegv 2.13-4.el9

1.46.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor,
Boston, MA 02110-1301, USA.
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak
of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright
the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS
AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"

means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the
files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on

the Program is not required to print an announcement.)

These requirements apply to the modified
work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not
bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative
is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source

code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from
the same place counts as
distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all
its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence
you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application
of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems
or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software

Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute
it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking
proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.47 libseccomp 2.5.2-2.el9

1.47.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave

you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into

another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that,

in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of

the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these

materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if

you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

1.48 libverto 0.3.2-3.el9

1.48.1 Available under license :

Copyright 2011 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation files
(the "Software"), to deal in the Software without restriction,
including without limitation the rights to use, copy, modify, merge,
publish, distribute, sublicense, and/or sell copies of the Software,
and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE
 OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.49 lz4 1.9.3-5.el9

1.49.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and

modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer

to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to

this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
Copyright (c) 2014, lpsantil
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
This repository uses 2 different licenses :
- all files in the `lib` directory use a BSD 2-Clause license
- all other files use a GPLv2 license, unless explicitly stated otherwise

Relevant license is reminded at the top of each source file,
and with presence of COPYING or LICENSE file in associated directories.

This model is selected to emphasize that
files in the `lib` directory are designed to be included into 3rd party applications,
while all other files, in `programs`, `tests` or `examples`,
receive more limited attention and support for such scenario.
LZ4 Library
Copyright (c) 2011-2016, Yann Collet
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this
 list of conditions and the following disclaimer in the documentation and/or
 other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
 GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Format: http://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: liblz4
Upstream-Contact: Yann Collet <Cyan4973@github.com>
Source: https://github.com/lz4/lz4

Files: *
Copyright: (C) 2011-2020 Yann Collet
License: GPL-2+
The full text of license: https://github.com/lz4/lz4/blob/dev/lib/LICENSE

1.50 libreport-filesystem 2.15.2-6.el9

1.50.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free

software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such

interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is

allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.51 json-c 0.14-11.el9

1.51.1 Available under license :

Copyright (c) 2009-2012 Eric Haszlakiewicz

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
 WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2004, 2005 Metaparadigm Pte Ltd

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE
FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.52 python3-pysocks 1.7.1-12.el9

1.52.1 Available under license :

Copyright 2006 Dan-Haim. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
3. Neither the name of Dan Haim nor the names of his contributors may be used
to endorse or promote products derived from this software without specific
prior written permission.

THIS SOFTWARE IS PROVIDED BY DAN HAIM "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL DAN HAIM OR HIS CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA
OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMANGE.
3proxy 0.7 Public License Agreement

(c) 2000-2014 by 3APA3A (3APA3A@security.nnov.ru)
(c) 2000-2014 by SecurityVulns.com (http://3proxy.ru/)
(c) 2000-2014 by Vladimir Dubrovin (vlad@sandy.ru)

This software uses:
RSA Data Security, Inc. MD4 Message-Digest Algorithm
RSA Data Security, Inc. MD5 Message-Digest Algorithm

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF
THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software is FREEWARE.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that following conditions
are met (BSD style license):

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the SecurityVulns.COM nor the names of its
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

Instead of this license, you can also use and redistribute this software under
terms of compatible license, including:

1. Apache License, Version 2.0
You may obtain a copy
of the License at

http://www.apache.org/licenses/LICENSE-2.0

2. GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/gpl.txt

3. GNU Lesser General Public License as published by the
Free Software Foundation; either version 2.1 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/lgpl.txt

1.53 libidn 2.3.0-7.el9

1.53.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by
the Library is deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an
Application with the Library. The particular version of the Library
with which the Combined Work was made is also called the "Linked
Version".

The "Minimal Corresponding Source" for a Combined Work means the
Corresponding Source for the Combined Work, excluding any source code
for portions of the Combined Work that, considered in isolation, are
based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the
object code and/or source code for the Application, including any data
and utility programs needed for reproducing the Combined Work from the
Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License
without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a
facility refers to a function or data to be supplied by an Application
that uses the facility (other than as an argument passed when the
facility is invoked), then you may convey a copy of the modified
version:

a) under this License, provided that you make a good faith effort to
ensure that, in the event an Application does not supply the
function or data, the facility still operates, and performs
whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of
this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from
a header file that is part of the Library. You may convey such object
code under terms of your choice, provided that, if the incorporated
material is not limited to numerical parameters,
data structure
layouts and accessors, or small macros, inline functions and templates
(ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the
Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license
document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that,
taken together, effectively do not restrict modification of the
portions of the Library contained in the Combined Work and reverse
engineering for debugging such modifications, if you also do each of
the following:

a) Give prominent notice with each copy of the Combined Work that
the Library is used in it and that the Library and its use are

covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined

library under terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option
of following the terms and
conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This

General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a

notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such

an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues),

conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any

later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively

convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU
General Public License as published by
  the Free Software Foundation; either version 2 of the License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License along
  with this program; if not, write to the Free Software Foundation, Inc.,
  51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute
it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into

proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
 is what you want to do, use the GNU Lesser General
Public License instead of this License.
Libidn2 COPYING -- Licensing information.   -*- outline -*-
Copyright (C) 2011-2016 Simon Josefsson
See the end for copying conditions.

The source code for the C library (libidn2.a or libidn.so) are
licensed under the terms of either the GNU General Public License
version 2.0 or later (see the file COPYINGv2) or the GNU Lesser
General Public License version 3.0 or later (see the file
COPYING.LESSERv3), or both in parallel as here.

The command line tool, self tests, examples, and other auxiliary
files, are licensed under the GNU General Public License version 3.0
or later.

The license of the Unicode character data files (which are parsed into
static storage in the library) are documented in COPYING.unicode.

Other files are licensed as indicated in each file.

There may be exceptions to these general rules, see each file for
precise information.

This file is free software: you can redistribute
 it and/or modify it
under the terms of the GNU General Public License as published by the
Free Software Foundation, either version 3 of the License, or (at your
option) any later version.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License
along with this file. If not, see <http://www.gnu.org/licenses/>.
A. Unicode Copyright.

  Copyright 1991-2016 Unicode, Inc. All rights reserved.
  Certain documents and files on this website contain a legend indicating that "Modification is permitted." Any person is hereby authorized, without fee, to modify such documents and files to create derivative works conforming to the Unicode Standard, subject to Terms and Conditions herein.
  Any person is hereby authorized, without fee, to view, use, reproduce, and distribute all documents and files solely

for informational purposes and in the creation of products supporting the Unicode Standard, subject to the Terms and Conditions herein.

Further specifications of rights and restrictions pertaining to the use of the particular set of data files known as the "Unicode Character Database" can be found in the License.

Each version of the Unicode Standard has further specifications of rights and restrictions of use. For the book editions (Unicode 5.0 and earlier), these are found on the back of the
title page. The online code charts carry specific restrictions. All other files, including online documentation of the core specification for Unicode 6.0 and later, are covered under these general Terms of Use.

No license is granted to "mirror" the Unicode website where a fee is charged for access to the "mirror" site.

Modification is not permitted with respect to this document. All copies of this document must be verbatim.

B. Restricted Rights Legend.

Any technical data or software which is licensed to the United States of America, its agencies and/or instrumentalities under this Agreement is commercial technical data or commercial computer software developed exclusively at private expense as defined in FAR 2.101, or DFARS 252.227-7014 (June 1995), as applicable. For technical data, use, duplication, or disclosure by the Government is subject to restrictions as set forth in DFARS 202.227-7015 Technical Data, Commercial and Items (Nov 1995) and this Agreement. For Software,
in accordance with FAR 12-212 or DFARS 227-7202, as applicable, use, duplication or disclosure by the Government is subject to the restrictions set forth in this Agreement.

C. Warranties and Disclaimers.

This publication and/or website may include technical or typographical errors or other inaccuracies . Changes are periodically added to the information herein; these changes will be incorporated in new editions of the publication and/or website. Unicode may make improvements and/or changes in the product(s) and/or program(s) described in this publication and/or website at any time.

If this file has been purchased on magnetic or optical media from Unicode, Inc. the sole and exclusive remedy for any claim will be exchange of the defective media within ninety (90) days of original purchase.

EXCEPT AS PROVIDED IN SECTION C.2, THIS PUBLICATION AND/OR SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND EITHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO,
ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. UNICODE AND ITS LICENSORS ASSUME NO RESPONSIBILITY FOR ERRORS OR OMISSIONS IN THIS PUBLICATION AND/OR SOFTWARE OR OTHER DOCUMENTS WHICH ARE REFERENCED BY OR LINKED TO THIS PUBLICATION OR THE UNICODE WEBSITE.

D. Waiver of Damages.

In no event shall Unicode or its licensors be liable for any special, incidental, indirect or consequential damages of any kind, or any damages whatsoever, whether or not Unicode was advised of the possibility of the damage, including, without limitation, those resulting from the following: loss of use, data or profits, in connection with the use, modification or distribution of this information or its derivatives.

E. Trademarks & Logos.

The Unicode Word Mark and the Unicode Logo are trademarks of Unicode, Inc. The Unicode Consortium and Unicode, Inc. are trade names of Unicode, Inc. Use of the information and materials found on this website indicates your acknowledgement
of Unicode, Inc.s exclusive worldwide rights in the Unicode Word Mark, the Unicode Logo, and the Unicode trade names.

The Unicode Consortium Name and Trademark Usage Policy (Trademark Policy) are incorporated herein by

reference and you agree to abide by the provisions of the Trademark Policy, which may be changed from time to time in the sole discretion of Unicode, Inc.

All third party trademarks referenced herein are the property of their respective owners.

F. Miscellaneous.

Jurisdiction and Venue. This server is operated from a location in the State of California, United States of America. Unicode makes no representation that the materials are appropriate for use in other locations. If you access this server from other locations, you are responsible for compliance with local laws. This Agreement, all use of this site and any claims and damages resulting from use of this site are governed solely by the laws of the State of California without regard to any principles

which would apply the laws of a different jurisdiction. The user agrees that any disputes regarding this site shall be resolved solely in the courts located in Santa Clara County, California. The user agrees said courts have personal jurisdiction and agree to waive any right to transfer the dispute to any other forum.

Modification by Unicode Unicode shall have the right to modify this Agreement at any time by posting it to this site. The user may not assign any part of this Agreement without Unicodes prior written consent.

Taxes. The user agrees to pay any taxes arising from access to this website or use of the information herein, except for those based on Unicodes net income.

Severability. If any provision of this Agreement is declared invalid or unenforceable, the remaining provisions of this Agreement shall remain in effect.

Entire Agreement. This Agreement constitutes the entire agreement between the parties.

EXHIBIT 1
Unicode Data Files include all data files
under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/,
http://www.unicode.org/cldr/data/, http://source.icu-project.org/repos/icu/, and
http://www.unicode.org/utility/trac/browser/.

Unicode Data Files do not include PDF online code charts under the
directory http://www.unicode.org/Public/.

Software includes any source code published in the Unicode Standard
or under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/,
http://www.unicode.org/cldr/data/, http://source.icu-project.org/repos/icu/, and
http://www.unicode.org/utility/trac/browser/.

NOTICE TO USER: Carefully read the following legal agreement.
BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S
DATA FILES ("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"),
YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE
TERMS AND CONDITIONS OF THIS AGREEMENT.
IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE
THE DATA FILES OR SOFTWARE.

COPYRIGHT

AND PERMISSION NOTICE

Copyright 1991-2016 Unicode, Inc. All rights reserved.
Distributed under the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining
a copy of the Unicode data files and any associated documentation
(the "Data Files") or Unicode software and any associated documentation
(the "Software") to deal in the Data Files or Software
without restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, and/or sell copies of
the Data Files or Software, and to permit persons to whom the Data Files
or Software are furnished to do so, provided that either
(a) this copyright and permission notice appear with all copies
of the Data Files or Software, or
(b) this copyright and permission notice appear in associated
Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF
ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED
TO THE
WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT OF THIRD PARTY RIGHTS.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS
NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL
DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE,
DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder
shall not be used in advertising or otherwise to promote the sale,
use or other dealings in these Data Files or Software without prior
written authorization of the copyright holder.

1.54 python-six 1.15.0-9.el9

1.54.1 Available under license :

Copyright (c) 2010-2020 Benjamin Peterson

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.55 python3-gpg 1.15.1-6.el9

1.55.1 Available under license :

(21:protected-private-key(3:elg(1:p129:|B36I(s7}+ZJ/pvE;"tg7N ca"Gxvnyu&bB#h'7=89&oG
R<hO)(1:g1:)(1:y128:Ji]WU_UP}AQ\YMhAl|2e{_tcMNDg]{QnWsK 4pY{$bDCs)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:JcE7:6452224)16: i[Q*vK)192:FJA!O!ZAF
biJ&Tsb!t
&9@R\~V+x>?sedDz-W(yqf?u^e?s1saV8<T0:tC5%ZMh?$|,y_e[1D)(12:protected-at15:20130812T105135)))
(21:protected-private-key(3:elg(1:p129:W#}}l;;m>
;4YV$Qg
LoLy~*Tru*+ID8"-9,:17^g*({ #7)(1:g1:)(1:y128:2o62,Tj/
rRi3sSS iCAYNYbVtAHKi7(UPp)?Od{'R^f)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:fw`E7:5242880)16:aqR)192:5f1a-`{^EV699WoB\,:Rs1*W6Lu iZ
:=ZqURM47;pA3#DL
so8O)Th^P@lP0&.DR;"rkN7)(12:protected-at15:20101008T070216)))
#+TITLE: GPGME Python Bindings HOWTO Examples
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Examples
:PROPERTIES:
:CUSTOM_ID: gpgme-python3-examples
:END:

The contents of this directory are the examples included in the /GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO/ file. Each script is explicitly for Python 3 and specifically for Python 3.4 or later.

Some of these scripts may work with Python 2.7, but there are no

guarantees. They will include the relevant imports from the
=__future__= module to facilitate that if possible.

* Copyright and Licensing
:PROPERTIES:
:CUSTOM_ID: copyright-and-license
:END:

Unless otherwise stated, all the examples in this directory are
released under the same terms as GPGME
itself; that is they are dual
licensed under the terms of both the GNU General Public License
version 2.0 (or any later version) *and* the GNU Lesser General
Public License version 2.1 (or any later version).

** Copyright (C) The GnuPG Project, 2018
:PROPERTIES:
:CUSTOM_ID: copyright
:END:

Copyright The GnuPG Project, 2018.

** License GPL compatible
:PROPERTIES:
:CUSTOM_ID: license
:END:

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even
the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
cython
;;;; gpgme-package.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify
;;; it under the terms of the GNU General Public License as published
;;; by the Free Software Foundation; either version 2 of the License,

```
;;; or (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; Conventions:
;;;
;;; gpg-error is used for error handling.
;;;
;;; Standard I/O streams are used for input and output.

(defpackage #:gpgme
 (:use #:common-lisp #:cffi #:gpg-error)
  (:import-from #:trivial-garbage
            #:finalize)
 (:export #:check-version
   #:*version*
   #:context
   #:protocol
   #:armorp
   #:textmodep
   #:+include-certs-default+
   #:include-certs
   #:keylist-mode
   #:signers
   #:sig-notations
   #:with-context
   #:key-data
   #:get-key
   #:op-encrypt
   #:op-decrypt
   #:op-sign
   #:op-verify
   #:op-import
   #:op-export))
2011-12-02  Werner Koch  <wk@g10code.com>

 NB: ChangeLog files are no longer manually maintained.  Starting
 on December 1st, 2011 we put change information only in the GIT
 commit log, and generate a top-level ChangeLog file from logs at
 "make dist".  See doc/HACKING for details.
```

2011-05-12 Marcus Brinkmann <marcus@g10code.com>

 * gpgme.texi (I/O Callback Example): Fix example code.

 * gpgme.texi (Generating Keys): Fix OpenPGP parameters and reference
GPG and GPGSM manual.

2010-01-05 Werner Koch <wk@g10code.com>

 * gpgme.texi (Changing Passphrases): New.

2009-07-21 Werner Koch <wk@g10code.com>

 * uiserver.texi (UI Server Encrypt): Add --expect-sign option to
PREP_ENCRYPT.

2009-06-16 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Result Management): New section.

2009-06-16 Werner Koch <wk@g10code.com>

 * gpgme.texi (Exporting Keys): Document gpgme_op_export_keys.
(Importing Keys): Document gpgme_op_import_keys.
(Data Buffer Meta-Data): Document URL encodings.

2009-05-28
 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Library Version Check): Document selftest error.
(Creating Contexts): Likewise.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Encrypting a Plaintext): Document
GPGME_ENCRYPT_NO_ENCRYPT_TO.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Engine Information): Replace path by file_name.

2008-11-28 Werner Koch <wk@g10code.com>

 * gpgme.texi (Listing Keys): Change description of the return
value to match the code. Spotted by Colin Leroy.

2008-10-15 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Add option
--protocol to the SENDER command.

2008-07-17 Werner Koch <wk@g10code.com>

* module-overview.sk: New.

2008-07-04 Werner Koch <wk@g10code.com>

* gpgme.texi (Algorithms): Add a hint on symmetric only encryption.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancellation): Document gpgme_cancel_async.

2008-06-25
Werner Koch <wk@g10code.com>

* gpgme.texi (Listing Keys): Updated example to the current API.
Noted by Nico Schottelius.

2008-06-05 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Describe
START_CONFDIALOG.

2008-06-04 Werner Koch <wk@g10code.com>

* gpgme.texi: Use @copying command. Change license to
GPLv3. Include protocol specis from GpgOL and GPGEx. Minor
cleanups.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (File Based Data Buffers): Document the need for
blocking operations.
(Callback Based Data Buffers): Likewise.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Rename snippet function to
init_gpgme.
(I/O Callback Example): Call it here.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Document that data encoding affects some output data
objects now.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocols and Engines):
Document GPGME_PROTOCOL_UNKNOWN.

2007-09-11 Werner Koch <wk@g10code.com>

* gpgme.texi (I/O Callback Example): Typo fix.

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.texi (Verify): Describe chain_model.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgme.texi (Library Version Check): Add remark that the socket
layer will get initialized.

2007-06-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Advanced Key Editing): New section.

2007-05-21 Werner Koch <wk@g10code.com>

* Makefile.am (online): New target.

2007-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Fix documentation of
gpgme_strerror_r.

2006-11-01 Moritz Schulte <moritz@g10code.com>

* gpgme.texi (Data Buffer I/O Operations): Fixed entry for
gpgme_data_seek: OFFSET is not a pointer; some s/whence/offset/.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Destroying Data Buffers): Clarify that
gpgme_data_release_and_get_mem destroys DH unconditionally.

2005-03-24
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Make example code compatible
to W32 systems.

2006-06-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix inverted condition in
description.

2005-12-20 Werner Koch <wk@g10code.com>

* gpgme.texi (Verify): Document pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

* gpgme.texi (Key Management): Updated to match the fixes for
subkey fingerprints and theg secret flag.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Destroying Data Buffers): Document gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Add the new member notations of
gpgme_sig_key_t.
(Key Listing Mode): Document GPGME_KEYLIST_MODE_SIG_NOTATIONS.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Enclose all return parameters of deftypefuns in
curly brackets.

* gpgme.texi (Signature Notation Data): New
section.
(Verify): Added more about the notation data structure.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Data Buffer I/O Operations, Data Buffer Meta-Data):
New subsections.

* gpgme.texi: Replace plaintext_filename with file_name.

* gpgme.texi (Key Management): Document is_qualified.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Decrypt): Add plaintext_filename to
gpgme_decrypt_result_t.
(Verify): Likewise for gpgme_verify_result_t.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Add information about new fields in
gpgme_signature_t.

* gpgme.texi (Decrypt): Add gpgme_recipient_t.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Fix return type of
gpgme_set_keylist_mode.
Reported by "Sergio" <ml_sergico@virgilio.it>.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Included Certificates): Document
GPGME_INCLUDE_CERTS_DEFAULT.

2005-01-12 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Configuration): New section.
(Crypto Engine): New subsection.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* lesser.texi (Library Copying): Change from @appendixsec to
@appendix.
* gpgme.texi (Features): Change reference to GPL to one to LGPL.

* Makefile.am: Change license to LGPL.
(gpgme_TEXINFOS): Replace gpl.texi with lesser.texi.

* gpgme.texi: Change license to LGPL (also for documentation of
GPGME's license).
* lesser.texi: New file.
* gpl.texi: File removed.

* gpgme.texi (Creating Contexts): Fix cut&paste error. Reported
by Noel Torres <envite@rolamasao.org>.

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme_TEXINFOS): Remove fdl.texi.
* gpgme.texi: Do not include fdl.texi. Change license to GPL.
* fdl.texi: File removed.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Change type of keylist_mode in
gpgme_key_t to gpgme_keylist_mode_t.

2004-09-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix last change.

2004-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document
GPG_ERR_NOT_IMPLEMENTED.

* gpgme.texi: Update copyright year for tex version.

2004-07-29 Moritz Schulte <moritz@g10code.com>

* gpgme.texi (Verify): Fix gpgme_get_key example (ancient
force_update argument was still there).

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Elaborate on the length restrictions
on search patterns.

* gpgme.texi (Decrypt and Verify): Document the NO_DATA error
code.
(Verify): Document the relationship between gpgme_op_verify_result
and the decrypt and verify operations.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.text (Verify): Document GPG_ERR_CERT_REVOKED status.

* gpgme.texi (Decrypt): Add note about new field wrong_key_usage
of gpgme_decrypt_result_t.

* gpgme.texi (Key Management): Add
note about new field
keylist_mode of gpgme_key_t.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Correct type of member wrong_key_usage.

2004-03-29 Moritz Schulte <moritz@duesseldorf.ccc.de>

* gpgme.texi (Verify): Fix type of gpgme_op_verify_result.
* gpgme.texi (Key Listing Mode): Typo fix.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Fix the instruction when to
set the locale.

2004-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Example Qt): New section by Marc Mutz.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (cancellation): New section.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgme.texi (Key Listing Mode): Doc KEYLIST_MODE_VALIDATE.

2004-02-06 Moritz Schulte <mo@g10code.com>

* gpgme.texi: A couple of small fixes regarding the Largfile
Support section.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Largefile Support): New
section.

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Fix exportable field.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Rename member class in
gpgme_key_sig_t to sig_class.
(Creating a Signature): Likewise for gpgme_signature_t.

2003-12-23 Moritz Schulte <mo@g10code.com>

* gpgme.texi (Listing Keys): Minor clarification for
gpgme_get_key.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Signal Handling): New section.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Correct documentation on memory
synchronization requirement.

* gpgme.texi (Locale): New section.
(Multi Threading): Set locale in example.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add gpgme_strerror_r.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Update documentation.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Header): We don't use the assuan namespace anymore.
Document new thread options.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Change type of member class
to unsigned int.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Get error code from SIG->status in the code
for gpgme_get_sig_status.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Add can_authenticate flag.

* gpgme.texi (Listing Keys): Document GPG_ERR_AMBIGUOUS_NAME for
gpgme_get_key.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (EXTRA_DIST): Remove variable.

* gpgme.texi (Encrypting a Plaintext): Bad passphrase is only
possible with symmetric encryption, change the wording to reflect
that.

* gpgme.texi (Creating a Signature): Document
GPG_ERR_UNUSABLE_SECKEY.

* gpgme.texi (Encrypting a Plaintext): Mention encrypt and sign
operations in result function.
(Creating
a Signature): Likewise.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Remove word duplication.
(Listing Keys): Remove mentioning of force argument.
(Verify): Don't mention r_stat. Fix some typos.
(Decrypt and Verify): Correct info how to get the result. Don't
mention r_stat.
(Manipulating Data Buffers): Fix documentation of return value.
(Listing Keys): Update examples.
(Decrypt): Result might also be available when operation failed.
(Verify): Result might also be available when operation failed.
All spotted by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Sources): Fix cut and paste error.

2003-07-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Clarify difference between can_sign
and can_certify.
(Information About Keys): Likewise for GPGME_ATTR_CAN_SIGN and
GPGME_ATTR_CAN_CERTIFY.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Progress
Meter Callback): Change return type of
gpgme_progress_cb_t to void.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add 2003 to copyright notice.

* gpgme.texi (Header): Fix name space documentation on
libgpg-error.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove reference to

gpgme_recipients_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Crypto Operations): Rename gpgme_invalid_user_id_t
to gpgme_invalid_key_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Change error codes to GPG_ERR_* variants.
(Error Handling): Rewritten.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Exporting Keys): Change and document prototypes.
Add new gpgme_op_export_ext and gpgme_op_export_ext_start
variants.
(Selecting Recipients): Section removed.
(Encrypting a Plaintext): Change prototypes and document the
changes.

2003-05-28 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Exporting Keys): Change argument type from
gpgme_recipient_t to gpgme_user_id_t.
(Encrypting a Plaintext): Likewise.
(Selecting Recipients): Rewritten.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocol Selection): Do not use @acronym in @node
because that breaks texi2dvi.

* gpgme.texi (Passphrase Callback): Document new prototype.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Remove Gpgme as namespace prefix. Add
_GPGME to namespace prefix.
* gpgme.texi (Multi Threading): Add note about link order.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document what happens if key is not
found.

* gpgme.texi (Importing Keys): Fix cut and paste error.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Remove reference to
gpgme_get_op_info.
(Detailed Results): Subsection removed.

* gpgme.texi (Key Listing Mode): Add GPGME_KEYLIST_MODE_SIGS.
(Manipulating
Keys): Add obsoleteness note.
(Key Signatures): Likewise.
(Information About Keys): Likewise.
(Key Management): Add new data types GpgmeSubkey, GpgmeKeySig,
GpgmeUserID, and all the information about GpgmeKey.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Remove force_update argument from
gpgme_get_key.

* gpgme.texi (Trust Item Management): Add data members of
GpgmeTrustItem type.
(Information About Trust Items): Add note about obsoleteness.
(Manipulating Trust Items): Add gpgme_trust_item_ref and
gpgme_trust_item_unref.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Rewritten to take into account new and
deprecated functions and data types.

* gpgme.texi (Decrypt): Descript gpgme_op_decrypt_result and
GpgmeDecryptResult.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Add info about
GpgmeEncryptResult and gpgme_op_encrypt_result.

* gpgme.texi
(Creating a Signature): Add info about
GpgmeNewSignature, GpgmeSignResult and gpgme_op_sign_result.
(Crypto Operations): Add GpgmeInvalidUserID.
(Algorithms): New chapter.

* gpgme.texi (Deleting Keys): Document
GPGME_Ambiguous_Specification.
(Error Values): Remove GPGME_Invalid_Type and GPGME_Invalid_Mode.

Add GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Change GPGME_IMPORT_PRIVATE to
GPGME_IMPORT_SECRET.

* gpgme.texi (Importing Keys): Remove note about gpgme_get_op_info.
(Detailed Results): Remove note about import.

* gpgme.texi (Importing Keys): Add documentation
for
GpgmeImportStatus, GpgmeImportResult and gpgme_op_import_result.

* gpgme.texi (Generating Keys): Fix documentation of public and
secret arguments.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document changed gpgme_op_genkey
and new gpgme_op_genkey_result function. Document
GpgmeGenKeyResult data type.

* gpgme.texi (Error Values): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* gpgme.texi (Decrypt): Likewise.
(Decrypt and Verify): Likewise.
(Creating a Signature): Likewise.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Remove GPGME_Busy and GPGME_No_Request.
(Listing Keys): Likewise.
(Listing Trust Items): Likewise.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancelling an Operation): Removed.

(Passphrase
Callback): Document new type for GpgmePassphraseCb.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Information): Rename member part to
file_name.

* gpgme.texi (Protocols and Engines): Document
gpgme_get_protocol_name.

* gpgme.texi (Engine Information): Rewritten.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Interface): Document new even
GPGME_EVENT_START.
(Waiting For Completion): Document new possible return values.
(I/O Callback Interface): Document return type of GpgmeIOCb.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Hooking Up Into Idle Time): Section removed.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Drop R_STAT argument in gpgme_op_verify.
* gpgme.texi (Decrypt and Verify): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document that
GPGME_ATTR_IS_SECRET is not representable
as a string anymore.

2002-12-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Signatures): New section.
(Listing Keys): Add gpgme_get_key.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Memory Based Data Buffers): New subsection.
(File Based Data Buffers): Likewise.
(Callback Based Data Buffers): Likewise.
(Manipulating Data Buffers): Update interfaces. Add
gpgme_data_seek.

* gpgme.texi (Engine Version Check): Remove gpgme_check_engine.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document the new interface.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document new argument to
gpgme_op_genkey.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Fix prototype of gpgme_get_sig_key.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Selecting Signers): Fix reference count.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Document name space.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Document gpgme_op_import_ext.

* gpgme.texi (Importing Keys): Undocument EOF.

2002-08-14 Werner Koch <wk@gnupg.org>

* gpgme.texi (Information About Keys): Changed GPGME_ATTR_TYPE.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Say that secret keys might not be
deleted.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document (badly) the new
key attributes.

* gpgme.texi (Manipulating Data Buffers): Mention that backend
tries to detect encoding automatically.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): Update this section.
(Waiting For Completion): Likewise for this subsection.
(Cancelling an Operation): Likewise for this subsection.
(Using External Event Loops): New subsection with several
subsubsections.

2002-06-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove item about the need to
synchronize anything against gpgme_wait (except gpgme_wait
itself).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Fix documentation for IDX.
(Information About Trust Items): Likewise.

2002-06-26 Werner Koch <wk@gnupg.org>

* gpgme.texi (Importing Keys): Document the return value -1 of
gpgme_op_import.

2002-06-20 Werner Koch <wk@gnupg.org>

* gpgme.texi (Verify): Explain the new whatidx variable.

2002-06-10 Werner Koch <wk@gnupg.org>

* gpgme.texi (Verify): Document attribute GPGME_ATTR_ERRTOK.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Document new autodetection.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (DISTCLEANFILES): New variable.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Some typographical corrections
throughout.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Using Automake): New section.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Escape { and }.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Overview): Replace note about thread-safeness.
(Multi Threading): New section.

2002-05-03 Werner Koch <wk@gnupg.org>

* gpgme.texi (Manipulating Data Buffers): Changed some data types
to void*.
(Protocol Selection): Added gpgme_get_protocol.
(Verify): Updated to include the new attribute functions and
status codes.

2002-04-27 Werner Koch <wk@gnupg.org>

* gpgme.texi (Manipulating Data Buffers): New type GpgmeDataEncoding.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document that either return
argument can be NULL.
(Progress Meter Callback): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix small
typo. Document the
new function gpgme_get_passphrase_cb.
(Progress Meter Callback): Document the new function
gpgme_get_progress_cb.

2002-04-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Fix function name. Reported
by Wichert Ackerman <wichert@debian.org>.

2002-03-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (direntry): End index entry with a full stop.
Patch submitted by Jose Carlos Garcia Sogo <jsogo@debian.org>.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Fix syntax error in last change.

2002-03-08 Werner Koch <wk@gnupg.org>

* gpgme.texi (Detailed Results): Import does also return info.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document symmetric
encryption.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add example.
* gpgme.texi (Listing Keys): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Information About Keys): Document GPGME_ATTR_EXPIRE.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document verification of normal and
cleartext signatures.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document gpgme_op_keylist_ext_start.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
GPGME_Invalid_Recipients.
(Error Values): Likewise.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
gpgme_op_encrypt_sign and gpgme_op_encrypt_sign_start.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Add a note about
certificates to include.
(Included Certificates): New section.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Remove literal tags.
(Generating Keys): Update documentation.

* gpgme.texi (Generating Keys):
Fix syntax error.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Waiting For Completion): Adjust doc to changes in
the code.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Update documentation.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document error at creation
failure.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Document new error values.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Add reference to gpgme_get_op_info.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Some spell checking.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add all the gpgme_op_*_start functions.
Fill the concept index with many, many entries.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): New section.
(Verify): Document gpgme_get_notation.
(More Information):
New section describing gpgme_get_op_info.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase callback): Change GpgmePassphraseCb's
R_HD type from void* to void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating data buffers): Change
gpgme_data_new_from_filepart's LENGTH type from off_t to size_t.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating keys): New subsection.
(Exporting keys): Likewise.
(Importing keys): Likewise.
(Deleting keys): Likewise.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: g10Code -> g10 Code

* gpgme.texi (Top): Complete detailmenu.

* gpgme.texi: Convert embarrassing cruft to the real thing.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

* ChangeLog: New file.
* gpgme.texi: Likewise.
* gpl.texi: Likewise.
* fdl.texi: Likewise.
* Makefile.am (info_TEXINFOS): New variable.
(gpgme_TEXINFOS): Likewise.

Copyright (C) 2002, 2003, 2004, 2005,
2006, 2007, 2008, 2009, 2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
(private-key
(oid.1.2.840.113549.1.1.1
(n
#00e0ce96f90b6c9e02f3922beada93fe50a875eac6bcc18bb9a9cf2e84965caa2d1ff95a7f542465c6c0c19d276e4526ce
048868a7a914fd343cc3a87dd74291ffc565506d5bbb25cbac6a0e2dd1f8bcaab0d4a29c2f37c950f363484bf269f78914

40464baf79827e03a36e70b814938eebdc63e964247be75dc58b014b7ea251#)
(e #010001#)
(d
#046129F2489D71579BE0A75FE029BD6CDB574EBF57EA8A5B0FDA942CAB943B117D7BB95E5D28875E0F
9FC5FCC06A72F6D502464DABDED78EF6B716177B83D5BDC543DC5D3FED932E59F5897E92E6F58A0F334
24106A3B6FA2CBF877510E4AC21C3EE47851E97D12996222AC3566D4CCB0B83D164074ABF7DE655FC244
6DA1781#)
(p
#00e861b700e17e8afe6837e7512e35b6ca11d0ae47d8b85161c67baf64377213fe52d772f2035b3ca830af41d8a4120e
1c1c70d12cc22f00d28d31dd48a8d424f1#)
(q
#00f7a7ca5367c661f8e62df34f0d05c10c88e5492348dd7bddc942c9a8f369f935a07785d2db805215ed786e4285df16
58eed3ce84f469b81b50d358407b4ad361#)
(u
#304559a9ead56d2309d203811a641bb1a09626bc8eb36fffa23c968ec5bd891eebbafc73ae666e01ba7c8990bae06cc2
bbe10b75e69fcacb353a6473079d8e9b#)
)
)
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the

License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: Top, Next: Introduction, Up: (dir)

Main Menu
****

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version 1.14.1-beta35 of the
GPGME library.

* Menu:

* Introduction:: How to use this manual.
* Preparation:: What you should
do before using the library.
* Protocols and Engines:: Supported crypto protocols.
* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from GPGME.
* Contexts:: Handling GPGME contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share GnuPG Made Easy.
* Copying:: The GNU General Public License says how you
can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

The Detailed Node Listing

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS):: How to use GPGME with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How GPGME affects signal handling.
* Multi-Threading:: How GPGME can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about
the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file

based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring
the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting ASCII armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys::
Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.

* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data::
  How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate GPGME in GTK+.
* I/O Callback Example GDK:: How to integrate GPGME in GDK.
* I/O Callback Example Qt:: How to integrate GPGME in Qt.

File:

gpgme.info, Node: Introduction, Next: Preparation, Prev: Top, Up: Top

1 Introduction

GnuPG Made Easy (GPGME) is a C language library that allows to add support for cryptography to a program. It is designed to make access to public key crypto engines like GnuPG or GpgSM easier for applications. GPGME provides a high-level crypto API for encryption, decryption, signing, signature verification and key management.

GPGME uses GnuPG and GpgSM as its backends to support OpenPGP and the Cryptographic Message Syntax (CMS).

* Menu:

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

File: gpgme.info, Node: Getting Started, Next: Features, Up: Introduction

1.1 Getting Started

This manual documents the GPGME library programming interface. All functions and data types provided
by the library are explained.

The reader is assumed to possess basic knowledge about cryptography in general, and public key cryptography in particular. The underlying cryptographic engines that are used by the library are not explained, but where necessary, special features or requirements by an engine are mentioned as far as they are relevant to GPGME or its users.

This manual can be used in several ways. If read from the beginning to the end, it gives a good introduction into the library and how it can be used in an application. Forward references are included where necessary. Later on, the manual can be used as a reference manual to get just the information needed about any particular interface of the library. Experienced programmers might want to start looking at the examples at the end of the manual, and then only read up those parts of the interface which are unclear.

The documentation for the language bindings is currently not included in this manual. Those

languages bindings follow the general programming
model of GPGME but may provide some extra high level abstraction on top
of the GPGME style API. For now please see the README files in the
lang/ directory of the source distribution.

File: gpgme.info, Node: Features, Next: Overview, Prev: Getting Started, Up: Introduction

1.2 Features

GPGME has a couple of advantages over other libraries doing a similar
job, and over implementing support for GnuPG or other crypto engines
into your application directly.

its free software
: Anybody can use, modify, and redistribute it under the terms of the
GNU Lesser General Public License (*note Library Copying::).

its flexible
: GPGME provides transparent support for several cryptographic
protocols by different engines. Currently, GPGME supports the
OpenPGP protocol using GnuPG as the backend, and the Cryptographic
Message Syntax using GpgSM as the backend.

its easy
: GPGME hides the differences
between the protocols and engines from
the programmer behind an easy-to-use interface. This way the
programmer can focus on the other parts of the program, and still
integrate strong cryptography in his application. Once support for
GPGME has been added to a program, it is easy to add support for
other crypto protocols once GPGME backends provide them.

its language friendly
: GPGME comes with languages bindings for several common programming
languages: Common Lisp, C++, Python 2, and Python 3.

File: gpgme.info, Node: Overview, Prev: Features, Up: Introduction

1.3 Overview

GPGME provides a data abstraction that is used to pass data to the
crypto engine, and receive returned data from it. Data can be read from
memory or from files, but it can also be provided by a callback
function.

The actual cryptographic operations are always set within a context. A context provides configuration parameters that define the behaviour of all operations performed within it. Only one operation per context is allowed at any time, but when one operation is finished, you can run the next operation in the same context. There can be more than one context, and all can run different operations at the same time.

Furthermore, GPGME has rich key management facilities including listing keys, querying their attributes, generating, importing, exporting and deleting keys, and acquiring information about the trust path.

With some precautions, GPGME can be used in a multi-threaded environment, although it is not completely thread safe and thus needs the support of the application.

File: gpgme.info, Node: Preparation, Next: Protocols and Engines, Prev: Introduction, Up: Top

2 Preparation

To use GPGME, you have to perform some changes to your sources and the build system. The necessary changes are small and explained in the following sections. At the end of this chapter, it is described how the library is initialized, and how the requirements of the library are verified.

* Menu:

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS):: How to use GPGME with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How GPGME affects signal handling.
* Multi-Threading:: How GPGME can be used in an MT environment.

File: gpgme.info, Node: Header, Next: Building the Source, Up: Preparation

2.1 Header

All interfaces (data types and functions) of the library are defined in the header file gpgme.h. You must include this in all programs using the library, either directly or through some other header file, like this:

```
#include <gpgme.h>
```

The name space of GPGME is gpgme_* for function names and data types and GPGME_* for other symbols. Symbols internal to GPGME take the form _gpgme_* and _GPGME_*.

Because GPGME makes use of the GPG Error library, using GPGME will also use the GPG_ERR_* name space directly, and the gpg_err*, gpg_str*, and gpgrt_* name space indirectly.

File: gpgme.info, Node: Building the Source, Next: Largefile Support (LFS), Prev: Header, Up: Preparation

2.2 Building the Source

If you want to compile a source file including the gpgme.h header file, you must make sure that the compiler can find it in the directory hierarchy. This is accomplished by adding the path to the directory in which the header file is located to the compilers include file search path (via the -I option).

However, the path to the include file is determined at the time the source is configured. To solve this problem, gpgme ships with a small helper program gpgme-config that knows about the path to the include file and other configuration options. The options that need to be added to the compiler invocation at compile time are output by the --cflags option to gpgme-config. The following example shows how it can be used at the command line:

```
gcc -c foo.c `gpgme-config --cflags`
```

Adding the output of gpgme-config --cflags to the compiler command line will ensure that the compiler can find the GPGME header file.

A similar problem occurs when linking the program with the library. Again, the compiler has to find the library files. For this to work, the path to the library files has to be added to the library search path (via the -L option). For this, the option --libs to gpgme-config can be used. For convenience, this option also outputs all other options that are required to link the program with GPGME (in particular,

the -lgpgme option). The example shows how to link foo.o with the GPGME library to a program foo.

```
gcc -o foo foo.o `gpgme-config --libs`
```

Of course you can also combine both examples to a single command by specifying both options to gpgme-config:

```
gcc -o foo foo.c `gpgme-config --cflags --libs`
```

If you need to detect the installed language bindings you can use list them using:

```
gpgme-config --print-lang
```

or test for the availability using

```
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
```

File: gpgme.info, Node: Largefile Support (LFS), Next: Using Automake, Prev: Building the Source, Up: Preparation

2.3 Largefile Support (LFS)

GPGME is compiled with largefile support by default, if it is available on the system. This means that GPGME supports files larger than two gigabyte in size, if the underlying operating system can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those new functions have the same name as their smallfile counterparts, but with a suffix of 64.

An example: The data type off_t is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type off64_t is provided, which is 64 bit wide. Or you can replace the existing off_t data type with its 64 bit wide counterpart. All occurrences of off_t are then

automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum
file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for GPGME, because some data types it uses in its interfaces are affected by that. For example, the off_t data type is used in the gpgme_data_seek function, to match its POSIX counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow
for a transitional period.

On POSIX platforms GPGME is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the gpgme.h header file. All types in this header files refer to their largefile counterparts, if they are different from any default types on the system.

On 32 and 64 bit Windows platforms off_t is declared as 32 bit signed integer. There is no specific support for LFS in the C library. The recommendation from Microsoft is to use the native interface (CreateFile et al.) for large files. Released binary versions of GPGME (libgpgme-11.dll) have always been build with a 32 bit off_t. To avoid an ABI break we stick to this convention for 32 bit Windows by using long there. GPGME versions for 64 bit Windows have never been released and thus we are able to use int64_t instead of off_t there. For easier migration the typedef gpgme_off_t has been defined. The reason we cannot use off_t
directly is that some toolchains (e.g.
mingw64) introduce a POSIX compatible hack for off_t. Some widely used toolkits make use of this hack and in turn GPGME would need to use it also. However, this would introduce an ABI break and existing software making use of libgpgme might suffer from a severe break. Thus with version 1.4.2 we redefined all functions using off_t to use

gpgme_off_t which is defined as explained above. This way we keep the ABI well defined and independent of any toolchain hacks. The bottom line is that LFS support in GPGME is only available on 64 bit versions of Windows.

On POSIX platforms you can enable largefile support, if it is different from the default on the system the application is compiled on, by using the Autoconf macro AC_SYS_LARGEFILE. If you do this, then you dont need to worry about anything else: It will just work. In this case you might also want to use AC_FUNC_FSEEKO to take advantage of some new interfaces, and AC_TYPE_OFF_T (just in case).

If you do not use Autoconf, you can define the preprocessor symbol _FILE_OFFSET_BITS to 64 _before_ including any header files, for example by specifying the option -D_FILE_OFFSET_BITS=64 on the compiler command line. You will also want to define the preprocessor symbol LARGEFILE_SOURCE to 1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough about the issue to invent your own solution. Just keep in mind that the GPGME header file expects that largefile support is enabled, if it is available. In particular, we do not support dual mode (_LARGEFILE64_SOURCE).

File: gpgme.info, Node: Using Automake, Next: Using Libtool, Prev: Largefile Support (LFS), Up: Preparation

2.4 Using Automake

It is much easier if you use GNU Automake instead of writing your own Makefiles. If you do that you do not have to worry about finding and invoking the gpgme-config script at all. GPGME provides an extension to Automake that does all the work for you.

-- Macro: AM_PATH_GPGME ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTH ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTHREAD ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])
Check whether GPGME (at least version MINIMUM-VERSION, if given) exists on the host system. If it is found, execute ACTION-IF-FOUND, otherwise do ACTION-IF-NOT-FOUND, if given.

Additionally, the function defines GPGME_CFLAGS to the flags needed for compilation of the program to find the gpgme.h header file, and GPGME_LIBS to the linker flags needed to link the program to the GPGME library. If the used helper script does not match the target type you are building for a warning is printed and the string libgcrypt is appended to the variable gpg_config_script_warn.

AM_PATH_GPGME_PTH checks for the version of GPGME that can be used with GNU Pth, and defines GPGME_PTH_CFLAGS and GPGME_PTH_LIBS.

AM_PATH_GPGME_PTHREAD checks for the version of GPGME that can be used with the native pthread implementation, and defines GPGME_PTHREAD_CFLAGS and GPGME_PTHREAD_LIBS. Since version 1.8.0 this is no longer required to GPGME_PTHREAD as GPGME itself is thread safe.

This macro searches for gpgme-config along the PATH. If you are cross-compiling, it is useful to set the environment variable SYSROOT to the top directory of your target. The macro will then first look for the helper program in the bin directory below that top directory. An absolute directory name must be used for SYSROOT. Finally, if the configure command line option --with-gpgme-prefix is used, only its value is used for the top directory below which the helper script is expected.

You can use the defined Autoconf variables like this in your Makefile.am:

```
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
```

File: gpgme.info, Node: Using Libtool, Next: Library Version Check, Prev: Using Automake, Up: Preparation

2.5 Using Libtool

The easiest way is to just use GNU Libtool. If you use libtool, and link to libgpgme.la, libgpgme-pth.la or libgpgme-pthread.la respectively, everything will be done automatically by Libtool.

File: gpgme.info, Node: Library Version Check, Next: Signal Handling, Prev: Using Libtool, Up: Preparation

2.6 Library Version Check
==========

-- Function: const char * gpgme_check_version
(const char *REQUIRED_VERSION)
The function gpgme_check_version has four purposes. It can be used to retrieve the version number of the library. In addition it can verify that the version number is higher than a certain required version number. In either case, the function initializes some sub-systems,
and for this reason alone it must be invoked early in your program, before you make use of the other functions in GPGME. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get initialized.

If REQUIRED_VERSION is NULL, the function returns a pointer to a statically allocated string containing the version number of the library.

If REQUIRED_VERSION is not NULL, it should point to a string containing a version number, and the function checks that the version of the library is at least as high as the version number provided. In this case, the function returns a pointer to a statically allocated string containing the version number of the library. If REQUIRED_VERSION is not a valid version number, or if the version requirement is not met, the function returns NULL.

If you use a version of a library that is backwards compatible with older releases, but contains
additional interfaces which your program uses, this function provides a run-time check if the necessary features are provided by the installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors are returned later when invoking gpgme_new or gpgme-data_new, so that a detailed error code can be returned (historically, gpgme_check_version does not return a detailed error code).

-- Function: int gpgme_set_global_flag (const char *NAME,
const char *VALUE)

SINCE: 1.4.0

On some systems it is not easy to set environment variables and

thus hard to use GPGMEs internal trace facility for debugging. This function has been introduced as an alternative way to enable debugging and for a couple of other rarely used tweaks. It is important to assure that only one thread accesses GPGME functions between a call to this function and after the return from the call to
gpgme_check_version.

All currently supported features require that this function is called as early as possible even before gpgme_check_version. The features are identified by the following values for NAME:

debug
To enable debugging use the string debug for NAME and VALUE identical to the value used with the environment variable GPGME_DEBUG.

disable-gpgconf
Using this feature with any VALUE disables the detection of the gpgconf program and thus forces GPGME to fallback into the simple OpenPGP only mode. It may be used to force the use of GnuPG-1 on systems which have both GPG versions installed. Note that in general the use of gpgme_set_engine_info is a better way to select a specific engine version.

gpgconf-name
gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are GNU/GnuPG/gpgconf and GNU/GnuPG/gpg. Under

Unix the leading directory part is ignored. Under Windows the leading directory part is used as the default installation directory; the .exe suffix is added by GPGME. Use forward slashed even under Windows.

require-gnupg
Set the minimum version of the required GnuPG engine. If that version is not met, GPGME fails early instead of trying to use the existent version. The given version must be a string with major, minor, and micro number. Example: "2.1.0".

w32-inst-dir
On Windows GPGME needs to know its installation directory to find its spawn helper. This is in general no problem because a DLL has this information. Some applications however link statically to GPGME and thus GPGME can only figure out the installation directory of this application which may be wrong in certain cases. By supplying an installation directory as

value to this flag, GPGME will assume that that directory is
the installation directory. This flag has no effect on
non-Windows platforms.

This function returns 0 on success. In contrast to other
functions the non-zero return value on failure does not convey any
error code. For setting debug the only possible error cause is
an out of memory condition; which would exhibit itself later
anyway. Thus the return value may be ignored.

After initializing GPGME, you should set the locale information to the locale required for your output terminal. This locale information is needed for example for the curses and Gtk pinentry. Here is an example of a complete initialization:

```
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
{
  /* Initialize the locale environment.  */
  setlocale (LC_ALL, "");
  gpgme_check_version (NULL);
  gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
 #ifdef LC_MESSAGES
  gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
}
```

Note that you are highly recommended to initialize the locale settings like this. GPGME can not do this for you because it would not be thread safe. The conditional on LC_MESSAGES is only necessary for portability to W32 systems.

File: gpgme.info, Node: Signal Handling, Next: Multi-Threading, Prev: Library Version Check, Up: Preparation

2.7 Signal Handling

The GPGME library communicates with child processes (the crypto engines). If a child process dies unexpectedly, for example due to a bug, or system problem, a SIGPIPE signal will be delivered to the application. The default action is to abort the program. To protect against this, gpgme_check_version sets the SIGPIPE signal action to SIG_IGN, which means that the signal will be ignored.

GPGME will only do that if the signal action for SIGPIPE is SIG_DEF at the time gpgme_check_version is called. If it is something different, GPGME will take no action.

This means that if your application does not install any signal handler for SIGPIPE, you dont need to take any precautions. If you do install a signal handler for SIGPIPE, you must be prepared to handle any SIGPIPE events that occur due to GPGME writing to a defunct pipe. Furthermore, if your application is multi-threaded, and you install a signal action for SIGPIPE, you must make sure you do this either before gpgme_check_version is called or afterwards.

File: gpgme.info, Node: Multi-Threading, Prev: Signal Handling, Up: Preparation

2.8 Multi-Threading

The GPGME library is mostly thread-safe, and can be used in a multi-threaded environment but there are some requirements for multi-threaded use:

The function gpgme_check_version must be called before any other function in the library, because it initializes the thread support subsystem in GPGME. To achieve this in multi-threaded programs, you must synchronize the memory with respect to other threads that also want to use GPGME. For this, it is sufficient to call gpgme_check_version before creating the other threads using GPGME(1).

Any gpgme_data_t and gpgme_ctx_t object must only be accessed by one thread at a time. If multiple threads want to deal with the same object, the caller has to make sure that operations on that object are fully synchronized.

Only one thread at any time is allowed to call gpgme_wait. If multiple threads call this function, the caller must make sure that all invocations are fully synchronized. It is safe to start asynchronous operations while a thread is running in gpgme_wait.

The function gpgme_strerror is not thread safe. You have to use gpgme_strerror_r instead.

---------- Footnotes ----------

(1) At least this is true for POSIX threads, as pthread_create is a function that synchronizes memory with respects to other threads. There are many functions which have this property, a complete list can be found in POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the definition of the term Memory Synchronization. For other thread packages other, more relaxed or more strict rules may apply.

File: gpgme.info, Node: Protocols and Engines, Next: Algorithms, Prev: Preparation, Up: Top

3 Protocols and Engines

GPGME supports several cryptographic protocols, however, it does not implement them. Rather it uses backends (also called engines) which implement the protocol. GPGME uses inter-process communication to pass data back and forth between the application and the backend, but the details of the communication protocol and invocation of the backend is completely hidden by the interface. All complexity is handled by GPGME. Where an exchange of information between the application and the backend is necessary, GPGME provides the necessary callback function hooks and further interfaces.

-- Data type: enum gpgme_protocol_t
The gpgme_protocol_t type specifies the set of possible protocol values that are supported by GPGME. The following protocols are supported:

GPGME_PROTOCOL_OpenPGP
GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

GPGME_PROTOCOL_GPGCONF
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_ASSUAN
SINCE: 1.2.0

This specifies the raw Assuan protocol.

GPGME_PROTOCOL_G13
SINCE: 1.3.0

Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_UISERVER
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_SPAWN
SINCE: 1.5.0

Special protocol for use with gpgme_op_spawn.

GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the used protocol is not known to the application. Currently, GPGME does not accept this value in any operation, though, except for gpgme_get_protocol_name.

-- Function: const char * gpgme_get_protocol_name (gpgme_protocol_t PROTOCOL)
The function gpgme_get_protocol_name returns a statically allocated string describing the protocol PROTOCOL, or NULL if the protocol number is not valid.

* Menu:

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan:: Support for the raw Assuan protocol.

File: gpgme.info,
Node: Engine Version Check, Next: Engine Information, Up: Protocols and Engines

3.1 Engine Version Check

-- Function: const char * gpgme_get_dirinfo (cons char *WHAT)
SINCE: 1.5.0

The function gpgme_get_dirinfo returns a statically allocated string with the value associated to WHAT. The returned values are the defaults and wont change even after gpgme_set_engine_info

has been used to configure a different engine. NULL is returned if no value is available. Commonly supported values for WHAT are:

homedir
: Return the default home directory.

sysconfdir
: Return the name of the system configuration directory

bindir
: Return the name of the directory with GnuPG program files.

libdir
: Return the name of the directory with GnuPG related library files.

libexecdir
: Return the name of the directory with GnuPG helper program files.

datadir
: Return the name of the directory with GnuPG shared data.

localedir
: Return the name of the directory with GnuPG locale data.

agent-socket
: Return the name of the socket to connect to the gpg-agent.

agent-ssh-socket
: Return the name of the socket to connect to the ssh-agent component of gpg-agent.

dirmngr-socket
: Return the name of the socket to connect to the dirmngr.

uiserver-socket
: Return the name of the socket to connect to the user interface server.

gpgconf-name
: Return the file name of the engine configuration tool.

gpg-name
: Return the file name of the OpenPGP engine.

gpgsm-name

Return the file name of the CMS engine.

g13-name
Return the name of the file container encryption engine.

gpg-wks-client-name
Return the name of the Web Key Service tool.

-- Function: gpgme_error_t gpgme_engine_check_version
(gpgme_protocol_t PROTOCOL)
The function gpgme_engine_check_version verifies that the engine implementing the protocol PROTOCOL is installed in the expected path and meets the version requirement of GPGME.

This function returns the error code GPG_ERR_NO_ERROR if the engine is available and GPG_ERR_INV_ENGINE if it is not.

File: gpgme.info, Node: Engine Information, Next: Engine Configuration, Prev: Engine Version Check, Up: Protocols and Engines

3.2 Engine Information
==========

-- Data type: gpgme_engine_info_t
The gpgme_engine_info_t type specifies a pointer to a structure describing a crypto engine. The structure contains the following elements:

gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked list, or NULL if this is the last element.

gpgme_protocol_t protocol
This is the protocol for which the crypto engine is used.
You
can convert this to a string with gpgme_get_protocol_name for printing.

const char *file_name
This is a string holding the file name of the executable of the crypto engine. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

const char *home_dir
This is a string holding the directory name of the crypto engines configuration directory. If it is NULL, then the

default directory is used. See gpgme_get_dirinfo on how to get the default directory.

const char *version
This is a string containing the version number of the crypto engine. It might be NULL if the version number can not be determined, for example because the executable doesnt exist or is invalid.

const char *req_version
This is a string containing the minimum required version number
of the crypto engine for GPGME to work correctly. This is the version number that gpgme_engine_check_version verifies against. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

-- Function: gpgme_error_t gpgme_get_engine_info (gpgme_engine_info_t *INFO)
The function gpgme_get_engine_info returns a linked list of engine info structures in INFO. Each info structure describes the defaults of one configured backend.

The memory for the info structures is allocated the first time this function is invoked, and must not be freed by the caller.

This function returns the error code GPG_ERR_NO_ERROR if successful, and a system error if the memory could not be allocated.

Here is an example how you can provide more diagnostics if you receive an error message which indicates that the crypto engine is invalid.

```
gpgme_ctx_t ctx;
gpgme_error_t
err;

[...]

if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
  {
    gpgme_engine_info_t info;
    err = gpgme_get_engine_info (&info);
    if (!err)
      {
        while (info && info->protocol != gpgme_get_protocol (ctx))
```

```
      info = info->next;
    if (!info)
      fprintf (stderr, "GPGME compiled without support for protocol %s",
               gpgme_get_protocol_name (info->protocol));
    else if (info->file_name && !info->version)
      fprintf (stderr, "Engine %s not installed properly",
               info->file_name);
    else if (info->file_name && info->version && info->req_version)
      fprintf (stderr, "Engine %s version %s installed, "
               "but at least version %s required", info->file_name,
               info->version, info->req_version);
    else
      fprintf (stderr, "Unknown problem with engine
for protocol %s",
               gpgme_get_protocol_name (info->protocol));
  }
}
```

File: gpgme.info, Node: Engine Configuration, Next: OpenPGP, Prev: Engine Information, Up: Protocols and Engines

3.3 Engine Configuration

You can change the configuration of a backend engine, and thus change the executable program and configuration directory to be used. You can make these changes the default or set them for some contexts individually.

-- Function: gpgme_error_t gpgme_set_engine_info (gpgme_protocol_t PROTO, const char *FILE_NAME, const char *HOME_DIR)

SINCE: 1.1.0

The function gpgme_set_engine_info changes the default configuration of the crypto engine implementing the protocol PROTO.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this crypto engine. If HOME_DIR is

NULL, the engines default will be used.

The new defaults are not applied to already created GPGME contexts.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

The functions gpgme_ctx_get_engine_info and gpgme_ctx_set_engine_info can be used to change the engine configuration per context. *Note Crypto Engine::.

File: gpgme.info, Node: OpenPGP, Next: Cryptographic Message Syntax, Prev: Engine Configuration, Up: Protocols and Engines

3.4 OpenPGP
==========

OpenPGP is implemented by GnuPG, the GNU Privacy Guard. This is the first protocol that was supported by GPGME.

The OpenPGP protocol is specified by GPGME_PROTOCOL_OpenPGP.

File: gpgme.info, Node: Cryptographic Message Syntax, Next: Assuan, Prev: OpenPGP, Up: Protocols and Engines

3.5 Cryptographic Message Syntax
==============================

CMS is implemented by GpgSM, the S/MIME implementation for GnuPG.

The CMS protocol is specified by GPGME_PROTOCOL_CMS.

File: gpgme.info, Node: Assuan, Prev: Cryptographic Message Syntax, Up: Protocols and Engines

3.6 Assuan
==========

Assuan is the RPC library used by the various GnuPG components. The Assuan protocol allows one to talk to arbitrary Assuan servers using GPGME. *Note Using the Assuan protocol::.

The ASSUAN protocol is specified by GPGME_PROTOCOL_ASSUAN.

File: gpgme.info, Node: Algorithms, Next: Error Handling, Prev: Protocols and Engines, Up: Top

4 Algorithms
****

The crypto backends support a variety of algorithms used in public key

cryptography.(1) The following sections list the identifiers used to denote such an algorithm.

* Menu:

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

---------- Footnotes ----------

(1) Some engines also provide symmetric only encryption; see the description of the encryption function on how to use this.

File:
gpgme.info, Node: Public Key Algorithms, Next: Hash Algorithms, Up: Algorithms

4.1 Public Key Algorithms
==========

Public key algorithms are used for encryption, decryption, signing and verification of signatures.

-- Data type: enum gpgme_pubkey_algo_t
The gpgme_pubkey_algo_t type specifies the set of all public key algorithms that are supported by GPGME. Possible values are:

GPGME_PK_RSA
This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

GPGME_PK_RSA_E
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for encryption and decryption only.

GPGME_PK_RSA_S
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for signing and verification only.

GPGME_PK_DSA
This value indicates DSA, the Digital Signature Algorithm.

GPGME_PK_ELG
This value indicates ElGamal.

GPGME_PK_ELG_E

This value also indicates ElGamal and is used specifically in GnuPG.

GPGME_PK_ECC
SINCE: 1.5.0

This value is a generic indicator for ellipic curve algorithms.

GPGME_PK_ECDSA
SINCE: 1.3.0

This value indicates ECDSA, the Elliptic Curve Digital Signature Algorithm as defined by FIPS 186-2 and RFC-6637.

GPGME_PK_ECDH
SINCE: 1.3.0

This value indicates ECDH, the Eliptic Curve Diffie-Hellmann encryption algorithm as defined by RFC-6637.

GPGME_PK_EDDSA
SINCE: 1.7.0

This value indicates the EdDSA algorithm.

-- Function: const char * gpgme_pubkey_algo_name (gpgme_pubkey_algo_t ALGO)
The function gpgme_pubkey_algo_name returns a pointer to a statically allocated string containing a description of the public key algorithm ALGO. This string can be used to output the name of the public key algorithm to the user.

If ALGO is not a valid public key algorithm, NULL is returned.

-- Function: char * gpgme_pubkey_algo_string (gpgme_subkey_t KEY)
SINCE: 1.7.0

The function gpgme_pubkey_algo_string is a convenience function to build and return an algorithm string in the same way GnuPG does (e.g. rsa2048 or ed25519). The caller must free the result using gpgme_free. On error (e.g. invalid argument or memory exhausted), the function returns NULL and sets ERRNO.

File: gpgme.info, Node: Hash Algorithms, Prev: Public Key Algorithms, Up: Algorithms

4.2 Hash Algorithms

==========

Hash (message digest) algorithms are used to compress a long message to
make it suitable for public key cryptography.

-- Data type: enum gpgme_hash_algo_t
   The gpgme_hash_algo_t type specifies the set of all hash
   algorithms that are supported by GPGME. Possible values are:

   GPGME_MD_MD5
   GPGME_MD_SHA1
   GPGME_MD_RMD160
   GPGME_MD_MD2
   GPGME_MD_TIGER
    GPGME_MD_HAVAL
   GPGME_MD_SHA256
   GPGME_MD_SHA384
   GPGME_MD_SHA512
   GPGME_MD_SHA224
       SINCE: 1.5.0

   GPGME_MD_MD4
   GPGME_MD_CRC32
   GPGME_MD_CRC32_RFC1510
   GPGME_MD_CRC24_RFC2440

-- Function: const char * gpgme_hash_algo_name (gpgme_hash_algo_t ALGO)
   The function gpgme_hash_algo_name returns a pointer to a
   statically allocated string containing a description of the hash
   algorithm ALGO. This string can be used to output the name of the
   hash algorithm to the user.

   If ALGO is not a valid hash algorithm, NULL is returned.

File: gpgme.info, Node: Error Handling, Next: Exchanging Data, Prev: Algorithms, Up: Top

5 Error Handling
****

Many functions in GPGME can return an error if they fail. For this
reason, the application should always catch the error condition and take
appropriate measures, for example by releasing the resources and passing
the error up to the caller, or by displaying a descriptive
 message to
the user and cancelling the operation.

  Some error values do not indicate a system error or an error in the

operation, but the result of an operation that failed properly. For example, if you try to decrypt a tempered message, the decryption will fail. Another error value actually means that the end of a data buffer or list has been reached. The following descriptions explain for many error codes what they mean usually. Some error values have specific meanings if returned by a certain functions. Such cases are described in the documentation of those functions.

GPGME uses the libgpg-error library. This allows to share the error codes with other components of the GnuPG system, and thus pass error values transparently from the crypto engine, or some helper application of the crypto engine, to the user. This way no information is lost. As a consequence, GPGME does not use its own identifiers for error codes, but uses those provided by libgpg-error. They usually start
with GPG_ERR_.

However, GPGME does provide aliases for the functions defined in libgpg-error, which might be preferred for name space consistency.

* Menu:

* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.
* Error Strings:: How to get a descriptive string from a value.

File: gpgme.info, Node: Error Values, Next: Error Sources, Up: Error Handling

5.1 Error Values

-- Data type: gpgme_err_code_t
The gpgme_err_code_t type is an alias for the libgpg-error type gpg_err_code_t. The error code indicates the type of an error, or the reason why an operation failed.

A list of important error codes can be found in the next section.

-- Data type: gpgme_err_source_t
The gpgme_err_source_t type is an alias for the libgpg-error type gpg_err_source_t. The error source
has not a precisely
defined meaning. Sometimes it is the place where the error happened, sometimes it is the place where an error was encoded into an error value. Usually the error source will give an indication to where to look for the problem. This is not always true, but it

is attempted to achieve this goal.

A list of important error sources can be found in the next section.

-- Data type: gpgme_error_t
The gpgme_error_t type is an alias for the libgpg-error type gpg_error_t. An error value like this has always two components, an error code and an error source. Both together form the error value.

Thus, the error value can not be directly compared against an error code, but the accessor functions described below must be used. However, it is guaranteed that only 0 is used to indicate success (GPG_ERR_NO_ERROR), and that in this case all other parts of the error value are set to 0, too.

Note
that in GPGME, the error source is used purely for diagnostical purposes. Only the error code should be checked to test for a certain outcome of a function. The manual only documents the error code part of an error value. The error source is left unspecified and might be anything.

-- Function: static inline gpgme_err_code_t gpgme_err_code (gpgme_error_t ERR)
The static inline function gpgme_err_code returns the gpgme_err_code_t component of the error value ERR. This function must be used to extract the error code from an error value in order to compare it with the GPG_ERR_* error code macros.

-- Function: static inline gpgme_err_source_t gpgme_err_source (gpgme_error_t ERR)
The static inline function gpgme_err_source returns the gpgme_err_source_t component of the error value ERR. This function must be used to extract the error source from an error value in order to compare it with the GPG_ERR_SOURCE_* error source macros.

-- Function: static inline gpgme_error_t gpgme_err_make (gpgme_err_source_t SOURCE, gpgme_err_code_t CODE)
The static inline function gpgme_err_make returns the error value consisting of the error source SOURCE and the error code CODE.

This function can be used in callback functions to construct an error value to return it to the library.

-- Function: static inline gpgme_error_t gpgme_error

(gpgme_err_code_t CODE)
The static inline function gpgme_error returns the error value consisting of the default error source and the error code CODE.

For GPGME applications, the default error source is GPG_ERR_SOURCE_USER_1. You can define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h to change this default.

This function can be used in callback functions to construct an error value to return it to the library.

The libgpg-error library provides error codes for all system error numbers it knows about. If ERR is an unknown error number, the error code GPG_ERR_UNKNOWN_ERRNO is used. The following functions can be used to construct error values from system errnor numbers.

-- Function: gpgme_error_t gpgme_err_make_from_errno (gpgme_err_source_t SOURCE, int ERR)
The function gpgme_err_make_from_errno is like gpgme_err_make, but it takes a system error like errno instead of a gpgme_err_code_t error code.

-- Function: gpgme_error_t gpgme_error_from_errno (int ERR)
The function gpgme_error_from_errno is like gpgme_error, but it takes a system error like errno instead of a gpgme_err_code_t error code.

Sometimes you might want to map system error numbers to error codes directly, or map an error code representing a system error back to the system error number. The following functions can be used to do that.

-- Function: gpgme_err_code_t gpgme_err_code_from_errno (int ERR)
The function gpgme_err_code_from_errno returns the error code for the system error ERR. If ERR is not a known system error, the function returns GPG_ERR_UNKNOWN_ERRNO.

-- Function: int gpgme_err_code_to_errno (gpgme_err_code_t ERR)
The function gpgme_err_code_to_errno returns the system error for the error code ERR. If ERR is not an error code representing a system error, or if this system error is not defined on this system, the function returns 0.

File: gpgme.info, Node: Error Sources, Next: Error Codes, Prev: Error Values, Up: Error Handling

5.2 Error Sources

==========

The library libgpg-error defines an error source for every component of the GnuPG system. The error source part of an error value is not well defined. As such it is mainly useful to improve the diagnostic error message for the user.

If the error code part of an error value is 0, the whole error value will be 0. In this case the error source part is of course GPG_ERR_SOURCE_UNKNOWN.

The list of error sources that might occur in applications using GPGME is:

GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is 0.

GPG_ERR_SOURCE_GPGME
The error source is GPGME itself. This is the default for errors that occur in the GPGME library.

GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the OpenPGP protocol.

GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is the crypto engine used for the CMS protocol.

GPG_ERR_SOURCE_GCRYPT
The error source is libgcrypt, which is used by crypto engines to perform cryptographic operations.

GPG_ERR_SOURCE_GPGAGENT
The error source is gpg-agent, which is used by crypto engines to perform operations with the secret key.

GPG_ERR_SOURCE_PINENTRY
The error source is pinentry, which is used by gpg-agent to query the passphrase to unlock a secret key.

GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by gpg-agent to delegate operations with the secret key to a SmartCard.

GPG_ERR_SOURCE_KEYBOX
The error source is libkbx, a library used by the crypto engines to manage local keyrings.

GPG_ERR_SOURCE_USER_1
GPG_ERR_SOURCE_USER_2
GPG_ERR_SOURCE_USER_3
GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be used by other software. For example, applications using GPGME can use them to mark error values coming from callback handlers. Thus GPG_ERR_SOURCE_USER_1 is the default for errors created with gpgme_error and gpgme_error_from_errno, unless you define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h.

File: gpgme.info, Node: Error Codes, Next: Error Strings, Prev: Error Sources, Up: Error Handling

5.3 Error Codes
==========

The library libgpg-error defines many error values. Most of them are not used by GPGME directly, but might be returned by GPGME because it received them
from the crypto engine. The below list only includes such error codes that have a specific meaning in GPGME, or which are so common that you should know about them.

GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is 0. Also, it is guaranteed that an error value made from the error code 0 will be 0 itself (as a whole). This means that the error source information is lost for this error code, however, as this error code indicates that no error occurred, this is generally not a problem.

GPG_ERR_GENERAL
This value means that something went wrong, but either there is not enough information about the problem to return a more useful error value, or there is no separate error value for this type of problem.

GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO
where FOO is the symbol for
the system error.

GPG_ERR_INV_VALUE
This value means that some user provided data was out of range.
This can also refer to objects. For example, if an empty
gpgme_data_t object was expected, but one containing data was
provided, this error value is returned.

GPG_ERR_UNUSABLE_PUBKEY
This value means that some recipients for a message were invalid.

GPG_ERR_UNUSABLE_SECKEY
This value means that some signers were invalid.

GPG_ERR_NO_DATA
This value means that a gpgme_data_t object which was expected to
have content was found empty.

GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is
not implemented. This error should never happen. It can only
occur if you use certain values or configuration options which do
not work, but for which we think that they should work at some
later time.

GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase
when requested.

GPG_ERR_CANCELED
This value means that the operation was canceled.

GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired
protocol is currently not available. This can either be because
the sources were configured to exclude support for this engine, or
because the engine is not installed properly.

GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify a unique key.

GPG_ERR_WRONG_KEY_USAGE
This value indicates that a key is not used appropriately.

GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

GPG_ERR_NO_CRL_KNOWN
This value indicates
that no certificate revocation list is known
for the certificate.

GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the issuer certificate is missing.

GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its certificate chain is not good, for example it could be too long.

GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic algorithm is not supported by the crypto backend.

GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not available.

GPG_ERR_USER_1
GPG_ERR_USER_2
...

GPG_ERR_USER_16
   These error codes are not used
 by any GnuPG component and can be
   freely used by other software. Applications using GPGME might use
   them to mark specific errors returned by callback handlers if no
   suitable error codes (including the system errors) for these errors
   exist already.

File: gpgme.info, Node: Error Strings, Prev: Error Codes, Up: Error Handling

5.4 Error Strings
==========

-- Function: const char * gpgme_strerror (gpgme_error_t ERR)
   The function gpgme_strerror returns a pointer to a statically
   allocated string containing a description of the error code
   contained in the error value ERR. This string can be used to
   output a diagnostic message to the user.

   This function is not thread safe. Use gpgme_strerror_r in
   multi-threaded programs.

-- Function: int gpgme_strerror_r (gpgme_error_t ERR, char *BUF,
        size_t BUFLEN)
   The function gpgme_strerror_r returns the error string for ERR in
   the user-supplied buffer BUF of size BUFLEN.
  This function is, in
   contrast to gpgme_strerror, thread-safe if a thread-safe
   strerror_r function is provided by the system. If the function
   succeeds, 0 is returned and BUF contains the string describing the
   error. If the buffer was not large enough, ERANGE is returned and
   BUF contains as much of the beginning of the error string as fits
   into the buffer.

-- Function: const char * gpgme_strsource (gpgme_error_t ERR)
   The function gpgme_strerror returns a pointer to a statically
   allocated string containing a description of the error source
   contained in the error value ERR. This string can be used to
   output a diagnostic message to the user.

  The following example illustrates the use of gpgme_strerror:

   gpgme_ctx_t ctx;
   gpgme_error_t err = gpgme_new (&ctx);
   if (err)
     {
       fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",

```
            argv[0], gpgme_strsource (err), gpgme_strerror (err));
      exit (1);
    }
```

File: gpgme.info, Node: Exchanging Data, Next: Contexts, Prev: Error Handling, Up: Top

6 Exchanging Data

A lot of data has to be exchanged between the user and the crypto engine, like plaintext messages, ciphertext, signatures and information about the keys. The technical details about exchanging the data information are completely abstracted by GPGME. The user provides and receives the data via gpgme_data_t objects, regardless of the communication protocol between GPGME and the crypto engine in use.

-- Data type: gpgme_data_t
   The gpgme_data_t type is a handle for a container for generic data, which is used by GPGME to exchange data with the user.

gpgme_data_t objects do not provide notifications on events. It is assumed that read and write operations are blocking until data is available. If this is undesirable, the application must ensure that all GPGME data operations always have data available, for example by using memory buffers or files rather than pipes or sockets. This might be relevant, for example, if the external event loop mechanism is used.

-- Data type: gpgme_off_t
   SINCE: 1.4.1

   On POSIX platforms the gpgme_off_t type is an alias for off_t; it may be used interchangeable. On Windows platforms gpgme_off_t is defined as a long (i.e. 32 bit) for 32 bit Windows and as a 64 bit signed integer for 64 bit Windows.

-- Data type: gpgme_ssize_t
   The gpgme_ssize_t type is an alias for ssize_t. It has only been introduced to overcome portability problems pertaining to the declaration of ssize_t by different toolchains.

* Menu:

* Creating Data Buffers::   Creating new data buffers.
* Destroying Data Buffers::   Releasing data buffers.
* Manipulating Data Buffers::   Operations on data buffers.

File: gpgme.info, Node: Creating Data Buffers, Next: Destroying Data Buffers, Up: Exchanging Data

6.1 Creating Data Buffers

Data
 objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all objects.

* Menu:

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

File: gpgme.info, Node: Memory Based Data Buffers, Next: File Based Data Buffers, Up: Creating Data Buffers

6.1.1 Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is
convenient, but only practical for an amount of data that is a fraction
of the available physical memory. The data has to be copied from its
source and to its destination, which can often be avoided by using one
of the other data object

-- Function: gpgme_error_t gpgme_data_new (gpgme_data_t *DH)
   The function gpgme_data_new creates a new gpgme_data_t object

 and returns a handle for it in DH. The data object is memory based
   and initially empty.

   The function returns the error code GPG_ERR_NO_ERROR if the data
   object was successfully created, GPG_ERR_INV_VALUE if DH is not a
   valid pointer, and GPG_ERR_ENOMEM if not enough memory is
   available.

-- Function: gpgme_error_t gpgme_data_new_from_mem (gpgme_data_t *DH,
        const char *BUFFER, size_t SIZE, int COPY)
   The function gpgme_data_new_from_mem creates a new gpgme_data_t
   object and fills it with SIZE bytes starting from BUFFER.

   If COPY is not zero, a private copy of the data is made. If COPY
   is zero, the data is taken from the specified buffer as needed, and
   the user has to ensure that the buffer remains valid for the whole
   life span of the data object.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
BUFFER is not a valid pointer, and
GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_file (gpgme_data_t *DH,
const char *FILENAME, int COPY)
The function gpgme_data_new_from_file creates a new
gpgme_data_t object and fills it with the content of the file
FILENAME.

If COPY is not zero, the whole file is read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for COPY might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
FILENAME is not a valid pointer, GPG_ERR_NOT_IMPLEMENTED if CODE
is zero, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_filepart
(gpgme_data_t *DH, const char *FILENAME,
FILE *FP,
off_t OFFSET, size_t LENGTH)
The function gpgme_data_new_from_filepart creates a new
gpgme_data_t object and fills it with a part of the file
specified by FILENAME or FP.

Exactly one of FILENAME and FP must be non-zero, the other must be
zero. The argument that is not zero specifies the file from which
LENGTH bytes are read into the data object, starting from OFFSET.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH and
exactly one of FILENAME and FP is not a valid pointer, and
GPG_ERR_ENOMEM if not enough memory is available.

File: gpgme.info, Node: File Based Data Buffers, Next: Callback Based Data Buffers, Prev: Memory Based Data Buffers, Up: Creating Data Buffers

6.1.2 File Based Data Buffers

File based data objects operate directly on file descriptors or streams.
Only a small amount of data is stored
in core at any time, so the size
of the data objects is not limited by GPGME.

-- Function: gpgme_error_t gpgme_data_new_from_fd (gpgme_data_t *DH,
int FD)
The function gpgme_data_new_from_fd creates a new gpgme_data_t object and uses the file descriptor FD to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the file descriptor than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_stream
(gpgme_data_t *DH, FILE *STREAM)
The function gpgme_data_new_from_stream creates a new gpgme_data_t object and uses the I/O stream STREAM to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the stream than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_estream
(gpgme_data_t *DH, gpgrt_stream_t STREAM)
The function gpgme_data_new_from_estream creates

a new
gpgme_data_t object and uses the gpgrt stream STREAM to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the stream than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

File: gpgme.info, Node: Callback Based Data Buffers, Prev: File Based Data Buffers, Up: Creating Data Buffers

6.1.3 Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your application, you can
implement the functions a data object provides yourself and create a data object from these callback functions.

-- Data type: ssize_t (*gpgme_data_read_cb_t) (void *HANDLE, void *BUFFER, size_t SIZE)
The gpgme_data_read_cb_t type is the type of functions which GPGME calls if it wants to read data from a user-implemented data object. The function should read up to SIZE bytes from the current read position into the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: ssize_t (*gpgme_data_write_cb_t) (void *HANDLE, const void *BUFFER, size_t SIZE)

The gpgme_data_write_cb_t type is the type of functions which GPGME calls if it wants to write data to a user-implemented data object. The function should write up to SIZE bytes to the current write position from the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes written, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: off_t (*gpgme_data_seek_cb_t) (void *HANDLE, off_t OFFSET, int WHENCE)

The gpgme_data_seek_cb_t type is the type of functions which GPGME calls if it wants to change the current read/write position in a user-implemented data object, just like the lseek function.

The function should return the new read/write position, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: void (*gpgme_data_release_cb_t) (void *HANDLE)

The gpgme_data_release_cb_t type is the type of functions which GPGME calls if it wants to destroy a user-implemented data object. The HANDLE is provided by the user at data object creation time.

-- Data type: struct gpgme_data_cbs

This structure is used to store the data callback interface functions described above. It has the following members:

gpgme_data_read_cb_t read

This is the function called by GPGME to read data from the data object. It is only required for input data object.

gpgme_data_write_cb_t write

This is the function called by GPGME to write data to the data object. It is only required for output data object.

gpgme_data_seek_cb_t seek

This is the function called by GPGME to change the current read/write pointer in the data object (if available). It is optional.

gpgme_data_release_cb_t release
This is the function called by GPGME to release a data object.
It is optional.

-- Function: gpgme_error_t gpgme_data_new_from_cbs (gpgme_data_t *DH,
gpgme_data_cbs_t CBS, void *HANDLE)
The function gpgme_data_new_from_cbs creates a new gpgme_data_t object and uses the user-provided callback functions to operate on the data object.

The handle HANDLE is passed as first argument to the callback functions. This can be used to identify this data object.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

File: gpgme.info, Node: Destroying Data Buffers, Next: Manipulating Data Buffers, Prev: Creating Data Buffers, Up: Exchanging Data

6.2 Destroying Data Buffers
==========

-- Function: void gpgme_data_release (gpgme_data_t DH)
The function gpgme_data_release destroys the data object with the handle DH. It releases all associated resources that were not provided by the user in the first place.

-- Function: char * gpgme_data_release_and_get_mem (gpgme_data_t DH,
size_t *LENGTH)
The function gpgme_data_release_and_get_mem is like gpgme_data_release, except that it returns the data buffer and its length that was provided by the object.

The user has to release the buffer with gpgme_free. In case the user provided the data buffer in non-copy mode, a copy will be made for this purpose.

In case an error returns, or there is no suitable data buffer that can be returned to the user, the function will return NULL. In any case, the data object DH is destroyed.

-- Function: void gpgme_free (void *BUFFER)
SINCE: 1.1.1

The function gpgme_free releases

the memory returned by
gpgme_data_release_and_get_mem and gpgme_pubkey_algo_string.
It should be used instead of the system libraries free function
in case different allocators are used by a program. This is often
the case if gpgme is used under Windows as a DLL.

File: gpgme.info, Node: Manipulating Data Buffers, Prev: Destroying Data Buffers, Up: Exchanging Data

6.3 Manipulating Data Buffers

Data buffers contain data and meta-data. The following operations can
be used to manipulate both.

* Menu:

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

File: gpgme.info, Node: Data Buffer I/O Operations, Next: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.1 Data Buffer I/O Operations

-- Function: ssize_t gpgme_data_read
(gpgme_data_t DH, void *BUFFER,
size_t LENGTH)
The function gpgme_data_read reads up to LENGTH bytes from the
data object with the handle DH into the space starting at BUFFER.

If no error occurs, the actual amount read is returned. If the end
of the data object is reached, the function returns 0.

In all other cases, the function returns -1 and sets ERRNO.

-- Function: ssize_t gpgme_data_write (gpgme_data_t DH,
const void *BUFFER, size_t SIZE)
The function gpgme_data_write writes up to SIZE bytes starting
from BUFFER into the data object with the handle DH at the current
write position.

The function returns the number of bytes actually written, or -1 if
an error occurs. If an error occurs, ERRNO is set.

-- Function: off_t gpgme_data_seek (gpgme_data_t DH, off_t OFFSET,
int WHENCE)
The function gpgme_data_seek changes the current read/write position.

The WHENCE argument specifies how the OFFSET should be interpreted.
It must be one of the following symbolic constants:

SEEK_SET
Specifies that OFFSET is a count of characters from the beginning of the data object.

SEEK_CUR
Specifies that OFFSET is a count of characters from the current file position. This count may be positive or negative.

SEEK_END
Specifies that OFFSET is a count of characters from the end of the data object. A negative count specifies a position within the current extent of the data object; a positive count specifies a position past the current end. If you set the position past the current end, and actually write data, you will extend the data object with zeros up to that position.

If successful, the function returns the resulting file position, measured in bytes from the beginning of the data object. You can use this feature together with SEEK_CUR to read the current read/write position.

If the function fails, -1 is returned and ERRNO is set.

File: gpgme.info, Node: Data Buffer Meta-Data, Next: Data Buffer Convenience, Prev: Data Buffer I/O Operations, Up: Manipulating Data Buffers

6.3.2 Data Buffer Meta-Data

-- Function: char * gpgme_data_get_file_name (gpgme_data_t DH)
SINCE: 1.1.0

The function gpgme_data_get_file_name returns a pointer to a string containing the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting

or verifying the output data.

If no error occurs, the string containing the file name is returned. Otherwise, NULL will be returned.

-- Function: gpgme_error_t gpgme_data_set_file_name (gpgme_data_t DH, const char *FILE_NAME)

SINCE: 1.1.0

The function gpgme_data_set_file_name sets the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

The function returns the error code GPG_ERR_INV_VALUE if DH is not a valid pointer and GPG_ERR_ENOMEM if not enough memory is available.

-- Data type: enum gpgme_data_encoding_t

The gpgme_data_encoding_t type specifies the encoding of a gpgme_data_t object. For input data objects, the encoding is useful to give the backend a hint on the type of data. For output data objects, the encoding can specify the output data format on certain operations. Please note that not all backends support all encodings on all operations. The following data types are available:

GPGME_DATA_ENCODING_NONE

This specifies that the encoding is not known. This is the default for a new data object. The backend will try its best to detect the encoding automatically.

GPGME_DATA_ENCODING_BINARY

This specifies that the data is encoding in binary form; i.e. there is no special encoding.

GPGME_DATA_ENCODING_BASE64

This specifies that the data is encoded using the Base-64 encoding scheme as used by MIME and other protocols.

GPGME_DATA_ENCODING_ARMOR

This specifies that the data is encoded in an armored form as used by OpenPGP and PEM.

GPGME_DATA_ENCODING_MIME

SINCE: 1.7.0

This specifies that the data is encoded as a MIME part.

GPGME_DATA_ENCODING_URL
SINCE: 1.2.0

The data is a list of linefeed delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URL0
SINCE: 1.2.0

The data is a list of binary zero delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URLESC

SINCE: 1.2.0

The data is a list of linefeed delimited URLs with all control and space characters percent escaped. This mode is is not yet implemented.

-- Function: gpgme_data_encoding_t gpgme_data_get_encoding (gpgme_data_t DH)
The function gpgme_data_get_encoding returns the encoding of the data object with the handle DH. If DH is not a valid pointer (e.g. NULL) GPGME_DATA_ENCODING_NONE is returned.

-- Function: gpgme_error_t gpgme_data_set_encoding (gpgme_data_t DH, gpgme_data_encoding_t ENC)
The function gpgme_data_set_encoding changes the encoding of the data object with the handle DH to ENC.

-- Function: gpgme_error_t gpgme_data_set_flag (gpgme_data_t DH, const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the data object can be controlled with flags set by this function. The properties are identified by the following values for NAME:

size-hint
The value is a decimal number with the length gpgme shall assume for this data object. This is useful if the data is provided by callbacks or via file descriptors but the applications knows the total size of the data. If this is set

the OpenPGP engine may use this to decide on buffer allocation
strategies and to provide a total value for its progress
information.

This function returns 0 on success.

File: gpgme.info, Node: Data Buffer Convenience, Prev: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.3 Data Buffer Convenience Functions

-- Data type: enum gpgme_data_type_t
SINCE: 1.4.3

The gpgme_data_type_t type is used to return the detected type of
the content of a data buffer.

GPGME_DATA_TYPE_INVALID
This is returned by gpgme_data_identify if it was not possible to
identify the data. Reasons for this might be a non-seekable
stream
or a memory problem. The value is 0.
GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary
signature, a detached one or a cleartext signature.
GPGME_DATA_TYPE_PGP_ENCRYPTED
SINCE: 1.7.0

The data is an OpenPGP encrypted message.
GPGME_DATA_TYPE_PGP_SIGNATURE
SINCE: 1.7.0

The data is an OpenPGP detached signature.
GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be
encrypted data.
GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
GPGME_DATA_TYPE_X509_CERT

The data is a X.509 certificate

GPGME_DATA_TYPE_PKCS12

The data is a PKCS#12 message. This is commonly used to exchange private keys for X.509.

-- Function: gpgme_data_type_t gpgme_data_identify (gpgme_data_t DH)

SINCE: 1.4.3

The function gpgme_data_identify returns the type of the data with the handle DH. If it is not possible to perform the identification, the function returns zero (GPGME_DATA_TYPE_INVALID). Note that depending on how the data object has been created the identification may not be possible or the data object may change its internal state (file pointer moved). For file or memory based data object, the state should not change.

File: gpgme.info, Node: Contexts, Next: UI Server Protocol, Prev: Exchanging Data, Up: Top

7 Contexts

All cryptographic operations in GPGME are performed within a context, which contains the internal state of the operation as well as configuration parameters. By using several contexts you can run several cryptographic operations in parallel, with different configuration.

-- Data type: gpgme_ctx_t

The gpgme_ctx_t type is a handle for a GPGME context, which is used to hold the configuration, status and result of cryptographic operations.

* Menu:

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations
* Run Control:: Controlling how operations are run.

File: gpgme.info, Node: Creating Contexts, Next: Destroying Contexts, Up: Contexts

7.1 Creating Contexts

==========

-- Function: gpgme_error_t gpgme_new (gpgme_ctx_t *CTX)
   The function gpgme_new creates a new gpgme_ctx_t object and
   returns a handle
for it in CTX.

   The function returns the error code GPG_ERR_NO_ERROR if the
   context was successfully created, GPG_ERR_INV_VALUE if CTX is not
   a valid pointer, and GPG_ERR_ENOMEM if not enough memory is
   available. Also, it returns GPG_ERR_NOT_OPERATIONAL if
   gpgme_check_version was not called to initialize GPGME, and
   GPG_ERR_SELFTEST_FAILED if a selftest failed. Currently, the
   only selftest is for Windows MingW32 targets to see if
   -mms-bitfields was used (as required).

File: gpgme.info, Node: Destroying Contexts, Next: Result Management, Prev: Creating Contexts, Up: Contexts

7.2 Destroying Contexts
==========

-- Function: void gpgme_release (gpgme_ctx_t CTX)
   The function gpgme_release destroys the context with the handle
   CTX and releases all associated resources.

File: gpgme.info, Node: Result Management, Next: Context Attributes, Prev: Destroying Contexts, Up: Contexts

7.3 Result Management
==========

The
detailed result of an operation is returned in operation-specific
structures such as gpgme_decrypt_result_t. The corresponding
retrieval functions such as gpgme_op_decrypt_result provide static
access to the results after an operation completes. Those structures
shall be considered read-only and an application must not allocate such
a structure on its own. The following interfaces make it possible to
detach a result structure from its associated context and give it a
lifetime beyond that of the current operation or context.

-- Function: void gpgme_result_ref (void *RESULT)
   SINCE: 1.2.0

   The function gpgme_result_ref acquires an additional reference
   for the result RESULT, which may be of any type gpgme_*_result_t.
   As long as the user holds a reference, the result structure is

guaranteed to be valid and unmodified.

-- Function: void gpgme_result_unref (void *RESULT)
SINCE: 1.2.0

The function gpgme_result_unref releases a reference for
the
result RESULT. If this was the last reference, the result
structure will be destroyed and all resources associated to it will
be released.

Note that a context may hold its own references to result structures,
typically until the context is destroyed or the next operation is
started. In fact, these references are accessed through the
gpgme_op_*_result functions.

File: gpgme.info, Node: Context Attributes, Next: Key Management, Prev: Result Management, Up: Contexts

7.4 Context Attributes

* Menu:

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting ASCII armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing
the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
* Additional Logs:: Additional logs of a context.

File: gpgme.info, Node: Protocol Selection, Next: Crypto Engine, Up: Context Attributes

7.4.1 Protocol Selection

-- Function: gpgme_error_t gpgme_set_protocol (gpgme_ctx_t CTX,

gpgme_protocol_t PROTO)
The function gpgme_set_protocol sets the protocol used within the context CTX to PROTO. All crypto operations will be performed by the crypto engine configured for that protocol. *Note Protocols and Engines::.

Setting the protocol with gpgme_set_protocol does intentionally not check if the crypto engine for that protocol is available and installed correctly. *Note Engine Version Check::.

The function returns the error code GPG_ERR_NO_ERROR if the protocol could be set successfully, and GPG_ERR_INV_VALUE if PROTOCOL is not a valid protocol.

-- Function: gpgme_protocol_t gpgme_get_protocol (gpgme_ctx_t CTX)
The function gpgme_get_protocol retrieves the protocol currently use with the context CTX.

File: gpgme.info, Node: Crypto Engine, Next: Setting the Sender, Prev: Protocol Selection, Up: Context Attributes

7.4.2 Crypto Engine

The following functions can be used to set and retrieve the configuration of the crypto engines of a specific context. The default can also be retrieved without any particular context. *Note Engine Information::. The default can also be changed globally. *Note Engine Configuration::.

-- Function: gpgme_engine_info_t gpgme_ctx_get_engine_info (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_ctx_get_engine_info returns a linked list of engine info structures. Each info structure describes the configuration of one configured backend, as used by the context CTX.

The result is valid until the next invocation of gpgme_ctx_set_engine_info for this particular context.

This function can not fail.

-- Function: gpgme_error_t gpgme_ctx_set_engine_info (gpgme_ctx_t CTX,

gpgme_protocol_t PROTO, const char *FILE_NAME,
const char *HOME_DIR)

SINCE: 1.1.0

The function gpgme_ctx_set_engine_info changes the configuration of the crypto engine implementing the protocol PROTO for the context CTX.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this
crypto engine. If HOME_DIR is
NULL, the engines default will be used.

Currently this function must be used before starting the first crypto operation. It is unspecified if and when the changes will take effect if the function is called after starting the first operation on the context CTX.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

File: gpgme.info, Node: Setting the Sender, Next: ASCII Armor, Prev: Crypto Engine, Up: Context Attributes

7.4.3 How to tell the engine the sender.

Some engines can make use of the senders address, for example to figure out the best user id in certain trust models. For verification and signing of mails, it is thus suggested to let the engine know the sender ("From:") address. GPGME provides two functions to accomplish that. Note that the esoteric use of multiple "From:" addresses is not supported.

-- Function: gpgme_error_t
gpgme_set_sender (gpgme_ctx_t CTX,
int ADDRESS)

SINCE: 1.8.0

The function gpgme_set_sender specifies the sender address for use in sign and verify operations. ADDRESS is expected to be the addr-spec part of an address but my also be a complete mailbox address, in which case this function extracts the addr-spec from it. Using NULL for ADDRESS clears the sender address.

The function returns 0 on success or an error code on failure. The

most likely failure is that no valid addr-spec was found in ADDRESS.

-- Function: const char * gpgme_get_sender (gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_get_sender returns the current sender address from the context, or NULL if none was set. The returned value is valid as long as the CTX is valid and gpgme_set_sender has not been called again.

File: gpgme.info, Node: ASCII Armor, Next: Text Mode, Prev: Setting the Sender, Up: Context Attributes

7.4.4 ASCII Armor

-- Function: void gpgme_set_armor (gpgme_ctx_t CTX, int YES)
The function gpgme_set_armor specifies if the output should be ASCII armored. By default, output is not ASCII armored.

ASCII armored output is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_armor (gpgme_ctx_t CTX)
The function gpgme_get_armor returns 1 if the output is ASCII armored, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Text Mode, Next: Offline Mode, Prev: ASCII Armor, Up: Context Attributes

7.4.5 Text Mode

-- Function: void gpgme_set_textmode (gpgme_ctx_t CTX, int YES)
The function gpgme_set_textmode specifies if canonical text mode should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that the updated RFC 3156 mandates that the mail user agent does some preparations so that
text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored by all other engines.

Canonical text mode is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_textmode (gpgme_ctx_t CTX)
The function gpgme_get_textmode returns 1 if canonical text mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Offline Mode, Next: Pinentry Mode, Prev: Text Mode, Up: Context Attributes

7.4.6 Offline Mode

-- Function: void gpgme_set_offline (gpgme_ctx_t CTX, int YES)
SINCE: 1.6.0

The function gpgme_set_offline specifies if offline mode should be used. Offline mode is disabled if YES is zero, and enabled otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its backend engine. It may eventually be extended to be more stricter and for example
completely disable the use of Dirmngr for any
engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall be used to do additional validation that might require connecting external services (e.g. CRL / OCSP checks). Here the offline mode only affects the keylist mode GPGME_KEYLIST_MODE_VALIDATE.

For the OpenPGP protocol offline mode entirely disables the use of the Dirmngr and will thus guarantee that no network connections are done as part of an operation on this context. It has only an effect with GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

-- Function: int gpgme_get_offline (gpgme_ctx_t CTX)
SINCE: 1.6.0

The function gpgme_get_offline returns 1 if offline mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Pinentry Mode, Next: Included Certificates, Prev: Offline Mode, Up: Context Attributes

7.4.7
Pinentry Mode

-- Function: gpgme_error_t gpgme_set_pinentry_mode (gpgme_ctx_t CTX,
gpgme_pinentry_mode_t MODE)

SINCE: 1.4.0

The function gpgme_set_pinentry_mode specifies the pinentry mode
to be used.

For GnuPG >= 2.1 this option is required to be set to
GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback
mechanism in GPGME through gpgme_set_passphrase_cb.

-- Function: gpgme_pinentry_mode_t gpgme_get_pinentry_mode
(gpgme_ctx_t CTX)
SINCE: 1.4.0

The function gpgme_get_pinenty_mode returns the mode set for the
context.

-- Data type: enum gpgme_pinentry_mode_t
SINCE: 1.4.0

The gpgme_minentry_mode_t type specifies the set of possible
pinentry modes that are supported by GPGME if GnuPG >= 2.1 is used.
The following modes are supported:

GPGME_PINENTRY_MODE_DEFAULT
SINCE: 1.4.0

Use the default of the agent, which is ask.

GPGME_PINENTRY_MODE_ASK
SINCE: 1.4.0

Force the use of the Pinentry.

GPGME_PINENTRY_MODE_CANCEL
SINCE: 1.4.0

Emulate use of Pinentrys cancel button.

GPGME_PINENTRY_MODE_ERROR
SINCE: 1.4.0

Return a Pinentry error No Pinentry.

GPGME_PINENTRY_MODE_LOOPBACK
SINCE: 1.4.0

Redirect Pinentry queries to the caller. This enables the use of gpgme_set_passphrase_cb because pinentry queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires allow-loopback-pinentry to be enabled in the gpg-agent.conf or an agent started with that option.

File: gpgme.info, Node: Included Certificates, Next: Key Listing Mode, Prev: Pinentry Mode, Up: Context Attributes

7.4.8 Included Certificates

-- Function: void gpgme_set_include_certs (gpgme_ctx_t CTX, int NR_OF_CERTS)

The function gpgme_set_include_certs specifies how many certificates should be included in an S/MIME signed message. By default, only the senders certificate is included. The possible values of NR_OF_CERTS are:

GPGME_INCLUDE_CERTS_DEFAULT
SINCE: 1.0.3

Fall back to the default of the crypto backend. This is the default for GPGME.

-2
Include all certificates except the root certificate.

-1
Include all certificates.

0
Include no certificates.

1
Include the senders certificate only.

n
Include the first n certificates of the certificates path, starting from the senders certificate. The number n must be positive.

Values of NR_OF_CERTS smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by all other engines.

-- Function: int gpgme_get_include_certs (gpgme_ctx_t CTX)
The function gpgme_get_include_certs returns the number of certificates to include into an S/MIME signed message.

File: gpgme.info, Node: Key Listing Mode, Next: Passphrase Callback, Prev: Included Certificates, Up: Context Attributes

7.4.9 Key Listing Mode

-- Function: gpgme_error_t gpgme_set_keylist_mode (gpgme_ctx_t CTX, gpgme_keylist_mode_t MODE)
The function gpgme_set_keylist_mode changes the default behaviour of the key listing functions. The value in MODE is a bitwise-or combination of one or multiple of the following bit values:

GPGME_KEYLIST_MODE_LOCAL
The GPGME_KEYLIST_MODE_LOCAL symbol specifies that the local keyring should be searched for keys in the keylisting operation. This is the default.

Using only this option results in a --list-keys.

GPGME_KEYLIST_MODE_EXTERN
The GPGME_KEYLIST_MODE_EXTERN symbol specifies that an external source should be searched for keys in the keylisting operation. The type of external source is dependent on the crypto engine used and whether it is combined with GPGME_KEYLIST_MODE_LOCAL. For example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a --search-keys for GPGME_PROTOCOL_OpenPGP and something similar to --list-external-keys for GPGME_PROTOCOL_CMS.

GPGME_KEYLIST_MODE_LOCATE
This is a shortcut for the combination of GPGME_KEYLIST_MODE_LOCAL and GPGME_KEYLIST_MODE_EXTERN, which results in a --locate-keys for GPGME_PROTOCOL_OpenPGP.

GPGME_KEYLIST_MODE_SIGS
The GPGME_KEYLIST_MODE_SIGS symbol specifies that the key

signatures should be included in the listed keys.

GPGME_KEYLIST_MODE_SIG_NOTATIONS
SINCE: 1.1.1

The GPGME_KEYLIST_MODE_SIG_NOTATIONS symbol specifies that
the signature notations on key signatures
should be included
in the listed keys. This only works if
GPGME_KEYLIST_MODE_SIGS is also enabled.

GPGME_KEYLIST_MODE_WITH_TOFU
SINCE: 1.7.0

The GPGME_KEYLIST_MODE_WITH_TOFU symbol specifies that
information pertaining to the TOFU trust model should be
included in the listed keys.

GPGME_KEYLIST_MODE_WITH_KEYGRIP
SINCE: 1.14.0

The GPGME_KEYLIST_MODE_WITH_KEYRIP symbol specifies that the
keygrip is always included in the listing. The default
depends on the version of the backend and the used protocol.

GPGME_KEYLIST_MODE_WITH_SECRET
SINCE: 1.5.1

The GPGME_KEYLIST_MODE_WITH_SECRET returns information about
the presence of a corresponding secret key in a public key
listing. A public key listing with this mode is slower than a
standard listing but can be used instead of a second run to
list the secret keys.
This is only supported for GnuPG
versions >= 2.1. Note that using this option also makes sure
that the keygrip is available in the output.

GPGME_KEYLIST_MODE_EPHEMERAL
SINCE: 1.2.0

The GPGME_KEYLIST_MODE_EPHEMERAL symbol specifies that keys
flagged as ephemeral are included in the listing.

GPGME_KEYLIST_MODE_VALIDATE
SINCE: 0.4.5

The GPGME_KEYLIST_MODE_VALIDATE symbol specifies that the
backend should do key or certificate validation and not just

get the validity information from an internal cache. This might be an expensive operation and is in general not useful. Currently only implemented for the S/MIME backend and ignored for other backends.

At least one of GPGME_KEYLIST_MODE_LOCAL and GPGME_KEYLIST_MODE_EXTERN must be specified. For future binary compatibility, you should get the current mode with gpgme_get_keylist_mode and modify it by setting or clearing the appropriate bits, and then using that calculated value in the gpgme_set_keylisting_mode operation. This will leave all other bits in the mode value intact (in particular those that are not used in the current version of the library).

The function returns the error code GPG_ERR_NO_ERROR if the mode could be set correctly, and GPG_ERR_INV_VALUE if CTX is not a valid pointer or MODE is not a valid mode.

-- Function: gpgme_keylist_mode_t gpgme_get_keylist_mode (gpgme_ctx_t CTX)

The function gpgme_get_keylist_mode returns the current key listing mode of the context CTX. This value can then be modified and used in a subsequent gpgme_set_keylist_mode operation to only affect the desired bits (and leave all others intact).

The function returns 0 if CTX is not a valid pointer, and the current mode otherwise. Note that 0 is not a valid mode value.

File: gpgme.info, Node: Passphrase Callback, Next: Progress Meter Callback, Prev: Key Listing Mode, Up: Context Attributes

7.4.10 Passphrase Callback

-- Data type: gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD, int FD)

The gpgme_passphrase_cb_t type is the type of functions usable as passphrase callback function.

The argument UID_HINT might contain a string that gives an indication for which user ID the passphrase is required. If this is not available, or not applicable (in the case of symmetric encryption, for example), UID_HINT will be NULL.

The argument PASSPHRASE_INFO, if not NULL, will give further

information about the context in which the passphrase is required.
This information is engine and operation specific.

If this is the repeated attempt to get the passphrase, because
previous attempts failed, then PREV_WAS_BAD is 1,
otherwise it will
be 0.

The user must write the passphrase, followed by a newline
character, to the file descriptor FD. The function
gpgme_io_writen should be used for the write operation. Note
that if the user returns 0 to indicate success, the user must at
least write a newline character before returning from the callback.

If an error occurs, return the corresponding gpgme_error_t value.
You can use the error code GPG_ERR_CANCELED to abort the
operation. Otherwise, return 0.

Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not
with the 2.0.x series. See gpgme_set_pinentry_mode for more
details on 2.1.x usage.

-- Function: void gpgme_set_passphrase_cb (gpgme_ctx_t CTX,
gpgme_passphrase_cb_t PASSFUNC, void *HOOK_VALUE)
The function gpgme_set_passphrase_cb sets the function that is
used when a passphrase needs to be provided by the user to
PASSFUNC. The function PASSFUNC needs to
implemented by the user,
and whenever it is called, it is called with its first argument
being HOOK_VALUE. By default, no passphrase callback function is
set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase
from a trusted agent (a daemon process), rather than having each
user to implement their own passphrase query. Some engines do not
even support an external passphrase callback at all, in this case
the error code GPG_ERR_NOT_SUPPORTED is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to
GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback.
See gpgme_set_pinentry_mode.

The user can disable the use of a passphrase callback function by
calling gpgme_set_passphrase_cb with PASSFUNC being NULL.

-- Function: void gpgme_get_passphrase_cb (gpgme_ctx_t CTX,
gpgme_passphrase_cb_t *PASSFUNC, void **HOOK_VALUE)

The function gpgme_get_passphrase_cb returns the function that is used when a passphrase needs to be provided by the user in *PASSFUNC, and the first argument for this function in *HOOK_VALUE. If no passphrase callback is set, or CTX is not a valid pointer, NULL is returned in both variables.

PASSFUNC or HOOK_VALUE can be NULL. In this case, the corresponding value will not be returned.

File: gpgme.info, Node: Progress Meter Callback, Next: Status Message Callback, Prev: Passphrase Callback, Up: Context Attributes

7.4.11 Progress Meter Callback

-- Data type: void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT, int TYPE, int CURRENT, int TOTAL)
The gpgme_progress_cb_t type is the type of functions usable as progress callback function.

The arguments are specific to the crypto engine. More information about the progress information returned from the GnuPG engine can be found in the GnuPG source code in the file doc/DETAILS in the section PROGRESS.

-- Function: void gpgme_set_progress_cb (gpgme_ctx_t CTX, gpgme_progress_cb_t PROGFUNC, void *HOOK_VALUE)
The function gpgme_set_progress_cb sets the function that is used when progress information about a cryptographic operation is available. The function PROGFUNC needs to implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no progress callback function is set.

Setting a callback function allows an interactive program to display progress information about a long operation to the user.

The user can disable the use of a progress callback function by calling gpgme_set_progress_cb with PROGFUNC being NULL.

-- Function: void gpgme_get_progress_cb (gpgme_ctx_t CTX, gpgme_progress_cb_t *PROGFUNC, void **HOOK_VALUE)
The function gpgme_get_progress_cb returns the function that is used to inform the user about the progress made in *PROGFUNC, and the first argument for this function in *HOOK_VALUE. If no

progress callback is set, or CTX is not a valid pointer, NULL is returned in both variables.

PROGFUNC or HOOK_VALUE can be NULL. In this case, the corresponding value will not be returned.

File: gpgme.info, Node: Status Message Callback, Next: Context Flags, Prev: Progress Meter Callback, Up: Context Attributes

7.4.12 Status Message Callback

-- Data type: gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS)

The gpgme_status_cb_t type is the type of function usable as a status message callback function.

The argument KEYWORD is the name of the status message while the ARGS argument contains any arguments for the status message.

If an error occurs, return the corresponding gpgme_error_t value. Otherwise, return 0.

-- Function: void gpgme_set_status_cb (gpgme_ctx_t CTX, gpgme_status_cb_t STATUSFUNC, void *HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_set_status_cb sets the function that is used when a status message is received from gpg to STATUSFUNC. The function STATUSFUNC needs to be implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no status message callback function is set.

The user can disable the use of a status message callback function by calling gpgme_set_status_cb with STATUSFUNC being NULL.

-- Function: void gpgme_get_status_cb (gpgme_ctx_t CTX, gpgme_status_cb_t *STATUSFUNC, void **HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_get_status_cb returns the function that is used to process status messages from gpg in *STATUSFUNC, and the first argument for this function in *HOOK_VALUE. If no status message callback

is set, or CTX is not a valid pointer, NULL is
returned in both variables.

File: gpgme.info, Node: Context Flags, Next: Locale, Prev: Status Message Callback, Up: Context Attributes

7.4.13 Context Flags

-- Function: gpgme_error_t gpgme_set_ctx_flag (gpgme_ctx_t CTX,
const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the context can be controlled with flags
set by this function. The properties are identified by the
following values for NAME:

"redraw"
This flag is normally not changed by the caller because GPGME
sets and clears it automatically: The flag is cleared before
an operation and set if an operation noticed that the engine
has launched a Pinentry. A Curses based application may use
this information to redraw the screen; for example:

```
err = gpgme_op_keylist_start (ctx, "foo@example.org", 0);
while
(!err)
  {
    err = gpgme_op_keylist_next (ctx, &key);
    if (err)
      break;
    show_key (key);
    gpgme_key_release (key);
  }
if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
  redraw_screen ();
gpgme_release (ctx);
```

"full-status"
Using a VALUE of "1" the status callback set by
gpgme_set_status_cb returns all status lines with the
exception of PROGRESS lines. With the default of "0" the
status callback is only called in certain situations.

"raw-description"
Setting the VALUE to "1" returns human readable strings in a
raw format. For example the non breaking space characters

("~") will not be removed from the description field of the gpgme_tofu_info_t object.

"export-session-key"

Using a VALUE of "1" specifies that the context should try to export the symmetric session key when decrypting data. By default, or when using an empty string or "0" for VALUE, session keys are not exported.

"override-session-key"

The string given in VALUE is passed to the GnuPG engine to override the session key for decryption. The format of that session key is specific to GnuPG and can be retrieved during a decrypt operation when the context flag "export-session-key" is enabled. Please be aware that using this feature with GnuPG < 2.1.16 will leak the session key on many platforms via ps(1).

"auto-key-retrieve"

Setting the VALUE to "1" asks the backend to automatically retrieve a key for signature verification if possible. Note that this option makes a "web bug" like behavior possible. Keyserver or Web Key Directory operators can see which keys you request, so by sending you a message signed by a brand new key (which you naturally will not have on your local keyring), the operator can tell both your IP address and the time when you verified the signature.

"auto-key-import"

Setting the VALUE to "1" forces the GPG backend to automatically import a missing key for signature verification from the signature.

"include-key-block"

Setting the VALUE to "1" forces the GPG backend to embed the signing key as well as an encryption subkey into the the signature.

"request-origin"

The string given in VALUE is passed to the GnuPG engines to request restrictions based on the origin of the request. Valid values are documented in the GnuPG manual and the gpg man page under the option --request-origin. Requires at least GnuPG 2.2.6 to have an effect.

"no-symkey-cache"

For OpenPGP disable the passphrase cache used for symmetrical en- and decryption. This cache is based on the message specific salt value. Requires at least GnuPG 2.2.7 to have an effect.

"ignore-mdc-error"
This flag passes the option --ignore-mdc-error to gpg. This can be used to force decryption of a message which failed due to a missing integrity check. This flag must be used with great caution and only if it is a known non-corrupted old message and the decryption result of the former try had the decryption result flag legacy_cipher_nomdc set. For failsafe reasons this flag is reset after each operation.

"auto-key-locate"
The string given in VALUE is passed to gpg. This can be used to change the behavior of a GPGME_KEYLIST_MODE_LOCATE keylisting. Valid values are documented in the GnuPG manual and the gpg
man page under the option --auto-key-locate.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through auto-key-locate are automatically imported in the keyring.

trust-model
SINCE: 1.11.2

Change the trust-model for all GnuPG engine operations. An empty string sets the trust-model back to the users default. If the trust-model is not supported by GnuPG the behavior is undefined and will likely cause all operations to fail. Example: "tofu+pgp".

This options should be used carefully with a strict version requirement. In some versions of GnuPG setting the trust-model changes the default trust-model for future operations. A change in the trust-model also can have unintended side effects, like rebuilding the trust-db.

"extended-edit"
This flag passes the option --expert to gpg key edit. This can be used to get additional
callbacks in gpgme_op_edit.

This function returns 0 on success.

-- Function: const char * gpgme_get_ctx_flag (gpgme_ctx_t CTX,

const char *NAME)

SINCE: 1.8.0

The value of flags settable by gpgme_set_ctx_flag can be retrieved by this function. If NAME is unknown the function returns NULL. For boolean flags an empty string is returned for False and the string "1" is returned for True; either atoi(3) or a test for an empty string can be used to get the boolean value.

File: gpgme.info, Node: Locale, Next: Additional Logs, Prev: Context Flags, Up: Context Attributes

7.4.14 Locale

A locale setting can be associated with a context. This locale is passed to the crypto engine, and used for applications like the PIN entry, which is displayed to the user when entering a passphrase is required.

The default locale is used to initialize the locale setting of all contexts created afterwards.

-- Function: gpgme_error_t
gpgme_set_locale (gpgme_ctx_t CTX,
int CATEGORY, const char *VALUE)

SINCE: 0.4.3

The function gpgme_set_locale sets the locale of the context CTX, or the default locale if CTX is a null pointer.

The locale settings that should be changed are specified by CATEGORY. Supported categories are LC_CTYPE, LC_MESSAGES, and LC_ALL, which is a wildcard you can use if you want to change all the categories at once.

The value to be used for the locale setting is VALUE, which will be copied to GPGMEs internal data structures. VALUE can be a null pointer, which disables setting the locale, and will make PIN entry and other applications use their default setting, which is usually not what you want.

Note that the settings are only used if the application runs on a text terminal, and that the settings should fit the configuration of the output terminal. Normally, it is sufficient to initialize the default

value at startup.

The function returns an error if not enough memory is available.

File: gpgme.info, Node: Additional Logs, Prev: Locale, Up: Context Attributes

7.4.15 Additional Logs

Additional logs can be associated with a context. These logs are engine specific and can be be obtained with gpgme_op_getauditlog.

-- Function: gpgme_error_t gpgme_op_getauditlog (gpgme_ctx_t CTX, gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

The function gpgme_op_getauditlog is used to obtain additional logs as specified by FLAGS into the OUTPUT data. If

The function returns the error code GPG_ERR_NO_ERROR if a log could be queried from the engine, and GPG_ERR_NOT_IMPLEMENTED if the log specified in FLAGS is not available for this engine. If no log is available GPG_ERR_NO_DATA is returned.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_AUDITLOG_DIAG
SINCE: 1.11.2

Obtain diagnostic output which would be written to stderr in interactive use of the engine. This can be used to provide additional diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will be empty and GPG_ERR_NO_DATA will be returned.

Implemented for: GPGME_PROTOCOL_OpenPGP

GPGME_AUDITLOG_DEFAULT
SINCE: 1.11.2

This flag has the value 0 for compatibility reasons. Obtains additional information from the engine by issuing the GETAUDITLOG command. For GPGME_PROTOCOL_CMS this provides additional information about the X509 certificate chain.

Implemented for: GPGME_PROTOCOL_CMS

GPGME_AUDITLOG_HTML
SINCE: 1.1.1

Same as GPGME_AUDITLOG_DEFAULT but in HTML.

Implemented for: GPGME_PROTOCOL_CMS

-- Function: gpgme_error_t
gpgme_op_getauditlog_start (gpgme_ctx_t CTX,
gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

This is the asynchronous variant of gpgme_op_getauditlog.

File: gpgme.info, Node: Key Management, Next: Crypto Operations, Prev: Context Attributes, Up: Contexts

7.5 Key Management

Some of the cryptographic operations require that recipients or signers are specified. This is always done by specifying the respective keys that should be used for the operation. The following section describes how such keys can be selected and manipulated.

* Menu:

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

File: gpgme.info, Node: Key objects, Next: Listing Keys, Up: Key Management

7.5.1 Key objects

The keys are represented in GPGME by structures which may only be read
by the application but never be allocated or changed. They are valid as
long as the key object itself is valid.

-- Data type: gpgme_key_t

   The gpgme_key_t type is a pointer to a key object. It has the
   following members:

   gpgme_keylist_mode_t keylist_mode
      SINCE: 0.9.0

      The keylist mode that was active when the key was retrieved.

   unsigned int revoked : 1
       This is true if the key is revoked.

   unsigned int expired : 1
      This is true if the key is expired.

   unsigned int disabled : 1
      This is true if the key is disabled.

   unsigned int invalid : 1
      This is true if the key is invalid. This might have several
      reasons, for a example for the S/MIME backend, it will be set
      during key listings if the key could not be validated due to
      missing certificates or unmatched policies.

   unsigned int can_encrypt : 1
      This is true if the key (ie one of its subkeys) can be used
      for encryption.

   unsigned int can_sign : 1
      This is true if the key (ie one of its subkeys) can be used to
      create data signatures.

   unsigned int can_certify : 1
      This is true if the key (ie one of its subkeys) can be used to
      create key certificates.

   unsigned int can_authenticate : 1
      SINCE: 0.4.5

      This is true

if the key (ie one of its subkeys) can be used
for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the key can be used for qualified signatures
according to local government regulations.

unsigned int secret : 1
This is true if the key is a secret key. Note, that this will
always be true even if the corresponding subkey flag may be
false (offline/stub keys). This is only set if a listing of
secret keys has been requested or if
GPGME_KEYLIST_MODE_WITH_SECRET is active.

unsigned int origin : 5
SINCE: 1.8.0

Reserved for the origin of this key.

gpgme_protocol_t protocol
This is the protocol supported by this key.

char *issuer_serial
If protocol is GPGME_PROTOCOL_CMS, then this is the issuer
serial.

char *issuer_name
If protocol is GPGME_PROTOCOL_CMS, then this is the issuer
name.

char *chain_id
If protocol is GPGME_PROTOCOL_CMS, then this is the chain
ID, which can be used to built the certificate chain.

gpgme_validity_t owner_trust
If protocol is GPGME_PROTOCOL_OpenPGP, then this is the
owner trust.

gpgme_subkey_t subkeys
This is a linked list with the subkeys of the key. The first
subkey in the list is the primary key and usually available.

gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first
user ID in the list is the main (or primary) user ID.

char *fpr
SINCE: 1.7.0

This field gives the fingerprint of the primary key. Note that this is a copy of the fingerprint of the first subkey. For an incomplete key (for example from a verification result) a subkey may be missing but this field may be set nevertheless.

unsigned long last_update

SINCE: 1.8.0

Reserved for the time of the last update of this key.

-- Data type: gpgme_subkey_t
SINCE: 1.5.0

The gpgme_subkey_t type is a pointer to a subkey structure. Subkeys are one component of a gpgme_key_t object. In fact, subkeys are those parts that contains the real information about the individual cryptographic keys that belong to the same key object. One gpgme_key_t can contain several subkeys. The first subkey in the linked list is also called the primary key.

The subkey structure has the following members:

gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the subkey is revoked.

unsigned int expired : 1
This is true if the subkey is expired.

unsigned int disabled : 1
This is true if the subkey is disabled.

unsigned int
invalid : 1
This is true if the subkey is invalid.

unsigned int can_encrypt : 1
This is true if the subkey can be used for encryption.

unsigned int can_sign : 1

This is true if the subkey can be used to create data signatures.

unsigned int can_certify : 1
This is true if the subkey can be used to create key certificates.

unsigned int can_authenticate : 1
SINCE: 0.4.5

This is true if the subkey can be used for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the subkey can be used for qualified signatures according to local government regulations.

unsigned int is_de_vs : 1
SINCE: 1.8.0

This is true if the subkey complies with the rules for classified information in Germany at the restricted level (VS-NfD). This are currently RSA keys of at least 2048 bits or ECDH/ECDSA
keys using a Brainpool curve.

unsigned int secret : 1
This is true if the subkey is a secret key. Note that it will be false if the key is actually a stub key; i.e. a secret key operation is currently not possible (offline-key). This is only set if a listing of secret keys has been requested or if GPGME_KEYLIST_MODE_WITH_SECRET is active.

gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

unsigned int length
This is the length of the subkey (in bits).

char *keyid
This is the key ID of the subkey in hexadecimal digits.

char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if available.

char *keygrip

SINCE: 1.7.0

The keygrip of the subkey in hex digit form or NULL if not available.

long int timestamp
This is the creation timestamp of the subkey. This is -1 if the timestamp is invalid, and 0 if it is not available.

long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey does not expire.

unsigned int is_cardkey : 1
SINCE: 1.2.0

True if the secret key is stored on a smart card.

char *card_number
SINCE: 1.2.0

The serial number of a smart card holding this key or NULL.

char *curve
For ECC algorithms the name of the curve.

-- Data type: gpgme_user_id_t

A user ID is a component of a gpgme_key_t object. One key can have many user IDs. The first one in the list is the main (or primary) user ID.

The user ID structure has the following members.

gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the user ID is revoked.

unsigned int invalid : 1
This is true if the user ID is invalid.

gpgme_validity_t validity
This specifies the validity of the user ID.

char *uid
This is the user ID string.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

char *address;
The mail address (addr-spec from RFC-5322) of the user ID string. This is general the same as the email part of this structure but might be slightly different. If no mail address is available NULL is stored.

gpgme_tofu_info_t tofu
SINCE: 1.7.0

If not NULL information from the TOFU database pertaining to this user id.

gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

unsigned int origin :
5
SINCE: 1.8.0

Reserved for the origin of this user ID.

unsigned long last_update
SINCE: 1.8.0

Reserved for the time of the last update of this user ID.

char *uidhash;
A string used by gpg to identify a user ID. This string can be used at certain prompts of gpgme_op_edit to select a user ID. Users must be prepared to see a NULL value here. The format of the value is not specified and may depend on the GPGME or GnuPG version.

-- Data type: gpgme_tofu_info_t

SINCE: 1.7.0

The gpgme_tofu_info_t type is a pointer to a tofu info structure. Tofu info structures are one component of a gpgme_user_id_t object, and provide information from the TOFU database pertaining to the user ID.

The tofu info structure has the following members:

gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked list, or NULL if this is the last element.

unsigned int validity : 3
This is the TOFU validity. It can have the following values:

0
The value 0 indicates a conflict.

1
The value 1 indicates a key without history.

2
The value 2 indicates a key with too little history.

3
The value 3 indicates a key with enough history for basic trust.

4
The value 4 indicates a key with a lot of history.

unsigned int policy : 4
This is the TOFU policy, see gpgme_tofu_policy_t.

unsigned short signcount
This is the number of signatures seen for this binding (or USHRT_MAX if there are more than that).

unsigned short encrcount
This is the number of encryptions done with this binding (or USHRT_MAX if there are more than that).

unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with this binding.

unsigned long signlast
Number of seconds since Epoch when the last signature was seen with this binding.

unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with this binding.

unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with this binding.

char *description
A human-readable string summarizing the TOFU data (or NULL).

-- Data type: gpgme_key_sig_t

The gpgme_key_sig_t type is a pointer to a key signature structure. Key signatures are one component of a gpgme_key_t object, and validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled, because it can be expensive to retrieve all signatures of

a key.

The signature notations on a key signature are only available if the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIG_NOTATIONS mode enabled, because it can be expensive to retrieve all signature notations.

The key signature structure has the following members:

gpgme_key_sig_t next
This is a pointer to the next key signature structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the key signature is a revocation signature.

unsigned int expired : 1
This is true if the key signature is expired.

unsigned int invalid : 1
This is true if the key signature is invalid.

unsigned int exportable : 1
This is true if the key signature is exportable.

gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm used to create the signature.

char *keyid
This is the
key ID of the key (in hexadecimal digits) used to
create the signature.

long int timestamp
This is the creation timestamp of the key signature. This is
-1 if the timestamp is invalid, and 0 if it is not available.

long int expires
This is the expiration timestamp of the key signature, or 0 if
the key signature does not expire.

gpgme_error_t status
This is the status of the signature and has the same meaning
as the member of the same name in a gpgme_signature_t
object.

unsigned int sig_class
This specifies the signature class of the key signature. The
meaning is specific to the crypto engine.

char *uid
This is the main user ID of the key used to create the
signature.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

File: gpgme.info, Node: Listing Keys, Next: Information About Keys, Prev: Key objects, Up: Key Management

7.5.2 Listing Keys

-- Function: gpgme_error_t gpgme_op_keylist_start (gpgme_ctx_t CTX,
const char *PATTERN, int SECRET_ONLY)

The function gpgme_op_keylist_start initiates a key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys in the list.

If PATTERN is NULL, all available keys are returned. Otherwise, PATTERN contains an engine specific expression that is used to limit the list to all keys matching the pattern. Note that the total length of the pattern is restricted to an engine-specific maximum (a couple of hundred characters are usually accepted). The pattern should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_ext_start (gpgme_ctx_t CTX,
const char *PATTERN[], int SECRET_ONLY, int RESERVED)

The function gpgme_op_keylist_ext_start initiates an extended key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the

keys in the list.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are used to limit the list to all keys matching at least one of the patterns verbatim. Note that the total length of all patterns is restricted to an engine-specific maximum (the exact limit also depends on the number of patterns and amount of quoting required, but a couple of hundred characters are usually accepted). Patterns should be used to restrict the search to a certain common name or

user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The value of RESERVED must be 0.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_from_data_start (gpgme_ctx_t CTX, gpgme_data_t DATA, int RESERVED)

SINCE: 1.8.0

The function gpgme_op_keylist_from_data_start initiates a key listing operation inside the context CTX. In contrast to the other key listing operation the keys are read from the supplied DATA and not from the local key database. The keys are also not imported into the local key database. The function sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys from DATA.

The value of RESERVED must be 0.

This function requires at least GnuPG version 2.1.14 and currently works only with OpenPGP keys.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation. While the context is busy DATA may not be released.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_next (gpgme_ctx_t CTX, gpgme_key_t *R_KEY)

The function gpgme_op_keylist_next returns the next key in the list created by a previous gpgme_op_keylist_start operation in the context CTX. The key will have one reference for the user. *Note Manipulating Keys::.

This is the only way to get at gpgme_key_t objects in GPGME.

If the last key in the list has already been returned, gpgme_op_keylist_next returns GPG_ERR_EOF.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer, and GPG_ERR_ENOMEM if there is not enough memory
for the operation.

-- Function: gpgme_error_t gpgme_op_keylist_end (gpgme_ctx_t CTX)

The function gpgme_op_keylist_end ends a pending key list operation in the context CTX.

After the operation completed successfully, the result of the key listing operation can be retrieved with gpgme_op_keylist_result.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

The following example illustrates how all keys containing a certain string (g10code) can be listed with their key ID and the name and email address of the main user ID:

```
gpgme_ctx_t ctx;
gpgme_key_t key;
gpgme_error_t err = gpgme_new (&ctx);

if (!err)
  {
    err = gpgme_op_keylist_start (ctx, "g10code", 0);
    while (!err)
      {
        err = gpgme_op_keylist_next (ctx, &key);
        if (err)

break;
        printf ("%s:", key->subkeys->keyid);
        if (key->uids && key->uids->name)
          printf (" %s", key->uids->name);
        if (key->uids && key->uids->email)
```

```
            printf (" <%s>", key->uids->email);
          putchar ('\n');
          gpgme_key_release (key);
        }
      gpgme_release (ctx);
    }
  if (gpg_err_code (err) != GPG_ERR_EOF)
    {
      fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
      exit (1);
    }
```

-- Data type: gpgme_keylist_result_t
   This is a pointer to a structure used to store the result of a gpgme_op_keylist_* operation. After successfully ending a key listing operation, you can retrieve the pointer to the result with gpgme_op_keylist_result. The structure contains the following member:

   unsigned int truncated : 1
      This is true if the crypto backend had to truncate the result, and less than the desired keys
could be listed.

-- Function: gpgme_keylist_result_t gpgme_op_keylist_result (gpgme_ctx_t CTX)
   The function gpgme_op_keylist_result returns a gpgme_keylist_result_t pointer to a structure holding the result of a gpgme_op_keylist_* operation. The pointer is only valid if the last operation on the context was a key listing operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

In a simple program, for which a blocking operation is acceptable, the following function can be used to retrieve a single key.

-- Function: gpgme_error_t gpgme_get_key (gpgme_ctx_t CTX, const char *FPR, gpgme_key_t *R_KEY, int SECRET)
   The function gpgme_get_key gets the key with the fingerprint (or key ID) FPR from the crypto backend and return it in R_KEY. If SECRET is true, get the secret key. The currently active keylist mode is used to retrieve
the key. The key will have one reference
   for the user.

   If the key is not found in the keyring, gpgme_get_key returns the error code GPG_ERR_EOF and *R_KEY will be set to NULL.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer or FPR is not a fingerprint or key ID, GPG_ERR_AMBIGUOUS_NAME if the key ID was not a unique specifier for a key, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

File: gpgme.info, Node: Information About Keys, Next: Manipulating Keys, Prev: Listing Keys, Up: Key Management

7.5.3 Information About Keys

Please see the beginning of this section for more information about gpgme_key_t objects.

-- Data type: gpgme_validity_t
The gpgme_validity_t type is used to specify the validity of a user ID in a key. The following validities are defined:

GPGME_VALIDITY_UNKNOWN
The user ID is of unknown validity. The string representation of this validity is ?.

GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this validity is q.

GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this validity is n.

GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this validity is m.

GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this validity is f.

GPGME_VALIDITY_ULTIMATE
The user ID is ultimately valid. The string representation of this validity is u.

File: gpgme.info, Node: Manipulating Keys, Next: Generating Keys, Prev: Information About Keys, Up: Key Management

7.5.4 Manipulating Keys

-- Function: void gpgme_key_ref (gpgme_key_t KEY)
   The function gpgme_key_ref
acquires an additional reference for
   the key KEY.

-- Function: void gpgme_key_unref (gpgme_key_t KEY)
   The function gpgme_key_unref releases a reference for the key
   KEY. If this was the last reference, the key will be destroyed and
   all resources associated to it will be released.

-- Function: gpgme_error_t gpgme_op_setexpire (gpgme_ctx_t CTX,
        gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS,
        unsigned int RESERVED);

   SINCE: 1.14.1

   The function gpgme_op_setexpire sets the expiration time of the
   key KEY or of the specified subkeys. This function requires at
   least version 2.1.22 of GnuPG.

   KEY specifies the key to operate on.

   EXPIRES specifies the expiration time in seconds from now. To be
   similar to other usages where expiration times are provided in
   unsigned long this is similar to the key creation date and so it is
   in seconds from NOW.

   The common case is to use 0 to not set an
expiration time. Note
   that this parameter takes an unsigned long value and not a time_t
   to avoid problems on systems which use a signed 32 bit time_t.
   Note further that the OpenPGP protocol uses 32 bit values for
   timestamps and thus can only encode dates up to the year 2106.

   SUBFPRS selects the subkey(s) for which the expiration time should
   be set. If SUBFPRS is set to NULL, then the expiration time of
   the primary key is set. If SUBFPRS is an asterisk (*), then the
   expiration times of all non-revoked and not yet expired subkeys are
   set. To select more than one subkey put all subkey fingerprints
   into one string separated by linefeeds characters (\n).

   RESERVED is reserved for later use and must be 0.

-- Function: gpgme_error_t gpgme_op_setexpire_start (gpgme_ctx_t CTX,

gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS,
unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start
initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

File: gpgme.info, Node: Generating Keys, Next: Signing Keys, Prev: Manipulating Keys, Up: Key Management

7.5.5 Generating Keys

GPGME provides a set of functions to create public key pairs. Most of
these functions require the use of GnuPG 2.1 and later; for older GnuPG
versions the gpgme_op_genkey function can be used. Existing code
which wants to update to the new functions or new code which shall
supports older
GnuPG versions may try the new functions first and
provide a fallback to the old function if the error code
GPG_ERR_NOT_SUPPORTED is received.

-- Function: gpgme_error_t gpgme_op_createkey (gpgme_ctx_t CTX,
const char *USERID, const char *ALGO, unsigned long RESERVED,
unsigned long EXPIRES, gpgme_key_t EXTRAKEY,
unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey generates a new key for the
procotol active in the context CTX. As of now this function does
only work for OpenPGP and requires at least version 2.1.13 of
GnuPG.

USERID is commonly the mail address associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested. The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

ALGO specifies the algorithm for the new key (actually a keypair of public and private key). For a list of supported algorithms, see the GnuPG manual. If ALGO is NULL or the string "default", the key is generated using the default algorithm of the engine. If the string "future-default" is used the engine may use an algorithm which is planned to be the default in a future release of the engine; however existing implementation of the protocol may not be able to already handle such future algorithms. For the OpenPGP protocol, the specification of a default algorithm, without requesting a non-default usage via FLAGS, triggers the creation of a primary key plus a secondary key (subkey).

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you supply 0, a reasonable expiration time is chosen. Use the flag GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

EXTRAKEY is currently not used and must be set to NULL. A future version of GPGME may use this parameter to create X.509 keys.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_CREATE_SIGN
GPGME_CREATE_ENCR
GPGME_CREATE_CERT
GPGME_CREATE_AUTH
SINCE: 1.7.0

Do not create the key with the default capabilities (key usage) of the requested algorithm but use those explicitly given by these flags: signing, encryption, certification, or authentication. The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been

selected only one key is created in the case of the OpenPGP protocol.

GPGME_CREATE_NOPASSWD
SINCE: 1.7.0

Request generation of the key without password protection.

GPGME_CREATE_SELFSIGNED
SINCE: 1.7.0

For an X.509 key do not create a CSR but a self-signed certificate. This has not yet been implemented.

GPGME_CREATE_NOSTORE
SINCE: 1.7.0

Do not store the created key in the local key database. This has not yet been implemented.

GPGME_CREATE_WANTPUB
GPGME_CREATE_WANTSEC
SINCE: 1.7.0

Return the public or secret key as part of the result structure. This has not yet been implemented.

GPGME_CREATE_FORCE
SINCE: 1.7.0

The engine does not allow the creation of a key with a user ID already existing in the local key database. This flag can be used to override this check.

GPGME_CREATE_NOEXPIRE
SINCE: 1.9.0

Request generation of keys that do not expire.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createkey_start (gpgme_ctx_t CTX,

const char *USERID, const char *ALGO, unsigned long RESERVED,
unsigned long EXPIRES, gpgme_key_t EXTRAKEY,
unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey_start initiates a
gpgme_op_createkey operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

-- Function: gpgme_error_t gpgme_op_createsubkey (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED,
unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createsubkey creates and adds
a new subkey
to the primary OpenPGP key given by KEY. The only allowed protocol
in CTX is GPGME_PROTOCOL_OPENPGP. Subkeys (aka secondary keys)
are a concept in the OpenPGP protocol to bind several keys to a
primary key. As of now this function requires at least version
2.1.13 of GnuPG.

KEY specifies the key to operate on.

ALGO specifies the algorithm for the new subkey. For a list of
supported algorithms, see the GnuPG manual. If ALGO is NULL or
the string "default", the subkey is generated using the default
algorithm for an encryption subkey of the engine. If the string
"future-default" is used the engine may use an encryption algorithm
which is planned to be the default in a future release of the
engine; however existing implementation of the protocol may not be
able to already handle such future algorithms.

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you
supply 0,
a reasonable expiration time is chosen. Use the flag
GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a time_t
to avoid problems on systems which use a signed 32 bit time_t.
Note further that the OpenPGP protocol uses 32 bit values for
timestamps and thus can only encode dates up to the year 2106.

FLAGS takes the same values as described above for

gpgme_op_createkey.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createsubkey_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, unsigned int FLAGS);

SINCE:
1.7.0

The function gpgme_op_createsubkey_start initiates a gpgme_op_createsubkey operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_adduid (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid adds a new user ID to the OpenPGP key given by KEY. Adding additional user IDs after key creation is a feature of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to add to the key. A user ID is commonly the mail address to be associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested.
The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

FLAGS are currently not used and must be set to zero.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_adduid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid_start initiates a gpgme_op_adduid operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid revokes a user ID from the OpenPGP key given by KEY. Revoking user IDs after key creation is a feature
of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to be revoked from the key. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. This is a required parameter.

FLAGS are currently not used and must be set to zero.

Note that the engine wont allow to revoke the last valid user ID. To change a user ID is better to first add the new user ID, then revoke the old one, and finally publish the key.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const
char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid_start initiates a gpgme_op_revuid operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_set_ui_flag (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, cons char * NAME,
cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag is used to set flags on a user ID from the OpenPGP key given by KEY. Setting flags on user IDs after key creation is a feature of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP.

KEY specifies the key to operate on. This parameters is required.

USERID is the user ID of the key to be manipulated. This user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object

(gpgme_user_id_t) is to be used. This is a required parameter.

NAME names the flag which is to be changed. The only currently supported flag is:

primary
This sets the primary key flag on the given user ID. All other primary key flag on other user IDs are removed. VALUE must be given as NULL. For technical reasons this functions bumps the creation timestamp of all affected self-signatures up by one second. At least GnuPG version 2.1.20 is required.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_set_uid_flag_start
(gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID,
cons char * NAME, cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag_start initiates a gpgme_op_set_uid_flag operation; see there for details. It must

be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_genkey (gpgme_ctx_t CTX,
const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)

The function gpgme_op_genkey generates a new key pair in the context CTX. The meaning of PUBLIC and SECRET depends on the crypto backend.

GPG does not support PUBLIC and SECRET, they should be NULL. GnuPG will generate a key pair and add it to the standard key ring. The fingerprint of the generated key is available with gpgme_op_genkey_result.

GpgSM requires PUBLIC to be a writable data object. GpgSM will generate a secret key (which will be stored by gpg-agent, and return a certificate request in PUBLIC, which then needs to be signed by the certification authority and imported before it can be used. GpgSM does not make the fingerprint available.

The argument PARMS specifies parameters for the key in an string that looks something like XML. The details about the format of PARMS are specific to the crypto engine used by CTX. The first line of the parameters must be <GnupgKeyParams format="internal"> and the last line must be </GnupgKeyParams>. Every line in between the first and last lines is treated as a Header: Value pair. In particular, no XML escaping is necessary if you need to include the characters <, >, or &.

Here is an example for GnuPG as the crypto engine (all parameters of OpenPGP key generation are documented in the GPG manual):

```
<GnupgKeyParms format="internal">
Key-Type: default
Subkey-Type: default
Name-Real: Joe Tester
Name-Comment: with stupid passphrase
Name-Email: joe@foo.bar
Expire-Date: 0
Passphrase: abc
</GnupgKeyParms>
```

Here is an example for GpgSM as the crypto engine (all parameters of OpenPGP key generation are documented in the GPGSM manual):

```
<GnupgKeyParms format="internal">
Key-Type: RSA
Key-Length: 1024
Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
Name-Email: joe@foo.bar
```

</GnupgKeyParms>

Strings should be given in UTF-8 encoding. The only format supported for now is internal. The content of the GnupgKeyParms container is passed verbatim to the crypto backend. Control statements are not allowed.

After the operation completed successfully, the result can be retrieved with gpgme_op_genkey_result.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a well-formed string (e.g. does not have the expected tag-like headers and footers), GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not valid, and GPG_ERR_GENERAL if no key was created by the backend.

-- Function: gpgme_error_t
gpgme_op_genkey_start (gpgme_ctx_t CTX,
const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)

The function gpgme_op_genkey_start initiates a gpgme_op_genkey operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a valid XML string, and GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not NULL.

-- Data type: gpgme_genkey_result_t

This is a pointer to a structure used to store the result of a gpgme_op_genkey operation. After successfully generating a key, you can retrieve the pointer to the result with gpgme_op_genkey_result. The structure contains the following members:

unsigned int primary : 1
This flag is set to 1 if a primary key was created and to 0 if not.

unsigned int sub : 1
This
flag is set to 1 if a subkey was created and to 0 if not.

unsigned int uid : 1
This flag is set to 1 if a user ID was created and to 0 if

not.

char *fpr
This is the fingerprint of the key that was created. If both a primary and a subkey were generated, the fingerprint of the primary key will be returned. If the crypto engine does not provide the fingerprint, fpr will be a null pointer.

gpgme_data_t pubkey
SINCE: 1.7.0

This will eventually be used to return the public key. It is currently not used.

gpgme_data_t seckey
SINCE: 1.7.0

This will eventually be used to return the secret key. It is currently not used.

-- Function: gpgme_genkey_result_t gpgme_op_genkey_result (gpgme_ctx_t CTX)

The function gpgme_op_genkey_result returns a gpgme_genkey_result_t pointer to a structure holding the result of a gpgme_op_genkey operation. The pointer is only valid if the last operation on the context was a gpgme_op_genkey or gpgme_op_genkey_start operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Signing Keys, Next: Exporting Keys, Prev: Generating Keys, Up: Key Management

7.5.6 Signing Keys

Key signatures are a unique concept of the OpenPGP protocol. They can be used to certify the validity of a key and are used to create the Web-of-Trust (WoT). Instead of using the gpgme_op_interact function along with a finite state machine, GPGME provides a convenient function to create key signatures when using modern GnuPG versions.

-- Function: gpgme_error_t gpgme_op_keysign (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign adds
a new key signature to the
public key KEY. This function requires at least version 2.1.12 of
GnuPG.

CTX is the usual context which describes the protocol to use (which
must be OpenPGP) and has also the list of signer keys to be used
for the signature. The common case is to use the default key for
signing other keys. If another key or more than one key shall be
used for a key signature, gpgme_signers_add can be used. *Note
Selecting Signers::.

KEY specifies the key to operate on.

USERID selects the user ID or user IDs to be signed. If USERID is
set to NULL all valid user IDs are signed. The user ID must be
given verbatim because the engine does an exact and case sensitive
match. Thus the uid field from the user ID object
(gpgme_user_id_t) is to be used. To select more than one user ID
put them all into one string separated by linefeeds characters
(\n) and set the flag GPGME_KEYSIGN_LFSEP.

EXPIRES
specifies the expiration time of the new signature in
seconds. The common case is to use 0 to not set an expiration
date. However, if the configuration of the engine defines a
default expiration for key signatures, that is still used unless
the flag GPGME_KEYSIGN_NOEXPIRE is used. Note that this
parameter takes an unsigned long value and not a time_t to avoid
problems on systems which use a signed 32 bit time_t. Note
further that the OpenPGP protocol uses 32 bit values for timestamps
and thus can only encode dates up to the year 2106.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_KEYSIGN_LOCAL
SINCE: 1.7.0

Instead of creating an exportable key signature, create a key
signature which is is marked as non-exportable.

GPGME_KEYSIGN_LFSEP
SINCE: 1.7.0

Although linefeeds are uncommon in user IDs this flag is
required to explicitly declare that

USERID may contain several
linefeed separated user IDs.

GPGME_KEYSIGN_NOEXPIRE
Force the creation of a key signature without an expiration
date. This overrides EXPIRE and any local configuration of
the engine.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if
the engine does not support the command, or a bunch of other error
codes.

-- Function: gpgme_error_t gpgme_op_keysign_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES,
unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign_start initiates a
gpgme_op_keysign operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

-- Function: gpgme_error_t gpgme_op_revsig (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID,
unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig revokes key signatures of the public
key KEY made with the key SIGNING_KEY. This function requires at
least version 2.2.24 of GnuPG.

KEY specifies the key to operate on.

SIGNING_KEY specifies the key whose signatures shall be revoked.

USERID selects the user ID or user IDs whose signatures shall be
revoked. If USERID is set to NULL the signatures on all user IDs
are revoked. The user ID must be given verbatim because the engine
does an exact and case sensitive match. Thus the uid field from
the user ID object (gpgme_user_id_t) is to be used. To select
more than one user ID put them all into one string separated by
linefeeds characters (\n) and set the flag GPGME_REVSIG_LFSEP.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_REVSIG_LFSEP

SINCE: 1.14.1

Although linefeeds are uncommon in user IDs this flag is
required to explicitly declare
that USERID may contain several
linefeed separated user IDs.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_revsig_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig_start initiates a gpgme_op_revsig operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

File: gpgme.info, Node: Exporting Keys, Next: Importing Keys, Prev: Signing Keys, Up: Key Management

7.5.7 Exporting Keys

Exporting keys means the same as running gpg with the command --export. However, a mode flag can be used to change the way the export works. The available mode flags are described below, they may be or-ed together.

GPGME_EXPORT_MODE_EXTERN
If this bit is set, the output is send directly to the default keyserver. This is currently only allowed for OpenPGP keys. It is good practise to not send more than a few dozens key to a keyserver at one time. Using this flag requires that the KEYDATA argument of the export function is set to NULL.

GPGME_EXPORT_MODE_MINIMAL
SINCE: 1.3.1

If this bit is set, the smallest possible key is exported. For OpenPGP keys it removes all signatures except for the latest self-signatures. For X.509 keys it has no effect.

GPGME_EXPORT_MODE_SSH
SINCE: 1.4.0

If this bit is set, the latest authentication key of the requested
OpenPGP key is exported in the OpenSSH public key format. This
accepts just a single key; to force the export of a specific subkey
a fingerprint pattern with an appended exclamation mark may be
used.

GPGME_EXPORT_MODE_SECRET
SINCE: 1.6.0

Instead of exporting the public
key, the secret key is exported.
This may not be combined with GPGME_EXPORT_MODE_EXTERN. For
X.509 the export format is PKCS#8.

GPGME_EXPORT_MODE_RAW
SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509
key the export format will be changed to PKCS#1. This flag may not
be used with OpenPGP.

GPGME_EXPORT_MODE_PKCS12
SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509
key the export format will be changed to PKCS#12 which also
includes the certificate. This flag may not be used with OpenPGP.

GPGME_EXPORT_MODE_NOUID
SINCE: 1.12.0 - experimental Do not export user ids. Works only
with certain gpg version.

-- Function: gpgme_error_t gpgme_op_export (gpgme_ctx_t CTX,
const char *PATTERN, gpgme_export_mode_t MODE,
gpgme_data_t KEYDATA)
The function gpgme_op_export extracts public keys and returns
them in the data buffer KEYDATA. The output
format of the key data
returned is determined by the ASCII armor attribute set for the
context CTX, or, if that is not set, by the encoding specified for
KEYDATA.

If PATTERN is NULL, all available keys are returned. Otherwise,
PATTERN contains an engine specific expression that is used to
limit the list to all keys matching the pattern.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_start (gpgme_ctx_t CTX, const char *PATTERN, gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

The function gpgme_op_export_start initiates a gpgme_op_export operation. It can be completed by calling gpgme_wait on the context.

*Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_ext (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

The function gpgme_op_export extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are used to limit the list to all keys matching at least one of the patterns verbatim.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_ext_start (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

The function gpgme_op_export_ext_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the

operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_keys (gpgme_ctx_t CTX, gpgme_key_t keys[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
SINCE: 1.2.0

The function gpgme_op_export_keys extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

The keys to export are taken form the NULL terminated array KEYS. Only keys of the currently selected protocol of CTX which do have a fingerprint set are considered for export. Other keys specified by the KEYS are ignored. In particular OpenPGP keys retrieved via an external key listing are not included.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_keys_start (gpgme_ctx_t CTX, gpgme_key_t KEYS[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
SINCE: 1.2.0

The function gpgme_op_export_keys_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

File: gpgme.info, Node: Importing Keys, Next: Deleting Keys, Prev: Exporting Keys, Up: Key Management

7.5.8 Importing Keys

Importing keys means the same as running gpg with the command
--import.

-- Function: gpgme_error_t gpgme_op_import (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import
adds the keys in the data buffer
KEYDATA to the key ring of the crypto engine used by CTX. The
format of KEYDATA can be ASCII armored, for example, but the
details are specific to the crypto engine.

After the operation completed successfully, the result can be
retrieved with gpgme_op_import_result.

The function returns the error code GPG_ERR_NO_ERROR if the
import was completed successfully, GPG_ERR_INV_VALUE if KEYDATA
if CTX or KEYDATA is not a valid pointer, and GPG_ERR_NO_DATA if
KEYDATA is an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_start (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import_start initiates a gpgme_op_import
operation. It can be completed by calling gpgme_wait on the
context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
import could be started successfully, GPG_ERR_INV_VALUE if CTX or
KEYDATA
is not a valid pointer, and GPG_ERR_NO_DATA if KEYDATA is
an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_keys (gpgme_ctx_t CTX,
gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys adds the keys described by the
NULL terminated array KEYS to the key ring of the crypto engine
used by CTX. It is used to actually import and make keys permanent
which have been retrieved from an external source (i.e. using
GPGME_KEYLIST_MODE_EXTERN) earlier. The external keylisting must
have been made with the same context configuration (in particular
the same home directory). (1) Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of CTX are considered

for import. Other keys specified by the KEYS are ignored. As of now all considered keys must have been retrieved using the same method, i.e. the used key
listing mode must be identical.

After the operation completed successfully, the result can be retrieved with gpgme_op_import_result.

To move keys from one home directory to another, export and import the keydata using gpgme_op_export and gpgme_op_import.

The function returns the error code GPG_ERR_NO_ERROR if the import was completed successfully, GPG_ERR_INV_VALUE if CTX is not a valid pointer, GPG_ERR_CONFLICT if the key listing mode does not match, and GPG_ERR_NO_DATA if no keys are considered for export.

-- Function: gpgme_error_t gpgme_op_import_keys_start (gpgme_ctx_t CTX, gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys_start initiates a gpgme_op_import_keys operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the import was completed successfully, GPG_ERR_INV_VALUE
if KEYDATA
if CTX or KEYDATA is not a valid pointer, GPG_ERR_CONFLICT if the key listing mode does not match, and GPG_ERR_NO_DATA if no keys are considered for export.

-- Data type: gpgme_import_status_t
This is a pointer to a structure used to store a part of the result of a gpgme_op_import operation. For each considered key one status is added that contains information about the result of the import. The structure contains the following members:

gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or NULL if this is the last element.

char *fpr
This is the fingerprint of the key that was considered.

gpgme_error_t result
If the import was not successful, this is the error value that caused the import to fail. Otherwise the error code is

GPG_ERR_NO_ERROR.

unsigned int status
This is a bit-wise OR of the following flags that give more information about what part of the key was imported. If the key was already known, this might be 0.

GPGME_IMPORT_NEW
The key was new.

GPGME_IMPORT_UID
The key contained new user IDs.

GPGME_IMPORT_SIG
The key contained new signatures.

GPGME_IMPORT_SUBKEY
The key contained new sub keys.

GPGME_IMPORT_SECRET
The key contained a secret key.

-- Data type: gpgme_import_result_t
This is a pointer to a structure used to store the result of a gpgme_op_import operation. After a successful import operation, you can retrieve the pointer to the result with gpgme_op_import_result. The structure contains the following members:

int considered
The total number of considered keys.

int no_user_id
The number of keys without user ID.

int imported
The total number of imported keys.

int imported_rsa
The number of imported RSA keys.

int unchanged
The number of unchanged keys.

int new_user_ids
The number of new user IDs.

int new_sub_keys
The number of new sub keys.

int new_signatures
The number of new signatures.

int new_revocations
The number of new revocations.

int secret_read
The total number of secret keys read.

int secret_imported
The number of imported secret keys.

int secret_unchanged
The number of unchanged secret keys.

int not_imported
The number of keys not imported.

gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more information about the keys for which an import was attempted.

int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore support v3 keys (created with PGP
2.x) and ignores them on
import. This counter provides the number of such skipped v3 keys.

-- Function: gpgme_import_result_t gpgme_op_import_result (gpgme_ctx_t CTX)
The function gpgme_op_import_result returns a gpgme_import_result_t pointer to a structure holding the result of a gpgme_op_import operation. The pointer is only valid if the last operation on the context was a gpgme_op_import or gpgme_op_import_start operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

---------- Footnotes ----------

(1) Thus it is a replacement for the usual workaround of exporting and then importing a key to make an X.509 key permanent.

File: gpgme.info, Node: Deleting Keys, Next: Changing Passphrases, Prev: Importing Keys, Up: Key Management

7.5.9 Deleting Keys

-- Function: gpgme_error_t gpgme_op_delete_ext
(gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext deletes the key KEY from the key ring of the crypto engine used by CTX.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_DELETE_ALLOW_SECRET
SINCE: 1.9.1

If not set, only public keys are deleted. If set, secret keys are deleted as well, if that is supported.

GPGME_DELETE_FORCE
SINCE: 1.9.1

If set, the user is not asked to confirm the deletion.

The function returns the error code GPG_ERR_NO_ERROR if the key was deleted successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, GPG_ERR_NO_PUBKEY if KEY could not be found in the keyring, GPG_ERR_AMBIGUOUS_NAME if the key was not specified unambiguously, and GPG_ERR_CONFLICT if the secret key for KEY is available, but ALLOW_SECRET is zero.

-- Function: gpgme_error_t gpgme_op_delete_ext_start
(gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext_start initiates a gpgme_op_delete operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

The following functions allow only to use one particular flag.

-- Function: gpgme_error_t gpgme_op_delete (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext, but only the flag
GPGME_DELETE_ALLOW_SECRET can be provided.

-- Function: gpgme_error_t gpgme_op_delete_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext_start, but only the flag
GPGME_DELETE_ALLOW_SECRET can be provided.

File: gpgme.info, Node:
Changing Passphrases, Next: Changing TOFU Data, Prev: Deleting Keys, Up: Key Management

7.5.10 Changing Passphrases

-- Function: gpgme_error_t gpgme_op_passwd (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd changes the passphrase of the
private key associated with KEY. The only allowed value for FLAGS
is 0. The backend engine will usually popup a window to ask for
the old and the new passphrase. Thus this function is not useful
in a server application (where passphrases are not required
anyway).

Note that old gpg engines (before version 2.0.15) do not support
this command and will silently ignore it.

-- Function: gpgme_error_t gpgme_op_passwd_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd_start initiates a gpgme_op_passwd
operation. It can be completed
by calling gpgme_wait on the
context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully,
and an error code if one of the arguments is not valid or the
oepration could not be started.

File: gpgme.info, Node: Changing TOFU Data, Next: Advanced Key Editing, Prev: Changing Passphrases, Up: Key Management

7.5.11 Changing TOFU Data

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation model. For resolving conflicts it is necessary to declare the policy for a key. See the GnuPG manual for details on the TOFU implementation.

-- Data type: enum gpgme_tofu_policy_t
SINCE: 1.7.0

The gpgme_tofu_policy_t type specifies the set of possible policy values that are supported by GPGME:

GPGME_TOFU_POLICY_AUTO
Set the policy to auto.
GPGME_TOFU_POLICY_GOOD
Set the policy to good.
GPGME_TOFU_POLICY_BAD
Set the policy to
bad.
GPGME_TOFU_POLICY_ASK
Set the policy to ask.
GPGME_TOFU_POLICY_UNKNOWN
Set the policy to unknown.

To change the policy for a key the following functions can be used:

-- Function: gpgme_error_t gpgme_op_tofu_policy (gpgme_ctx_t CTX, const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy changes the TOFU policy of KEY. The valid values for POLICY are listed above. As of now this function does only work for OpenPGP and requires at least version 2.1.10 of GnuPG.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_tofu_policy_start (gpgme_ctx_t CTX, const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy_start initiates a gpgme_op_tofu_policy operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and an error code if one of the arguments is not valid or the oepration could not be started.

File: gpgme.info, Node: Advanced Key Editing, Prev: Changing TOFU Data, Up: Key Management

7.5.12 Advanced Key Editing

-- Data type: gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE, const char *STATUS, const char *ARGS, int FD)

SINCE: 1.7.0

The gpgme_interact_cb_t type is the type of functions which GPGME calls if it a key interact operation is on-going. The status keyword STATUS and the argument line ARGS are passed through by GPGME from the crypto engine. An empty string represents EOF. The file descriptor FD is -1 for normal status messages. If STATUS indicates a command rather than a status message, the response to the command should be written to FD. The HANDLE is provided by the user at start of operation.

The function should return GPG_ERR_FALSE if it did not handle the status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_interact (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact processes the key KEY interactively, using the interact callback function FNC with the handle HANDLE. The callback is invoked for every status and command request from the crypto engine. The output of the crypto engine is written to the data object OUT.

Note that the protocol between the callback function and the crypto

engine is specific to the crypto engine and no further support in implementing this protocol correctly is provided by GPGME.

FLAGS modifies the behaviour of the function; the only defined bit value is:

GPGME_INTERACT_CARD
SINCE: 1.7.0

This is used for smartcard based keys and uses gpgs --card-edit command.

The function returns 0 if the edit operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, and any error returned by the crypto engine or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_interact_start (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact_start initiates a gpgme_op_interact operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

File: gpgme.info, Node: Crypto Operations, Next: Miscellaneous, Prev: Key Management, Up: Contexts

7.6 Crypto Operations

Sometimes, the result of a crypto operation returns a list of invalid keys encountered in processing the request. The following structure is used to hold information about such a key.

-- Data type: gpgme_invalid_key_t
This is a pointer to a structure used to store a part of the result of a crypto operation which takes user IDs as one input parameter. The structure contains the following members:

gpgme_invalid_key_t next

This is a pointer to the next invalid key structure in the linked list, or NULL if this is the last element.

char *fpr
The fingerprint or key ID of the invalid key encountered.

gpgme_error_t reason
An error code describing the reason why the key was found invalid.

* Menu:

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

File: gpgme.info, Node: Decrypt, Next: Verify, Up: Crypto Operations

7.6.1 Decrypt

-- Function: gpgme_error_t gpgme_op_decrypt (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt decrypts the ciphertext in the data object CIPHER and stores it into the data object PLAIN.

The function returns the error code GPG_ERR_NO_ERROR if the ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt, GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, and passes through some errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_decrypt_start (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_start initiates a gpgme_op_decrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CIPHER or PLAIN is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_decrypt_ext (gpgme_ctx_t CTX,
gpgme_decrypt_flags_t FLAGS, gpgme_data_t CIPHER,
gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext is the same as gpgme_op_decrypt but has an additional argument FLAGS. If FLAGS is 0 both function behave identically.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_DECRYPT_VERIFY
SINCE: 1.8.0

The GPGME_DECRYPT_VERIFY symbol specifies that this function shall exactly act as gpgme_op_decrypt_verify.

GPGME_DECRYPT_UNWRAP
SINCE: 1.8.0

The GPGME_DECRYPT_UNWRAP symbol specifies that the output shall be an OpenPGP message with only the encryption layer removed. This requires GnuPG 2.1.12 and works only for OpenPGP. This is the counterpart to GPGME_ENCRYPT_WRAP.

The function returns the error codes as described for gpgme_op_decrypt.

-- Function: gpgme_error_t gpgme_op_decrypt_ext_start (
gpgme_ctx_t CTX, gpgme_decrypt_flags_t FLAGS,
gpgme_data_t CIPHER, gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext_start initiates a gpgme_op_decrypt_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully,
and GPG_ERR_INV_VALUE if
CIPHER or PLAIN is not a valid pointer.

-- Data type: gpgme_recipient_t

SINCE: 1.1.0

This is a pointer to a structure used to store information about the recipient of an encrypted text which is decrypted in a gpgme_op_decrypt operation. This information (except for the status field) is even available before the operation finished successfully, for example in a passphrase callback. The structure contains the following members:

gpgme_recipient_t next
This is a pointer to the next recipient structure in the linked list, or NULL if this is the last element.

gpgme_pubkey_algo_t
The public key algorithm used in the encryption.

char *keyid
This is the key ID of the key (in hexadecimal digits) used as recipient.

gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY if the secret key for this recipient
is not available, and 0
otherwise.

-- Data type: gpgme_decrypt_result_t
This is a pointer to a structure used to store the result of a gpgme_op_decrypt operation. After successfully decrypting data, you can retrieve the pointer to the result with gpgme_op_decrypt_result. As with all result structures, it this structure shall be considered read-only and an application must not allocate such a strucure on its own. The structure contains the following members:

char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the algorithm that is not supported.

unsigned int wrong_key_usage : 1
SINCE: 0.9.0 This is true if the key was not used according to its policy.

unsigned int legacy_cipher_nomdc : 1
SINCE: 1.11.2 The message was made by a legacy algorithm without any integrity protection. This might be an old but

legitimate message.

unsigned int is_mime : 1;
SINCE: 1.11.0 The message claims that the content is a MIME object.

unsigned int is_de_vs : 1;
SINCE: 1.10.0 The message was encrypted in a VS-NfD compliant way. This is a specification in Germany for a restricted communication level.

gpgme_recipient_t recipients
SINCE: 1.1.0

This is a linked list of recipients to which this message was encrypted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer.

char *session_key
SINCE: 1.8.0

A textual representation (nul-terminated string) of the session key used in symmetric encryption of the message, if the context has been set to export session keys (see gpgme_set_ctx_flag, "export-session-key"), and a session key was available for the
most recent decryption operation.
Otherwise, this is a null pointer.

You must not try to access this member of the struct unless gpgme_set_ctx_flag (ctx, "export-session-key") returns success or gpgme_get_ctx_flag (ctx, "export-session-key") returns true (non-empty string).

char *symkey_algo
SINCE: 1.11.0

A string with the symmetric encryption algorithm and mode using the format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of OpenPGP is given as "PGPCFB".

-- Function: gpgme_decrypt_result_t gpgme_op_decrypt_result (gpgme_ctx_t CTX)
The function gpgme_op_decrypt_result returns a gpgme_decrypt_result_t pointer to a structure holding the result

of a gpgme_op_decrypt operation. The pointer is only valid if the last operation on the context was a gpgme_op_decrypt or gpgme_op_decrypt_start operation. If the operation failed this

might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Verify, Next: Decrypt and Verify, Prev: Decrypt, Up: Crypto Operations

7.6.2 Verify

-- Function: gpgme_error_t gpgme_op_verify (gpgme_ctx_t CTX, gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT, gpgme_data_t PLAIN)

The function gpgme_op_verify verifies that the signature in the data object SIG is a valid signature. If SIG is a detached signature, then the signed text should be provided in SIGNED_TEXT and PLAIN should be a null pointer. Otherwise, if SIG is a normal (or cleartext) signature, SIGNED_TEXT should be a null pointer and PLAIN should be a writable data object that will contain the plaintext after successful verification.

The results of the individual signature verifications can be retrieved with gpgme_op_verify_result.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be completed successfully, GPG_ERR_INV_VALUE if CTX, SIG or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if SIG does not contain any data to verify, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_verify_start (gpgme_ctx_t CTX, gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT, gpgme_data_t PLAIN)

The function gpgme_op_verify_start initiates a gpgme_op_verify operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, SIG or PLAIN is not a valid pointer, and GPG_ERR_NO_DATA if SIG or PLAIN does not contain any data to verify.

-- Data type: gpgme_sig_notation_t

This is a pointer to a structure used to store a part of the result

of a gpgme_op_verify operation. The structure contains the
following members:

gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure
in the linked list, or NULL if this is the last element.

char *name
The name of the notation field. If this is NULL, then the
member value will contain a policy URL.

int name_len
The length of the name field. For strings the length is
counted without the trailing binary zero.

char *value
The value of the notation field. If name is NULL, then
this is a policy URL.

int value_len
The length of the value field. For strings the length is
counted without the trailing binary zero.

gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags
associated with the notation data in an accumulated form which
can be used
as an argument to the function
gpgme_sig_notation_add. The value flags is a bitwise-or
combination of one or multiple of the following bit values:

GPGME_SIG_NOTATION_HUMAN_READABLE
SINCE: 1.1.0

The GPGME_SIG_NOTATION_HUMAN_READABLE symbol specifies
that the notation data is in human readable form

GPGME_SIG_NOTATION_CRITICAL
SINCE: 1.1.0

The GPGME_SIG_NOTATION_CRITICAL symbol specifies that
the notation data is critical.

unsigned int human_readable : 1
This is true if the GPGME_SIG_NOTATION_HUMAN_READABLE flag
is set and false otherwise. This flag is only valid for
notation data, not for policy URLs.

unsigned int critical : 1
This is true if the GPGME_SIG_NOTATION_CRITICAL flag is set and false otherwise. This flag is valid for notation data and policy URLs.

-- Data type: gpgme_signature_t
This is a pointer to a structure used to store a part of the result of a gpgme_op_verify operation. The structure contains the following members:

gpgme_signature_t next
This is a pointer to the next new signature structure in the linked list, or NULL if this is the last element.

gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status. It provides an easy interface to a defined semantic of the signature status. Checking just one bit is sufficient to see whether a signature is valid without any restrictions. This means that you can check for GPGME_SIGSUM_VALID like this:

```
if ((sig.summary & GPGME_SIGSUM_VALID))
{
  ..do stuff if valid..
}
else
{
  ..do stuff if not fully valid..
}
```

The defined bits are:
GPGME_SIGSUM_VALID
The signature is fully valid.

GPGME_SIGSUM_GREEN
The signature is good but one might want to display some extra information. Check the other bits.

GPGME_SIGSUM_RED
The signature is bad. It might be useful to check other bits and display more information, i.e. a revoked certificate might not render a signature invalid when the message was received prior to the cause for the revocation.

GPGME_SIGSUM_KEY_REVOKED
The key or at least one certificate has been revoked.

GPGME_SIGSUM_KEY_EXPIRED
The key or one of the certificates has expired. It is probably a good idea to display the date of the expiration.

GPGME_SIGSUM_SIG_EXPIRED
The signature has expired.

GPGME_SIGSUM_KEY_MISSING
Cant verify due to a missing key or certificate.

GPGME_SIGSUM_CRL_MISSING
The CRL (or an equivalent mechanism) is not available.

GPGME_SIGSUM_CRL_TOO_OLD
Available CRL is too old.

GPGME_SIGSUM_BAD_POLICY
A policy requirement was not met.

GPGME_SIGSUM_SYS_ERROR
A system error occurred.

GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.

char *fpr
This is the fingerprint or key ID of the signature.

gpgme_error_t status
This is the status of the signature. In particular, the following status codes are of interest:

GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that there is no signature. For the combined result this status means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check the summary field for that.

For example a gpgme_op_decrypt_verify returns a verification result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For the combined result this status means that all signatures are valid and expired.

GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used to verify the signature has been revoked. For the combined result this status means that all signatures

are valid and all keys are revoked.

GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPG_ERR_NO_PUBKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be checked due to missing keys.

GPG_ERR_GENERAL
This status indicates that there was some other error which prevented the signature verification.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

unsigned long timestamp
The creation timestamp of this signature.

unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature
does not expire.

unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

unsigned int pka_trust : 2

This is set to the trust information gained by means of the PKA system. Values are:

0
: No PKA information available or verification not possible.

1
: PKA verification failed.

2
: PKA verification succeeded.

3
: Reserved for future use.

Depending on the configuration of the engine, this metric may also be reflected by the validity of the signature.

unsigned int chain_model : 1

SINCE: 1.1.6

This is true if the validity of the signature has been checked using the chain model. In the chain model the time the signature has been created must be within the validity period of the certificate and the time the certificate itself has been created must be within the validity period of the issuing certificate. In contrast the default validation model checks the validity of signature as well at the entire certificate chain at the current time.

gpgme_validity_t validity

The validity of the signature.

gpgme_error_t validity_reason

If a signature is not valid, this provides a reason why.

gpgme_pubkey_algo_t

The public key algorithm used to create this signature.

gpgme_hash_algo_t

The hash algorithm used to create this signature.

char *pka_address

The mailbox from the PKA information or NULL.

gpgme_key_t key

SINCE: 1.7.0

An object describing the key used to create the signature. This key object may be incomplete in that it only conveys information availabale directly with a signature. It may also be NULL if such information is not readily available.

-- Data type: gpgme_verify_result_t
This is a pointer to a structure used to store the result of a gpgme_op_verify operation. After verifying a signature, you can retrieve the pointer to the result with gpgme_op_verify_result. If the operation failed this might be a NULL pointer. The structure contains the following member:

gpgme_signature_t signatures
A linked list with information about all signatures for which a verification was attempted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer. Warning: The filename is not covered by the signature.

unsigned int is_mime : 1;
SINCE: 1.11.0

The message claims that the content is a MIME object. Warning: This flag is not covered by the signature.

-- Function: gpgme_verify_result_t gpgme_op_verify_result (gpgme_ctx_t CTX)

The function gpgme_op_verify_result returns a gpgme_verify_result_t pointer to a structure holding the result of a gpgme_op_verify operation. The pointer is only valid if the last operation on the context was a gpgme_op_verify, gpgme_op_verify_start, gpgme_op_decrypt_verify or gpgme_op_decrypt_verify_start operation, and if this operation finished successfully (for gpgme_op_decrypt_verify and gpgme_op_decrypt_verify_start, the error code GPG_ERR_NO_DATA counts as successful in this context). The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Decrypt and Verify, Next: Sign, Prev: Verify, Up: Crypto Operations

7.6.3 Decrypt and Verify

-- Function: gpgme_error_t gpgme_op_decrypt_verify (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify decrypts the ciphertext in the data object CIPHER and

stores it into the data object PLAIN.
If CIPHER contains signatures, they will be verified.

After the operation completed, gpgme_op_decrypt_result and
gpgme_op_verify_result can be used to retrieve more information
about the signatures.

If the error code GPG_ERR_NO_DATA is returned, CIPHER does not
contain any data to decrypt. However, it might still be signed.
The information about detected signatures is available with
gpgme_op_verify_result in this case.

The function returns the error code GPG_ERR_NO_ERROR if the
ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if
CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if
CIPHER does not contain any data to decrypt,
GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text,
GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could
not be retrieved, and passes through any errors that are reported
by the crypto engine support
routines.

-- Function: gpgme_error_t gpgme_op_decrypt_verify_start
(gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify_start initiates a
gpgme_op_decrypt_verify operation. It can be completed by
calling gpgme_wait on the context. *Note Waiting For
Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully, GPG_ERR_INV_VALUE if
CTX, CIPHER, PLAIN or R_STAT is not a valid pointer, and
GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt.

When processing mails it is sometimes useful to extract the actual
mail address (the addr-spec) from a string. GPGME provides this
helper function which uses the same semantics as the internal functions
in GPGME and GnuPG:

-- Function: char * gpgme_addrspec_from_uid (const char *UID)

SINCE: 1.7.1

Return the mail address (called addr-spec in RFC-5322) from the
string
UID which is assumed to be a user id (called address in
RFC-5322). All plain ASCII characters (i.e. those with bit 7
cleared) in the result are converted to lowercase. Caller must

free the result using gpgme_free. Returns NULL if no valid address was found (in which case ERRNO is set to EINVAL) or for other errors.

File: gpgme.info, Node: Sign, Next: Encrypt, Prev: Decrypt and Verify, Up: Crypto Operations

7.6.4 Sign

A signature can contain signatures by one or more keys. The set of keys used to create a signatures is contained in a context, and is applied to all following signing operations in this context (until the set is changed).

* Menu:

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

File: gpgme.info, Node: Selecting Signers, Next: Creating a Signature, Up: Sign

7.6.4.1
Selecting Signers
.....

The key or the keys used to create a signature are stored in the context. The following functions can be used to manipulate this list. If no signer has been set into the context a default key is used for signing.

-- Function: void gpgme_signers_clear (gpgme_ctx_t CTX)
The function gpgme_signers_clear releases a reference for each key on the signers list and removes the list of signers from the context CTX.

Every context starts with an empty list.

-- Function: gpgme_error_t gpgme_signers_add (gpgme_ctx_t CTX,
const gpgme_key_t KEY)
The function gpgme_signers_add adds the key KEY to the list of signers in the context CTX.

Calling this function acquires an additional reference for the key.

-- Function: unsigned int gpgme_signers_count (const gpgme_ctx_t CTX)

SINCE: 1.4.3

The function gpgme_signers_count returns the number of signer keys in the context CTX.

-- Function:
gpgme_key_t gpgme_signers_enum (const gpgme_ctx_t CTX,
int SEQ)

The function gpgme_signers_enum returns the SEQth key in the list of signers in the context CTX. An additional reference is acquired for the user.

If SEQ is out of range, NULL is returned.

File: gpgme.info, Node: Creating a Signature, Next: Signature Notation Data, Prev: Selecting Signers, Up: Sign

7.6.4.2 Creating a Signature
.....

-- Data type: enum gpgme_sig_mode_t
The gpgme_sig_mode_t type is used to specify the desired type of a signature. The following modes are available:

GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the signature.

GPGME_SIG_MODE_DETACH
A detached signature is made.

GPGME_SIG_MODE_CLEAR
A clear text signature is made. The ASCII armor and text mode settings of the context are ignored.

-- Function: gpgme_error_t gpgme_op_sign
(gpgme_ctx_t CTX,
gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign creates a signature for the text in the data object PLAIN and returns it in the data object SIG. The type of the signature created is determined by the ASCII armor (or, if that is not set, by the encoding specified for SIG), the text mode attributes set for the context CTX and the requested signature mode MODE.

After the operation completed successfully, the result can be retrieved with gpgme_op_sign_result.

If an S/MIME signed message is created using the CMS crypto engine, the number of certificates to include in the message can be specified with gpgme_set_include_certs. *Note Included Certificates::.

The function returns the error code GPG_ERR_NO_ERROR if the signature could be created successfully, GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer, GPG_ERR_NO_DATA if the signature could not be created, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, GPG_ERR_UNUSABLE_SECKEY if there are invalid signers, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_sign_start (gpgme_ctx_t CTX, gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign_start initiates a gpgme_op_sign operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer.

-- Data type: gpgme_new_signature_t
This is a pointer to a structure used to store a part of the result of a gpgme_op_sign operation. The structure contains the following members:

gpgme_new_signature_t next
This is a pointer to the next new signature structure in the linked list, or NULL if this is the last element.

gpgme_sig_mode_t type
The type of this signature.

gpgme_pubkey_algo_t pubkey_algo
The public key algorithm used to create this signature.

gpgme_hash_algo_t hash_algo
The hash algorithm used to create this signature.

unsigned int sig_class
The signature class of this signature.

long int timestamp

The creation timestamp of this signature.

char *fpr
The fingerprint of the key which was used to create this signature.

-- Data type: gpgme_sign_result_t
This is a pointer to a structure used to store the result of a gpgme_op_sign operation. After successfully generating a signature, you can retrieve the pointer to the result with gpgme_op_sign_result. The structure contains the following members:

gpgme_invalid_key_t
invalid_signers
A linked list with information about all invalid keys for which a signature could not be created.

gpgme_new_signature_t signatures
A linked list with information about all signatures created.

-- Function: gpgme_sign_result_t gpgme_op_sign_result (gpgme_ctx_t CTX)
The function gpgme_op_sign_result returns a gpgme_sign_result_t pointer to a structure holding the result of a gpgme_op_sign operation. The pointer is only valid if the last operation on the context was a gpgme_op_sign, gpgme_op_sign_start, gpgme_op_encrypt_sign or gpgme_op_encrypt_sign_start operation. If that operation failed, the function might return a NULL pointer. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Signature Notation Data, Prev: Creating a Signature, Up: Sign

7.6.4.3 Signature Notation Data
.....

Using the following
functions, you can attach arbitrary notation data to
a signature. This information is then available to the user when the signature is verified.

-- Function: void gpgme_sig_notation_clear (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_clear removes the notation data from the context CTX. Subsequent signing operations from this context will not include any notation data.

Every context starts with an empty notation data list.

-- Function: gpgme_error_t gpgme_sig_notation_add (gpgme_ctx_t CTX,
const char *NAME, const char *VALUE,
gpgme_sig_notation_flags_t FLAGS)
SINCE: 1.1.0

The function gpgme_sig_notation_add adds the notation data with the name NAME and the value VALUE to the context CTX.

Subsequent signing operations will include this notation data, as well as any other notation data that was added since the creation of the context or the last gpgme_sig_notation_clear operation.

The arguments NAME and VALUE must be NUL-terminated strings in human-readable form. The flag GPGME_SIG_NOTATION_HUMAN_READABLE is implied (non-human-readable notation data is currently not supported). The strings must be in UTF-8 encoding.

If NAME is NULL, then VALUE should be a policy URL.

The function gpgme_sig_notation_add returns the error code GPG_ERR_NO_ERROR if the notation data could be added successfully, GPG_ERR_INV_VALUE if CTX is not a valid pointer, or if NAME, VALUE and FLAGS are an invalid combination. The function also passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_sig_notation_t gpgme_sig_notation_get
(const gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_get returns the linked list of notation data structures that are contained in the context CTX.

If CTX is not a valid pointer, or there is no notation data added for this context, NULL is returned.

File: gpgme.info, Node: Encrypt, Prev: Sign, Up: Crypto Operations

7.6.5 Encrypt

One plaintext can be encrypted for several recipients at the same time. The list of recipients is created independently of any context, and then

passed to the encryption operation.

* Menu:

* Encrypting a Plaintext:: How to encrypt a plaintext.

File: gpgme.info, Node: Encrypting a Plaintext, Up: Encrypt

7.6.5.1 Encrypting a Plaintext
.....

-- Function: gpgme_error_t gpgme_op_encrypt (gpgme_ctx_t CTX,
     gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
     gpgme_data_t PLAIN, gpgme_data_t CIPHER)
   The function gpgme_op_encrypt encrypts the plaintext in the data
   object PLAIN for the recipients RECP and stores the ciphertext in
   the data object CIPHER. The type of the ciphertext created is
   determined by the ASCII armor (or, if that is not set, by the
   encoding specified
for CIPHER) and the text mode attributes set for
   the context CTX.

   RECP must be a NULL-terminated array of keys. The user must keep
   references for all keys during the whole duration of the call (but
   see gpgme_op_encrypt_start for the requirements with the
   asynchronous variant).

   The value in FLAGS is a bitwise-or combination of one or multiple
   of the following bit values:

   GPGME_ENCRYPT_ALWAYS_TRUST
      The GPGME_ENCRYPT_ALWAYS_TRUST symbol specifies that all the
      recipients in RECP should be trusted, even if the keys do not
      have a high enough validity in the keyring. This flag should
      be used with care; in general it is not a good idea to use any
      untrusted keys.

   GPGME_ENCRYPT_NO_ENCRYPT_TO
      SINCE: 1.2.0

      The GPGME_ENCRYPT_NO_ENCRYPT_TO symbol specifies that no
      default or hidden default recipients as configured in the
      crypto backend should be included. This
can be useful for
      managing different user profiles.

   GPGME_ENCRYPT_NO_COMPRESS

SINCE: 1.5.0

The GPGME_ENCRYPT_NO_COMPRESS symbol specifies that the plaintext shall not be compressed before it is encrypted. This is in some cases useful if the length of the encrypted message may reveal information about the plaintext.

GPGME_ENCRYPT_PREPARE
GPGME_ENCRYPT_EXPECT_SIGN
The GPGME_ENCRYPT_PREPARE symbol is used with the UI Server protocol to prepare an encryption (i.e. sending the PREP_ENCRYPT command). With the GPGME_ENCRYPT_EXPECT_SIGN symbol the UI Server is advised to also expect a sign command.

GPGME_ENCRYPT_SYMMETRIC
SINCE: 1.7.0

The GPGME_ENCRYPT_SYMMETRIC symbol specifies that the output should be additionally encrypted symmetrically even if recipients are provided. This feature is only supported for the OpenPGP
crypto engine.

GPGME_ENCRYPT_THROW_KEYIDS
SINCE: 1.8.0

The GPGME_ENCRYPT_THROW_KEYIDS symbols requests that the identifiers for the decrption keys are not included in the ciphertext. On the receiving side, the use of this flag may slow down the decryption process because all available secret keys must be tried. This flag is only honored for OpenPGP encryption.

GPGME_ENCRYPT_WRAP
SINCE: 1.8.0

The GPGME_ENCRYPT_WRAP symbol specifies that the input is an OpenPGP message and not a plain data. This is the counterpart to GPGME_DECRYPT_UNWRAP.

GPGME_ENCRYPT_WANT_ADDRESS
SINCE: 1.11.0

The GPGME_ENCRYPT_WANT_ADDRESS symbol requests that all supplied keys or key specifications include a syntactically valid mail address. If this is not the case the operation is not even tried and the error code GPG_ERR_INV_USER_ID

is
returned. Only the address part of the key specification is conveyed to the backend. As of now the key must be specified using the RECPSTRING argument of the extended encrypt functions. This feature is currently only supported for the OpenPGP crypto engine.

If GPG_ERR_UNUSABLE_PUBKEY is returned, some recipients in RECP are invalid, but not all. In this case the plaintext might be encrypted for all valid recipients and returned in CIPHER (if this happens depends on the crypto engine). More information about the invalid recipients is available with gpgme_op_encrypt_result.

If RECP is NULL, symmetric rather than public key encryption is performed. Symmetrically encrypted cipher text can be deciphered with gpgme_op_decrypt. Note that in this case the crypto backend needs to retrieve a passphrase from the user. Symmetric encryption is currently only supported for the OpenPGP
crypto backend.

The function returns the error code GPG_ERR_NO_ERROR if the ciphertext could be created successfully, GPG_ERR_INV_VALUE if CTX, RECP, PLAIN or CIPHER is not a valid pointer, GPG_ERR_UNUSABLE_PUBKEY if RECP contains some invalid recipients, GPG_ERR_BAD_PASSPHRASE if the passphrase for the symmetric key could not be retrieved, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_encrypt_start (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt_start initiates a gpgme_op_encrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

References to the keys only need to be held for the duration of this call. The user can release its references to the keys after this function returns, even
if the operation is not yet finished.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, RSET, PLAIN or CIPHER is not a valid pointer, and GPG_ERR_UNUSABLE_PUBKEY if RSET does not contain any valid recipients.

-- Function: gpgme_error_t gpgme_op_encrypt_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,

gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. Leading and trailing white space is remove from each line in RECPSTRING. The keys
are then passed verbatim to the backend
engine.

For the OpenPGP backend several special keywords are supported to modify the operation. These keywords are given instead of a key specification. The currently supported keywords are:

--hidden
--no-hidden
These keywords toggle between normal and hidden recipients for all following key specifications. When a hidden recipient is requested the gpg option -R (or -F in file mode) is used instead of -r (-f in file mode).

--file
--no-file
These keywords toggle between regular and file mode for all following key specification. In file mode the option -f or -F is passed to gpg. At least GnuPG version 2.1.14 is required to handle these options. The GPGME_ENCRYPT_WANT_ADDRESS flag is ignored in file mode.

--
This keyword disables all keyword detection up to the end of the string. All
keywords are treated as verbatim arguments.

To create a RECPSTRING it is often useful to employ a strconcat style function. For example this function creates a string to encrypt to two keys:

```
char *
xbuild_recpstring (const char *key1, const char *key2)
{
  char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
  if (!result)
```

```
    { perror ("strconcat failed"); exit (2); }
  return result;
}
```

Note the use of the double dash here; unless you want to specify a keyword, it is a good idea to avoid any possible trouble with key specifications starting with a double dash. The used strconcat function is available in Libgpg-error 1.28 and later; Libgpg-error (aka Gpgrt) is a dependency of GPGME. The number of arguments to gpgrt_strconcat is limited to 47 but that should always be sufficient. In case a larger and non-fixed number of keys are to be
supplied the following code can be used:

```
char *
xbuild_long_recpstring (void)
{
  gpgrt_stream_t memfp;
  const char *s;
  void *result;

  memfp = gpgrt_fopenmem (0, "w+b");
  if (!memfp)
    { perror ("fopenmem failed"); exit (2); }
  gpgrt_fputs ("--", memfp);
  while ((s = get_next_keyspec ()))
    {
      gpgrt_fputc ('\n', memfp);
      gpgrt_fputs (s, memfp);
    }
  gpgrt_fputc (0, memfp);
  if (gpgrt_ferror (memfp))
    { perror ("writing to memstream failed"); exit (2); }
  if (gpgrt_fclose_snatch (memfp, &result, NULL))
    { perror ("fclose_snatch failed"); exit (2); }
  return result;
}
```

In this example get_next_keyspec is expected to return the next key to be added to the string. Please take care: Encrypting to a large number of recipients
is often questionable due to security reasons and also for the technicality that all keys are currently passed on the command line to gpg which has as a platform specific length limitation.

```
-- Function: gpgme_error_t gpgme_op_encrypt_ext_start (gpgme_ctx_t CTX,
      gpgme_key_t RECP[], const char *RECPSTRING,
```

gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_start with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. The keys are passed verbatim to the backend engine.

-- Data type: gpgme_encrypt_result_t
This is a pointer to a structure used to store the result of a gpgme_op_encrypt
operation. After successfully encrypting data, you can retrieve the pointer to the result with gpgme_op_encrypt_result. The structure contains the following members:

gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which the data could not be encrypted.

-- Function: gpgme_encrypt_result_t gpgme_op_encrypt_result
(gpgme_ctx_t CTX)
The function gpgme_op_encrypt_result returns a gpgme_encrypt_result_t pointer to a structure holding the result of a gpgme_op_encrypt operation. The pointer is only valid if the last operation on the context was a gpgme_op_encrypt, gpgme_op_encrypt_start, gpgme_op_sign or gpgme_op_sign_start operation. If this operation failed, this might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context.

-- Function: gpgme_error_t gpgme_op_encrypt_sign (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt_sign does a combined encrypt and sign operation. It is used like gpgme_op_encrypt, but the ciphertext also contains signatures for the signers listed in CTX.

The combined encrypt and sign operation is currently only available for the OpenPGP crypto engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[],

gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

The function gpgme_op_encrypt_sign_start initiates a gpgme_op_encrypt_sign operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CTX, RSET, PLAIN or CIPHER is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create the key objects. The keys are passed verbatim to the backend engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign_start with RECPSTRING
as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create the key objects. The keys are passed verbatim to the backend engine.

File: gpgme.info, Node: Miscellaneous, Next: Run Control, Prev: Crypto Operations, Up: Contexts

7.7 Miscellaneous operations

Here are some support functions which are sometimes useful.

* Menu:

* Running other Programs::   Running other Programs
* Using the Assuan protocol::   Using the Assuan protocol
* Checking for updates::   How to check for software updates

File: gpgme.info, Node: Running other Programs, Next: Using the Assuan protocol, Up: Miscellaneous

7.7.1 Running other Programs

GPGME features an internal subsystem to run the actual backend engines.
Along
 with data abstraction object this subsystem can be used to run
arbitrary simple programs which even need not be related to
cryptographic features. It may for example be used to run tools which
are part of the GnuPG system but are not directly accessible with the
GPGME API.

-- Function: gpgme_error_t gpgme_op_spawn (gpgme_ctx_t CTX,
      const char *FILE, const char *ARGV[], gpgme_data_t DATAIN,
      gpgme_data_t DATAOUT, gpgme_data_t DATAERR,
      unsigned int FLAGS)

   SINCE: 1.5.0

   The function gpgme_op_spawn runs the program FILE with the
   arguments taken from the NULL terminated array ARGV. If no
   arguments are required ARGV may be given as NULL. In the latter
   case or if argv[0] is the empty string, GPGME uses the basename
   of FILE for argv[0]. The file descriptors stdin, stdout, and
   stderr are connected to the data objects DATAIN, DATAOUT, and
   DATAERR. If NULL is passed for one of these data objects the
   corresponding
 file descriptor is connected to /dev/null.

   The value in FLAGS is a bitwise-or combination of one or multiple
   of the following bit values:

   GPGME_SPAWN_DETACHED
      SINCE: 1.5.0

      Under Windows this flag inhibits the allocation of a new
      console for the program. This is useful for a GUI application
      which needs to call a command line helper tool.

GPGME_SPAWN_ALLOW_SET_FG
SINCE: 1.5.0

Under Windows this flag allows the called program to put itself into the foreground.

-- Function: gpgme_error_t gpgme_op_spawn_start (gpgme_ctx_t CTX, const char *FILE, const char *ARGV[], gpgme_data_t DATAIN, gpgme_data_t DATAOUT, gpgme_data_t DATAERR, unsigned int FLAGS)

SINCE: 1.5.0

This is the asynchronous variant of gpgme_op_spawn.

File: gpgme.info, Node: Using the Assuan protocol, Next: Checking for updates, Prev: Running other Programs, Up: Miscellaneous

7.7.2 Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers. By default it is connected to the GnuPG agent, but it may be connected to arbitrary servers by using gpgme_ctx_set_engine_info, passing the location of the servers socket as FILE_NAME argument, and an empty string as HOME_DIR argument.

The Assuan protocol functions use three kinds of callbacks to transfer data:

-- Data type: gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN)

SINCE: 1.2.0

This callback receives any data sent by the server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, DATA of length DATALEN refers to the data sent.

-- Data type: gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA)

SINCE: 1.2.0

This callback is used to provide additional data to the Assuan

server. OPAQUE is the pointer passed to
gpgme_op_assuan_transact_start, NAME and ARGS specify what kind
of data the server requested, and R_DATA is used to return the
actual data.

Note: Returning data is currently not implemented in GPGME.

-- Data type: gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE,
const char *STATUS, const char *ARGS)

SINCE: 1.2.0

This callback receives any status lines sent by the server. OPAQUE
is the pointer passed to gpgme_op_assuan_transact_start, STATUS
and ARGS denote the status update sent.

-- Function: gpgme_error_t gpgme_op_assuan_transact_start
(gpgme_ctx_t CTX, const char *COMMAND,
gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE,
gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE,
gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE)

SINCE: 1.2.0

Send the Assuan COMMAND and return results via the callbacks. Any
callback may be NULL. The result of the operation may be
retrieved using gpgme_wait_ext.

Asynchronous variant.

-- Function: gpgme_error_t gpgme_op_assuan_transact_ext
(gpgme_ctx_t CTX, const char *COMMAND,
gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE,
gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE,
gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE,
gpgme_error_t *OP_ERR)

Send the Assuan COMMAND and return results via the callbacks. The
result of the operation is returned in OP_ERR.

Synchronous variant.

File: gpgme.info, Node: Checking for updates, Prev: Using the Assuan protocol, Up: Miscellaneous

7.7.3 How to check for software updates

The GnuPG Project operates a server to query the current versions of software packages related to GnuPG. GPGME can be used to access this online database and check whether a new version of a software package is available.

-- Data type: gpgme_query_swdb_result_t
SINCE: 1.8.0

This is a pointer to a structure used to store the result of a gpgme_op_query_swdb operation. After success full call to that function, you can retrieve the pointer to the result with gpgme_op_query_swdb_result. The structure contains the following member:

name
This is the name of the package.

iversion
The currently installed version or an empty string. This value is either a copy of the argument given to gpgme_op_query_swdb or the version of the installed software as figured out by GPGME or GnuPG.

created
This gives the date the file with the list of version numbers has originally be created by the GnuPG project.

retrieved
This gives the date the file was downloaded.

warning
If this flag is set either an error has occurred or some of the information in this structure are not properly set. For example if the version number of the installed software could not be figured out, the update flag may not reflect a required update status.

update
If this flag is set an update of the software is available.

urgent
If this flag is set an available update is important.

noinfo
If this flag is set, no valid information could be retrieved.

unknown
If this flag is set the given name is not known.

tooold
If this flag is set the available information is not fresh enough.

error
If this flag is set some other error has occurred.

version
The version string of the latest released version.

reldate
The release date of the latest released version.

-- Function: gpgme_error_t gpgme_op_query_swdb (gpgme_ctx_t CTX, const char *NAME, const char *IVERSION, gpgme_data_t RESERVED)

SINCE: 1.8.0

Query the software version database for software package NAME and check against the installed version given by IVERSION. If IVERSION is given as NULL a check is only done if GPGME can figure out the version by itself (for example when using "gpgme" or "gnupg"). If NULL is used for NAME the current gpgme version is checked. RESERVED must be set to 0.

-- Function: gpgme_query_swdb_result_t gpgme_op_query_swdb_result (gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_op_query_swdb_result returns a gpgme_query_swdb_result_t pointer to a structure holding the result of a gpgme_op_query_swdb operation. The pointer is only valid if the last operation on the context was a successful call to gpgme_op_query_swdb. If that call failed, the result might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context CTX.

Here is an example on
how to check whether GnuPG is current:

```
#include <gpgme.h>

int
main (void)
```

```
{
  gpg_error_t err;
  gpgme_ctx_t ctx;
  gpgme_query_swdb_result_t result;

  gpgme_check_version (NULL);
  err = gpgme_new (&ctx);
  if (err)
    fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
  else
    {
      gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

      err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
      if (err)
        fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
      else
        {
          result = gpgme_op_query_swdb_result (ctx);
          if (!result)
            fprintf (stderr, "error querying swdb\n");
          if (!result->warning && !result->update)
            printf ("GnuPG version %s is current\n",
                    result->iversion);
          else if (!result->warning && result->update)

      printf ("GnuPG version %s can be updated to %s\n",
                    result->iversion, result->version);
          else
            fprintf (stderr, "error finding the update status\n");
        }
      gpgme_release (ctx);
    }
  return 0;
}
```

File: gpgme.info, Node: Run Control, Prev: Miscellaneous, Up: Contexts

7.8 Run Control

GPGME supports running operations synchronously and asynchronously. You can use asynchronous operation to set up a context up to initiating the desired operation, but delay performing it to a later point.

Furthermore, you can use an external event loop to control exactly when GPGME runs. This ensures that GPGME only runs when necessary and

also prevents it from blocking for a long time.

* Menu:

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to
end pending operations prematurely.

File: gpgme.info, Node: Waiting For Completion, Next: Using External Event Loops, Up: Run Control

7.8.1 Waiting For Completion

-- Function: gpgme_ctx_t gpgme_wait (gpgme_ctx_t CTX,
gpgme_error_t *STATUS, int HANG)
The function gpgme_wait continues the pending operation within
the context CTX. In particular, it ensures the data exchange
between GPGME and the crypto backend and watches over the run time
status of the backend process.

If HANG is true, the function does not return until the operation
is completed or cancelled. Otherwise the function will not block
for a long time.

The error status of the finished operation is returned in STATUS if
gpgme_wait does not return NULL.

The CTX argument can be NULL. In that case, gpgme_wait waits
for any context to complete its operation.

gpgme_wait can be used only in conjunction with any context
that
has a pending operation initiated with one of the
gpgme_op_*_start functions except gpgme_op_keylist_start and
gpgme_op_trustlist_start (for which you should use the
corresponding gpgme_op_*_next functions). If CTX is NULL, all
of such contexts are waited upon and possibly returned.
Synchronous operations running in parallel, as well as key and
trust item list operations, do not affect gpgme_wait.

In a multi-threaded environment, only one thread should ever call
gpgme_wait at any time, regardless of whether CTX is specified or
not. This means that all calls to this function should be fully
synchronized by locking primitives. It is safe to start
asynchronous operations while a thread is running in gpgme_wait.

The function returns the CTX of the context which has finished the operation. If HANG is false, and the timeout expires, NULL is returned and *status will be set to 0. If an error occurs, NULL
is returned and the error is returned in *status.

File: gpgme.info, Node: Using External Event Loops, Next: Cancellation, Prev: Waiting For Completion, Up: Run Control

7.8.2 Using External Event Loops

GPGME hides the complexity of the communication between the library and the crypto engine. The price of this convenience is that the calling thread can block arbitrary long waiting for the data returned by the crypto engine. In single-threaded programs, in particular if they are interactive, this is an unwanted side-effect. OTOH, if gpgme_wait is used without the HANG option being enabled, it might be called unnecessarily often, wasting CPU time that could be used otherwise.

The I/O callback interface described in this section lets the user take control over what happens when. GPGME will provide the user with the file descriptors that should be monitored, and the callback functions that should be invoked when a file descriptor is ready for reading
or writing. It is then the users responsibility to decide when to check the file descriptors and when to invoke the callback functions. Usually this is done in an event loop, that also checks for events in other parts of the program. If the callback functions are only called when the file descriptors are ready, GPGME will never block. This gives the user more control over the program flow, and allows to perform other tasks when GPGME would block otherwise.

By using this advanced mechanism, GPGME can be integrated smoothly into GUI toolkits like GTK+ even for single-threaded programs.

* Menu:

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use GPGME with GTK+.
* I/O Callback Example GDK:: How to use GPGME with GDK.
* I/O Callback Example Qt:: How to use
GPGME with Qt.

7.8.2.1 I/O Callback Interface
.....

-- Data type: gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD)
The gpgme_io_cb_t type is the type of functions which GPGME wants to register as I/O callback handlers using the gpgme_register_io_cb_t functions provided by the user.

DATA and FD are provided by GPGME when the I/O callback handler is registered, and should be passed through to the handler when it is invoked by the user because it noticed activity on the file descriptor FD.

The callback handler always returns 0, but you should consider the return value to be reserved for later use.

-- Data type: gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG)
The gpgme_register_io_cb_t type is the type of functions which can be called by GPGME to register an I/O callback function FNC for the file descriptor FD with the user. FNC_DATA should be passed as the first argument to FNC when the handler is invoked (the second argument should be FD). If DIR is 0, FNC should be called by the user when FD is ready for writing. If DIR is 1, FNC should be called when FD is ready for reading.

DATA was provided by the user when registering the gpgme_register_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the event loop to which the file descriptor should be added.

GPGME will call this function when a crypto operation is initiated in a context for which the user has registered I/O callback handler functions with gpgme_set_io_cbs. It can also call this function when it is in an I/O callback handler for a file descriptor associated to this context.

The user should return a unique handle in TAG identifying this I/O callback registration, which will be passed to the gpgme_register_io_cb_t function without interpretation when the file descriptor should not be monitored anymore.

-- Data type: void (*gpgme_remove_io_cb_t) (void *TAG)
The gpgme_remove_io_cb_t type is the type of functions which can be called by GPGME to remove an I/O callback handler that was registered before. TAG is the handle that was returned by the gpgme_register_io_cb_t for this I/O callback.

GPGME can call this function when a crypto operation is in an I/O callback. It will also call this function when the context is destroyed while an operation is pending.

-- Data type: enum gpgme_event_io_t
The gpgme_event_io_t type specifies the type of an event that is reported to the user by GPGME as a consequence of an I/O operation. The following events
are defined:

GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the registered I/O callback handlers now. Note that registered I/O callback handlers must not be run before this event is signalled. TYPE_DATA is NULL and reserved for later use.

GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation was removed. The accompanying TYPE_DATA points to a struct gpgme_io_event_done_data variable that contains the status of the operation that finished. This event is signalled after the last I/O callback has been removed.

GPGME_EVENT_NEXT_KEY
In a gpgme_op_keylist_start operation, the next key was received from the crypto engine. The accompanying TYPE_DATA is a gpgme_key_t variable that contains the key with one reference for the user.

-- Data type: void (*gpgme_event_io_cb_t)
(void *DATA,
gpgme_event_io_t TYPE, void *TYPE_DATA)
The gpgme_event_io_cb_t type is the type of functions which can be called by GPGME to signal an event for an operation running in a context which has I/O callback functions registered by the user.

DATA was provided by the user when registering the gpgme_event_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the context in which this event has occurred.

TYPE will specify the type of event that has occurred. TYPE_DATA specifies the event further, as described in the above list of possible gpgme_event_io_t types.

GPGME can call this function in an I/O callback handler.

File: gpgme.info, Node: Registering I/O Callbacks, Next: I/O Callback Example, Prev: I/O Callback Interface, Up: Using External Event Loops

7.8.2.2 Registering I/O Callbacks

.....

-- Data type: struct gpgme_io_cbs

This structure is used to store the I/O callback interface functions described in the previous section. It has the following members:

gpgme_register_io_cb_t add

This is the function called by GPGME to register an I/O callback handler. It must be specified.

void *add_priv

This is passed as the first argument to the add function when it is called by GPGME. For example, it can be used to determine the event loop to which the file descriptor should be added.

gpgme_remove_io_cb_t remove

This is the function called by GPGME to remove an I/O callback handler. It must be specified.

gpgme_event_io_cb_t event

This is the function called by GPGME to signal an event for an operation. It must be specified, because at least the start event must be processed.

void *event_priv

This is passed as the first argument to the event function when it is called by GPGME. For example, it can be used to determine the context in which the event has occurred.

-- Function: void gpgme_set_io_cbs (gpgme_ctx_t CTX, struct gpgme_io_cbs *IO_CBS)

The function gpgme_set_io_cbs enables the I/O callback interface for the context CTX. The I/O callback functions are specified by IO_CBS.

If IO_CBS->add is NULL, the I/O callback interface is disabled
for the context, and normal operation is restored.

-- Function: void gpgme_get_io_cbs (gpgme_ctx_t CTX,
struct gpgme_io_cbs *IO_CBS)
The function gpgme_get_io_cbs returns the I/O callback functions
set with gpgme_set_io_cbs in IO_CBS.

File: gpgme.info, Node: I/O Callback Example, Next: I/O Callback Example GTK+, Prev: Registering I/O Callbacks, Up: Using External Event Loops

7.8.2.3 I/O Callback Example
.....

To
actually use an external event loop, you have to implement the I/O
callback functions that are used by GPGME to register and unregister
file descriptors. Furthermore, you have to actually monitor these file
descriptors for activity and call the appropriate I/O callbacks.

The following example illustrates how to do that. The example uses
locking to show in which way the callbacks and the event loop can run
concurrently. For the event loop, we use a fixed array. For a
real-world implementation, you should use a dynamically sized structure
because the number of file descriptors needed for a crypto operation in
GPGME is not predictable.

```
#include <assert.h>
#include <errno.h>
#include <stdlib.h>
#include <pthread.h>
#include <sys/types.h>
#include <gpgme.h>

/* The following structure holds the result of a crypto operation. */
struct op_result
{
  int done;
  gpgme_error_t err;
};

/* The following structure holds the
 data associated with one I/O
callback. */
struct one_fd
{
```

```
  int fd;
  int dir;
  gpgme_io_cb_t fnc;
  void *fnc_data;
  void *loop;
};

struct event_loop
{
  pthread_mutex_t lock;
#define MAX_FDS 32
  /* Unused slots are marked with FD being -1.  */
  struct one_fd fds[MAX_FDS];
};
```

The following functions implement the I/O callback interface.

```
gpgme_error_t
add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
    void **r_tag)
{
  struct event_loop *loop = data;
  struct one_fd *fds = loop->fds;
  int i;

  pthread_mutex_lock (&loop->lock);
  for (i = 0; i < MAX_FDS; i++)
    {
      if (fds[i].fd == -1)
 {
  fds[i].fd = fd;
  fds[i].dir = dir;
  fds[i].fnc = fnc;
  fds[i].fnc_data = fnc_data;
  fds[i].loop = loop;
  break;
 }
    }
  pthread_mutex_unlock (&loop->lock);
   if (i == MAX_FDS)
    return gpg_error (GPG_ERR_GENERAL);
  *r_tag = &fds[i];
  return 0;
}

void
remove_io_cb (void *tag)
{
```

```
  struct one_fd *fd = tag;
  struct event_loop *loop = fd->loop;

  pthread_mutex_lock (&loop->lock);
  fd->fd = -1;
  pthread_mutex_unlock (&loop->lock);
}

void
event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
{
  struct op_result *result = data;

  /* We don't support list operations here.  */
  if (type == GPGME_EVENT_DONE)
    {
      result->done = 1;
      result->err = *type_data;
    }
}
```

The final missing piece is the event loop, which will be presented next. We only support waiting for the success of a single operation.

```
int
do_select (struct event_loop *loop)
{
  fd_set rfds;
  fd_set wfds;
  int i, n;
  int any = 0;
  struct timeval tv;
  struct one_fd *fdlist
= loop->fds;

  pthread_mutex_lock (&loop->lock);
  FD_ZERO (&rfds);
  FD_ZERO (&wfds);
  for (i = 0; i < MAX_FDS; i++)
    if (fdlist[i].fd != -1)
      FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
  pthread_mutex_unlock (&loop->lock);

  tv.tv_sec = 0;
  tv.tv_usec = 1000;

  do
    {
```

```
      n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
    }
  while (n < 0 && errno == EINTR);

  if (n < 0)
    return n; /* Error or timeout.  */

  pthread_mutex_lock (&loop->lock);
  for (i = 0; i < MAX_FDS && n; i++)
    {
      if (fdlist[i].fd != -1)
 {
   if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
     {
       assert (n);
       n--;
       any = 1;
            /* The I/O callback handler can register/remove callbacks,
               so we have to unlock the file descriptor list.  */
            pthread_mutex_unlock (&loop->lock);
        (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
            pthread_mutex_lock (&loop->lock);
     }
 }
    }
  pthread_mutex_unlock (&loop->lock);
  return any;
}

void
wait_for_op (struct event_loop *loop, struct op_result *result)
{
  int ret;

  do
    {
      ret = do_select (loop);
    }
  while (ret >= 0 && !result->done);
}
```

The main function shows how to put it all together.

```
int
main (int argc, char *argv[])
{
  struct event_loop loop;
  struct op_result result;
```

```
    gpgme_ctx_t ctx;
    gpgme_error_t err;
    gpgme_data_t sig, text;
    int i;
    pthread_mutexattr_t attr;
    struct gpgme_io_cbs io_cbs =
    {
      add_io_cb,
      &loop,
      remove_io_cb,
      event_io_cb,
      &result
    };

    init_gpgme ();

    /* Initialize the loop structure.  */

    /* The mutex must be
recursive, since remove_io_cb (which acquires a
       lock) can be called while holding a lock acquired in do_select.  */
    pthread_mutexattr_init (&attr);
    pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
    pthread_mutex_init (&loop.lock, &attr);
    pthread_mutexattr_destroy (&attr);

    for (i = 0; i < MAX_FDS; i++)
      loop.fds[i].fd = -1;

    /* Initialize the result structure.  */
    result.done = 0;

    err = gpgme_data_new_from_file (&sig, "signature", 1);
    if (!err)
      err = gpgme_data_new_from_file (&text, "text", 1);
    if (!err)
      err = gpgme_new (&ctx);
    if (!err)
      {
        gpgme_set_io_cbs (ctx, &io_cbs);
        err = gpgme_op_verify_start (ctx, sig, text, NULL);
      }
    if (err)
      {
        fprintf (stderr, "gpgme error: %s: %s\n",
                 gpgme_strsource (err), gpgme_strerror (err));
        exit (1);
      }
```

```
    wait_for_op (&loop,
&result);
    if (!result.done)
      {
        fprintf (stderr, "select error\n");
        exit (1);
      }
    if (!result.err)
      {
        fprintf (stderr, "verification failed: %s: %s\n",
                 gpgme_strsource (result.err), gpgme_strerror (result.err));
        exit (1);
      }
    /* Evaluate verify result.  */
    ...
    return 0;
  }
```

File: gpgme.info, Node: I/O Callback Example GTK+, Next: I/O Callback Example GDK, Prev: I/O Callback Example, Up: Using External Event Loops

7.8.2.4 I/O Callback Example GTK+
.....

The I/O callback interface can be used to integrate GPGME with the GTK+ event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GTK+ specific
setup.

```
  #include <gtk/gtk.h>

  struct my_gpgme_io_cb
  {
    gpgme_io_cb_t fnc;
    void *fnc_data;
    guint input_handler_id
  };

  void
  my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
  {
    struct my_gpgme_io_cb *iocb = data;
    (*(iocb->fnc)) (iocb->data, source);
```

```
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gtk_input_remove (data->input_handler_id);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->input_handler_id = gtk_input_add_full (fd, dir
                                               ? GDK_INPUT_READ
                                               : GDK_INPUT_WRITE,
                                              my_gpgme_io_callback,
                                              0, iocb, NULL);
  *tag = iocb;
  return 0;
}
```

File: gpgme.info, Node: I/O Callback Example GDK, Next: I/O Callback Example Qt, Prev: I/O Callback Example GTK+, Up: Using External Event Loops

7.8.2.5 I/O Callback Example GDK

The I/O callback interface can also be used to integrate GPGME with the GDK event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

```
#include <gdk/gdk.h>

struct my_gpgme_io_cb
{
  gpgme_io_cb_t fnc;
  void *fnc_data;
  gint tag;
```

```
};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
{
  struct my_gpgme_io_cb *iocb = data;
  (*(iocb->fnc)) (iocb->data, source);
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gdk_input_remove (data->tag);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                  my_gpgme_io_callback, iocb, NULL);
  *tag = iocb;
  return 0;
}
```

File: gpgme.info, Node: I/O Callback Example Qt, Prev: I/O Callback Example GDK, Up: Using External Event Loops

7.8.2.6 I/O Callback Example Qt

The I/O callback interface can also be used to integrate GPGME with the Qt event loop. The following code snippets show how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any Qt specific setup.

```
#include <qsocketnotifier.h>
#include <qapplication.h>
```

```
  struct IOCB {
    IOCB( GpgmeIOCb f, void * d, QSocketNotifier * n )
      : func( f ), data( d ), notifier( n ) {}
    GpgmeIOCb func;
    void * data;
    QSocketNotifier * notifier;
  }

  class MyApp : public QApplication {

    // ...

    static void registerGpgmeIOCallback( void * data, int fd, int dir,
                                         GpgmeIOCb func, void * func_data,
                                         void ** tag ) {
      QSocketNotifier * n =
        new QSocketNotifier(
fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write );
      connect( n, SIGNAL(activated(int)),
               qApp, SLOT(slotGpgmeIOCallback(int)) );
      qApp->mIOCBs.push_back( IOCB( func, func_data, n ) );
      *tag = (void*)n;
    }

    static void removeGpgmeIOCallback( void * tag ) {
      if ( !tag ) return;
      QSocketNotifier * n = static_cast<QSocketNotifier*>( tag );
      for ( QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
            it != qApp->mIOCBs.end() ; ++it )
        if ( it->notifier == n ) {
          delete it->notifier;
          qApp->mIOCBs.erase( it );
          return;
        }
    }

  public slots:
    void slotGpgmeIOCallback( int fd ) {
      for ( QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
            it != mIOCBs.end() ; ++it )
        if ( it->notifier && it->notifier->socket() == fd )
          (*(it->func))
( it->func_data, fd );
    }

    // ...
```

```
private:
  QValueList<IOCB> mIOCBs;
  // ...
};
```

File: gpgme.info, Node: Cancellation, Prev: Using External Event Loops, Up: Run Control

7.8.3 Cancellation

Sometimes you do not want to wait for an operation to finish. GPGME provides two different functions to achieve that. The function gpgme_cancel takes effect immediately. When it returns, the operation is effectively canceled. However, it has some limitations and can not be used with synchronous operations. In contrast, the function gpgme_cancel_async can be used with any context and from any thread, but it is not guaranteed to take effect immediately. Instead, cancellation occurs at the next possible time (typically the next time I/O occurs in the target context).

-- Function: gpgme_ctx_t gpgme_cancel (gpgme_ctx_t CTX)
SINCE: 0.4.5

The function gpgme_cancel attempts to cancel a pending operation in the context
CTX. This only works if you use the global event loop or your own event loop.

If you use the global event loop, you must not call gpgme_wait during cancellation. After successful cancellation, you can call gpgme_wait (optionally waiting on CTX), and the context CTX will appear as if it had finished with the error code GPG_ERR_CANCEL.

If you use an external event loop, you must ensure that no I/O callbacks are invoked for this context (for example by halting the event loop). On successful cancellation, all registered I/O callbacks for this context will be unregistered, and a GPGME_EVENT_DONE event with the error code GPG_ERR_CANCEL will be signalled.

The function returns an error code if the cancellation failed (in this case the state of CTX is not modified).

-- Function: gpgme_ctx_t gpgme_cancel_async (gpgme_ctx_t CTX)
SINCE: 1.1.7

The function gpgme_cancel_async attempts to cancel a pending

operation
in the context CTX. This can be called by any thread at
any time after starting an operation on the context, but will not
take effect immediately. The actual cancellation happens at the
next time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in
this case the state of CTX is not modified).

File: gpgme.info, Node: UI Server Protocol, Next: Debugging, Prev: Contexts, Up: Top

Appendix A The GnuPG UI Server Protocol
****

This section specifies the protocol used between clients and a User
Interface Server (UI server). This protocol helps to build a system
where all cryptographic operations are done by a server and the server
is responsible for all dialogs. Although GPGME has no direct support
for this protocol it is believed that servers will utilize the GPGME
library; thus having the specification included in this manual is an
appropriate choice. This protocol
should be referenced as The GnuPG UI
Server Protocol.

A server needs to implement these commands:(1)

* Menu:

* UI Server Encrypt:: Encrypt a message.
* UI Server Sign:: Sign a message.
* UI Server Decrypt:: Decrypt a message.
* UI Server Verify:: Verify a message.
* UI Server Set Input Files:: Specifying the input files to operate on.
* UI Server Sign/Encrypt Files:: Encrypting and signing files.
* UI Server Verify/Decrypt Files:: Decrypting and verifying files.
* UI Server Import/Export Keys:: Managing certificates.
* UI Server Checksum Files:: Create and verify checksums for files.
* Miscellaneous UI Server Commands:: Commands not related to a specific operation.

---------- Footnotes ----------

(1) In all examples we assume that the connection has already been
established; see the Assuan manual for details.

File: gpgme.info, Node: UI Server Encrypt, Next: UI Server Sign, Up:

A.1 UI Server: Encrypt a Message

Before encryption can be done the recipients must be set using the command:

-- Command: RECIPIENT STRING

Set the recipient for the encryption. STRING is an RFC-2822 recipient name ("mailbox" as per section 3.4). This command may or may not check the recipient for validity right away; if it does not all recipients are expected to be checked at the time of the ENCRYPT command. All RECIPIENT commands are cumulative until a successful ENCRYPT command or until a RESET command. Linefeeds are obviously not allowed in STRING and should be folded into spaces (which are equivalent).

To tell the server the source and destination of the data, the next two commands are to be used:

-- Command: INPUT FD=N

Set the file descriptor for the message to be encrypted to N. The message send to the server is binary encoded.

GpgOL is a Windows only program, thus N is not a libc file descriptor but a regular system handle. Given that the Assuan connection works over a socket, it is not possible to use regular inheritance to make the file descriptor available to the server. Thus DuplicateHandle needs to be used to duplicate a handle to the server process. This is the reason that the server needs to implement the GETINFO pid command. Sending this command a second time replaces the file descriptor set by the last one.

-- Command: OUTPUT FD=N [--binary]

Set the file descriptor to be used for the output (i.e. the encrypted message) to N. If the option --binary is given the output shall be in binary format; if not given, the output for OpenPGP needs to be ASCII armored and for CMS Base-64 encoded. For details on the file descriptor, see the INPUT command.

The setting of the recipients, the data source and destination may happen in any order, even intermixed. If this has been done the actual encryption operation is called using:

-- Command: ENCRYPT --protocol=NAME

This command reads the plaintext from the file descriptor set by the INPUT command, encrypts it and writes the ciphertext to the file descriptor set by the OUTPUT command. The server may (and should) overlap reading and writing. The recipients used for the encryption are all the recipients set so far. If any recipient is not usable the server should take appropriate measures to notify the user about the problem and may cancel the operation by returning an error code. The used file descriptors are void after this command; the recipient list is only cleared if the server returns success.

Because GpgOL uses a streaming mode of operation the server is not allowed to auto select the protocol and must obey to the mandatory PROTOCOL parameter:

OpenPGP
Use the OpenPGP protocol (RFC-2440).
CMS
Use the CMS
(PKCS#7) protocol (RFC-3852).

To support automagically selection of the protocol depending on the selected keys, the server MAY implement the command:

-- Command: PREP_ENCRYPT [--protocol=NAME] [--expect-sign]

This commands considers all recipients set so far and decides whether it is able to take input and start the actual encryption. This is kind of a dry-run ENCRYPT without requiring or using the input and output file descriptors. The server shall cache the result of any user selection to avoid asking this again when the actual ENCRYPT command is send. The --protocol option is optional; if it is not given, the server should allow the user to select the protocol to be used based on the recipients given or by any other means.

If --expect-sign is given the server should expect that the message will also be signed and use this hint to present a unified recipient and signer selection dialog if possible and desired. A
selected signer should then be cached for the expected SIGN command (which is expected in the same session but possible on another connection).

If this command is given again before a successful ENCRYPT command, the second one takes effect.

Before sending the OK response the server shall tell the client the protocol to be used (either the one given by the argument or the one selected by the user) by means of a status line:

-- Status line: PROTOCOL NAME
Advise the client to use the protocol NAME for the ENCRYPT command. The valid protocol names are listed under the description of the ENCRYPT command. The server shall emit exactly one PROTOCOL status line.

Here is an example of a complete encryption sequence; client lines are indicated by a C:, server responses by C::

```
C: RESET
S: OK
C: RECIPIENT foo@example.net
S: OK
C: RECIPIENT bar@example.com
S: OK
C: PREP_ENCRYPT
 S: S PROTOCOL OpenPGP
S: OK
C: INPUT FD=17
S: OK
C: OUTPUT FD=18
S: OK
C: ENCRYPT
S: OK
```

File: gpgme.info, Node: UI Server Sign, Next: UI Server Decrypt, Prev: UI Server Encrypt, Up: UI Server Protocol

A.2 UI Server: Sign a Message
==========

The server needs to implement opaque signing as well as detached signing. Due to the nature of OpenPGP messages it is always required to send the entire message to the server; sending just the hash is not possible. The following two commands are required to set the input and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be signed to N. The message send to the server is binary encoded. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N [--binary]
   Set the file descriptor to be used for the output. The output
is
   either the complete signed message or in case of a detached
   signature just that detached signature. If the option --binary
   is given the output shall be in binary format; if not given, the
   output for OpenPGP needs to be ASCII armored and for CMS Base-64
   encoded. For details on the file descriptor, see the INPUT
   command.

To allow the server the selection of a non-default signing key the
client may optionally use the SENDER command, see *note command
SENDER::.

The signing operation is then initiated by:

-- Command: SIGN --protocol=NAME [--detached]
   Sign the data set with the INPUT command and write it to the sink
   set by OUTPUT. NAME is the signing protocol used for the message.
   For a description of the allowed protocols see the ENCRYPT
   command. With option --detached given, a detached signature is
   created; this is actually the usual way the command is used.

The client expects the server to send at least this status information
before
 the final OK response:

-- Status line: MICALG STRING
   The STRING represents the hash algorithm used to create the
   signature. It is used with RFC-1847 style signature messages and
   defined by PGP/MIME (RFC-3156) and S/MIME (RFC-3851). The GPGME
   library has a supporting function gpgme_hash_algo_name to return
   the algorithm name as a string. This string needs to be lowercased
   and for OpenPGP prefixed with "pgp-".
-----BEGIN PGP PRIVATE KEY BLOCK-----

lQOYBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAEAB/wLJ0gyMjs2fFfT83wM
5Lzz2yQIwV4t3bblBAujdHTqeN5Zmsm/oakFyjSokULK96Kv0R4ej9eoIgMFvxFk
HRkrggxTrbsNJ7I6QcKYHTPeIIj318ykNL6fj0WJUcdPIENukXl5jbqNyk3/4D2y
TTDySyq6jHTgvMH4K4KJUSpglvSJPntTk9RhuFGHAF+sNR9atygDYctAaERMRtSg
LCoSt/AoX5GRMlQjXT9oqQjwSQoZyF4s8HMC8wdTFIE/E0L4IVdHVp8sz2UszNtT
W/evmCA+KVruKjRH/Fhrq4hHkEamW28+j4L6uAyagONP7BONs+S5Oo2zTT9+tV2R

ILTZBADdgLuAgF6C5Lu9jCF6DfFgaT/uafMyQNkEGNlxOHMWHTgLHe475V2eG9gA
amd4yXKyEFKU1PWnvlGuicQSGdzVcwmq61msvXgYD0FK3LP3yWzKnE4X1tzrC9Vp
/uHJxKjewCuyt1f5in919v+T8TbUxBYKC0zX/qWtX+10cTx77QQA6leqhToJ95Yc
u4UBrKMEO+y2v8Svb3LG7yI5oY8tkw0EkJ/kpZ8xTAfZYCe6fXdvVE3PHg2lrxyc
Wv/EU3QY/qA3G82mbXYeJ2jNZaTNYo4MylMrt4Mx25x4ke7JlsE8SVrQ+4CrHkqp
OjSIa7fppLrQ78uW980AtN8NNQGrlTsD/A9aoA60Igxy1Q3K2uSyDCyjLknv57ym
ZSBD3/t7m0l6Q6gbdfhNGosT+Hd4y3actqEqzXZHW2VG4dKZ/wRNkxtSm9adU9vs
EHyzxjb6mKIH32zAG5TaFT20hC+NK6lsyHr9UE2ZrS6ma2sLxGW2O40hqNsdD+5m
NrqeBc2I/js1PMK0EHRlc3RAZXhhbXBsZS5vcmeJAVQEEwEIAD4WIQTUFzW5Ejb9
uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8JnAAULCQgHAgYVCgkICwIEFgIDAQIe
AQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGwFq07W9N01HWULyhHKoMmcHL6rfZ6
4oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6kaBe+wF6Kqir6udFSBW9rPcFg6/V
ZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rNGkYo1JCBR0XdRJYCSX3yB4TWv/eX
nZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k70DevQeBsv+UjVXjWpNTZmPbvDnd9
95uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6UunOf9Rlp1oMzdxMool/d1MlCxg2h
3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ1J8Nsv87SZeEnQOYBFrsKEkBCADj
oEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6yE+x2hk5FoQCajxKa/d4AVxOnJpd
whAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0pO7bgAiZxkA6RHxtNqhpPnPQoXvUz
kzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/8i9Taz67pdZwuJjac8qBuJHjzAo1
bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt3RuqVGP316Fk+Sy2+60tC/HlX8jg
MyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyLUGKU+L8cB2g1PGGp2biBFWqZbudZ
oyRBet/0yH/zirBdQJw1ABEBAAEAB/4lN3gXOI4OuoOcsvHak4pebx61Mt0YP9cT
qZASIBqxok5x8E28pFh/tYfkYdqRCtdNYZOnxcEoUWh5j6nfwZkEnJ9P/T8GPNk7
pMKnKXmExi05b5uGHD8nU1rSbf/YkvAF0vpbxd4/RDxbbtQhbUwGzusSI+pBLM0w
5TreEB+vRGBc2gOvXXOtKLNEa7M9rH2EwbAkP3jOGGwgk6adxbQdBcRxq4merqhL
YrVz73bCj8TDc0fsNJyIaZZJ++ejfBFYavsF1pvx9z7FNFi8rSXoiB3SBtaWGfhr
bwNaMZrDc7TRIq/fgGaL6g//bzcWrr1YaHXZ10Bgx6UymDOlYkCpBADm0Hv46sPw
07SO8+IACcaQliOto1pndOPwTimCeo58/7rf8I2a5uuJloGrnPwAX65bKDnUALp6
X3lnXRNMhnB3Uewx4i00LQmjsxhJfQiGLpMv0j58tn64s7GqQzGVV1JKcQm992RV
jFOydyjZ+K4LGWEOITG/bZrMEVNGCM+OnQQA/Haz8xN0NFSlq7tyfFc0pkx/TiCX
xGfBqbO0wU2b5GMnZbY/06HENpidIzpa231VQaw5/nPTvfhlLKW1iGAkc148cX1q
lL9w2ksXuaHR3LXud2VcfVTIdxU/7h7u1dD/85+c0+7jlGObD9cXKxlM6OjpIJz1
l5/1h3C5S0TuxHkEAL/3BGihkhNfv1Xx0rWu0/732usX/nE/A9C26hGu41FUf3fp
0ilonKpKZUEwWt5hWSEFCSrznNVekiO0rxvuu3RVegvzThPNU4Pf4JZtJpRVhvUQ
d9ulxJw7V9rs75uNBatTNC0kXuGoXhehw4Bn93xa67gYGd3LfrH+oT0GCDpTSHCJ
ATwEGAEIACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAK
CRAjAWNe7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ
5F32NDJ9PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7
Jq3e/4Iy0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02L
kr+2Cc/Qk6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe
23nntMSDA+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t
9Mmd7bM1+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=hkUm
-----END
PGP PRIVATE KEY BLOCK-----

```
from __future__ import absolute_import

import cython
```

```
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

if cython.compiled is True:
  cc = "Powered by Cython compiled C code."
else:
  cc = "Powered by Python."

print("""
  Number of secret keys:  {0}
  Number of public keys:  {1}

 {2}
""".format(secnum, pubnum, cc))
```

This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

Indirect:
gpgme.info-1: 1688
gpgme.info-2: 301751

Tag Table:
(Indirect)
Node: Top1688
Node: Introduction9067
Node: Getting Started9857
Node: Features11318
Node: Overview12630
Node: Preparation13739
Node: Header14736
Node: Building the Source15483
Node: Largefile Support (LFS)17627
Node: Using Automake23043
Node: Using Libtool25596
Node: Library Version
Check25958
Node: Signal Handling32018
Node: Multi-Threading33288
Ref: Multi-Threading-Footnote-134704
Node: Protocols and Engines35127
Node: Engine Version Check37878
Node: Engine Information40401
Node: Engine Configuration44261
Node: OpenPGP45565
Node: Cryptographic Message Syntax45905
Node: Assuan46218
Node: Algorithms46592
Ref: Algorithms-Footnote-147071
Node: Public Key Algorithms47199
Node: Hash Algorithms49801
Node: Error Handling51015

Node: Error Values52889
Node: Error Sources58092
Node: Error Codes60532
Node: Error Strings65325
Node: Exchanging Data67132
Node: Creating Data Buffers69017
Node: Memory Based Data Buffers69533
Node: File Based Data Buffers72966
Node: Callback Based Data Buffers76079
Node: Destroying Data Buffers80270
Node: Manipulating Data Buffers81777
Node: Data Buffer I/O Operations82269
Node: Data Buffer Meta-Data84642
Node: Data Buffer Convenience89161
Node: Contexts91381
Node: Creating Contexts92500
Node: Destroying Contexts93347
Node: Result Management93686
Node:
Context Attributes95267
Node: Protocol Selection96434
Node: Crypto Engine97480
Node: Setting the Sender99369
Node: ASCII Armor100882
Node: Text Mode101511
Node: Offline Mode102445
Node: Pinentry Mode103943
Node: Included Certificates105837
Node: Key Listing Mode107283
Node: Passphrase Callback112407
Node: Progress Meter Callback115969
Node: Status Message Callback117954
Node: Context Flags119719
Node: Locale126330
Node: Additional Logs127922
Node: Key Management130120
Node: Key objects131344
Node: Listing Keys145918
Node: Information About Keys154571
Node: Manipulating Keys155879
Node: Generating Keys158777
Node: Signing Keys177097
Node: Exporting Keys182611
Node: Importing Keys189891
Ref: Importing Keys-Footnote-1197294
Node: Deleting Keys197422
Node: Changing Passphrases199702
Node: Changing TOFU Data201029

Node: Advanced Key Editing203137
Node: Crypto Operations205870
Node: Decrypt207127
Node: Verify214407
Node: Decrypt and Verify227500
Node: Sign230355
Node: Selecting Signers230919
Node:
Creating a Signature232325
Node: Signature Notation Data237095
Node: Encrypt239380
Node: Encrypting a Plaintext239736
Node: Miscellaneous254148
Node: Running other Programs254560
Node: Using the Assuan protocol256723
Node: Checking for updates259521
Node: Run Control264338
Node: Waiting For Completion265082
Node: Using External Event Loops267207
Node: I/O Callback Interface269179
Node: Registering I/O Callbacks274107
Node: I/O Callback Example276146
Node: I/O Callback Example GTK+282771
Node: I/O Callback Example GDK284560
Node: I/O Callback Example Qt286202
Node: Cancellation288490
Node: UI Server Protocol290798
Ref: UI Server Protocol-Footnote-1292233
Node: UI Server Encrypt292352
Node: UI Server Sign297710
Node: UI Server Decrypt301751
Node: UI Server Verify303406
Node: UI Server Set Input Files306978
Node: UI Server Sign/Encrypt Files308048
Node: UI Server Verify/Decrypt Files309856
Node: UI Server Import/Export Keys311732
Node: UI Server Checksum Files312794
Node:
Miscellaneous UI Server Commands315012
Ref: command SENDER316943
Node: Debugging318645
Node: Deprecated Functions320394
Node: Library Copying343403
Node: Copying371623
Node: Concept Index409373
Node: Function and Data Index424085

End Tag Table

Local Variables:
coding: utf-8
End:
000
 *H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0
001102164724Z
011230180000Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1+0)U"DFN Server Certification Authority1!0 *H
 certify@pca.dfn.de0"0
 *H
0
W`r;wXu)QYHm1t]4?|-.B(iw6G01N>[mQSwC'muw~E'l-M
+<[A|F)F%
ZiRaW=OC,,meKW@J-*<,L}:Bnm-kv
EYBmu tt[-%,R+n0j0U00U0U{upz*D\
v0Ux0v09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfnpca.crx09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfn
pca.crl0 `HB0) `HBhttps://mystic.pca.dfn.de/0A `HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html0 `HB
This certificate was issued by the DFN-PCA, the Top
Level Certification Authority of the German Research
Network (Deutsches Forschungsnetz, DFN).
The key owner's identity was authenticated in
accordance with the DFN World Wide Web Policy, v1.00! `HBcgi/check-rev.cgi?0
 *H
\C)2
+ZYG| UCA|PzYFnTj@SA)/<HU+4t?@g?pb5w'Z;dqLi9\(d=
,}h?c(MeM44=Qe/_^^JyYN/61&jPFXifP&#;/KZ
1 xOK?ps
\input texinfo   @c -*- mode: texinfo; coding: utf-8; -*-
@documentencoding UTF-8
@setfilename gpgme.info
@include defs.inc
@settitle The `GnuPG Made Easy' Reference Manual

@dircategory GNU Libraries
@direntry
* @acronym{GPGME}: (gpgme).   Adding support for cryptography to your program.
@end direntry

@c Unify some of the indices.
@syncodeindex tp fn
@syncodeindex pg fn

@copying

Copyright @copyright{} 2002--2008, 2010, 2012--2018 g10 Code GmbH.

@quotation
Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU General Public License as published by the
Free Software Foundation; either version 3 of the License, or (at your
option) any later version. The text of the license can be found in the
section entitled ``Copying''.
@end quotation

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See
 the GNU
General Public License for more details.
@end copying

@c Macros used by the description of the UI server protocol
@macro clnt{string}
 @sc{c:} \string\
@end macro
@macro srvr{string}
 @sc{s:} \string\
@end macro

@c API version.
@macro since{string}
 @sc{Since:} \string\
@end macro

@c
@c T I T L E P A G E
@c
@ifinfo
This file documents the @acronym{GPGME} library.

This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version
@value{VERSION}.

@c NOTE: Don't forget to update the year for the TeX version, too.
@insertcopying

@end ifinfo

@c We do not want that bastard short titlepage.
@c @iftex

@c @shorttitlepage The `GnuPG Made Easy' Reference Manual
@c @end iftex
@titlepage
@center @titlefont{The `GnuPG Made Easy'}
@sp 1
@center @titlefont{Reference Manual}
@sp 6
@center Edition @value{EDITION}
@sp 1
@center last updated @value{UPDATED}
@sp 1
@center for version @value{VERSION}
@page
@vskip 0pt plus 1filll
Published
by The GnuPG Project@* c/o g10 Code GmbH@* Httenstr. 61@* 40699 Erkrath, Germany

@insertcopying
@end titlepage
@page

@summarycontents
@contents

@ifnottex
@node Top
@top Main Menu
This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version
@value{VERSION} of the @acronym{GPGME} library.
@end ifnottex

@menu
* Introduction:: How to use this manual.
* Preparation:: What you should do before using the library.
* Protocols and Engines:: Supported crypto protocols.
* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from @acronym{GPGME}.
* Contexts:: Handling @acronym{GPGME} contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated
Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share `GnuPG Made Easy'.
* Copying:: The GNU General Public License says how you
can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

@detailmenu
--- The Detailed Node Listing ---

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS)::
How to use @acronym{GPGME} with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How @acronym{GPGME} affects signal handling.
* Multi-Threading:: How @acronym{GPGME} can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error

value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new @acronym{GPGME} contexts.
*
Destroying Contexts:: Releasing @acronym{GPGME} contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with @acronym{GPGME}.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode::
Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.

* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of
a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting
until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.

* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate @acronym{GPGME} in GTK+.
* I/O Callback Example GDK:: How to integrate @acronym{GPGME} in GDK.
* I/O Callback Example Qt:: How to integrate @acronym{GPGME} in Qt.

@end detailmenu
@end menu

@node Introduction
@chapter Introduction

`GnuPG Made Easy' (@acronym{GPGME}) is a C language library that
allows to add support for cryptography to a program. It is designed
to make access to public key crypto engines like GnuPG or GpgSM easier
for applications. @acronym{GPGME} provides a high-level crypto API
for
 encryption, decryption, signing, signature verification and key
management.

@acronym{GPGME} uses GnuPG and GpgSM as its backends to support
OpenPGP and the Cryptographic Message Syntax (CMS).

@menu
* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.
@end menu

@node Getting Started
@section Getting Started

This manual documents the @acronym{GPGME} library programming
interface. All functions and data types provided by the library are
explained.

The reader is assumed to possess basic knowledge about cryptography in
general, and public key cryptography in particular. The underlying
cryptographic engines that are used by the library are not explained,
but where necessary, special features or requirements by an engine are
mentioned as far as they are relevant to @acronym{GPGME} or its users.

This manual
can be used in several ways. If read from the beginning
to the end, it gives a good introduction into the library and how it
can be used in an application. Forward references are included where
necessary. Later on, the manual can be used as a reference manual to
get just the information needed about any particular interface of the
library. Experienced programmers might want to start looking at the
examples at the end of the manual, and then only read up those parts
of the interface which are unclear.

The documentation for the language bindings is currently not included
in this manual. Those languages bindings follow the general
programming model of @acronym{GPGME} but may provide some extra high
level abstraction on top of the @acronym{GPGME} style API. For now
please see the README files in the @file{lang/} directory of the
source distribution.

@node Features
@section Features

@acronym{GPGME} has a couple of advantages over other libraries doing
a similar job, and over
implementing support for GnuPG or other crypto
engines into your application directly.

@table @asis
@item it's free software
Anybody can use, modify, and redistribute it under the terms of the GNU
Lesser General Public License (@pxref{Library Copying}).

@item it's flexible
@acronym{GPGME} provides transparent support for several cryptographic
protocols by different engines. Currently, @acronym{GPGME} supports
the OpenPGP protocol using GnuPG as the backend, and the Cryptographic
Message Syntax using GpgSM as the backend.

@item it's easy
@acronym{GPGME} hides the differences between the protocols and
engines from the programmer behind an easy-to-use interface. This way
the programmer can focus on the other parts of the program, and still
integrate strong cryptography in his application. Once support for
@acronym{GPGME} has been added to a program, it is easy to add support
for other crypto protocols once @acronym{GPGME} backends provide them.

@item it's language friendly
@acronym{GPGME}

comes with languages bindings for several common
programming languages: Common Lisp, C++, Python 2, and Python 3.
@end table

@node Overview
@section Overview

@acronym{GPGME} provides a data abstraction that is used to pass data
to the crypto engine, and receive returned data from it. Data can be
read from memory or from files, but it can also be provided by a
callback function.

The actual cryptographic operations are always set within a context.
A context provides configuration parameters that define the behaviour
of all operations performed within it. Only one operation per context
is allowed at any time, but when one operation is finished, you can
run the next operation in the same context. There can be more than
one context, and all can run different operations at the same time.

Furthermore, @acronym{GPGME} has rich key management facilities
including listing keys, querying their attributes, generating,
importing, exporting and deleting keys, and acquiring information
about
the trust path.

With some precautions, @acronym{GPGME} can be used in a multi-threaded
environment, although it is not completely thread safe and thus needs
the support of the application.

@node Preparation
@chapter Preparation

To use @acronym{GPGME}, you have to perform some changes to your
sources and the build system. The necessary changes are small and
explained in the following sections. At the end of this chapter, it
is described how the library is initialized, and how the requirements
of the library are verified.

@menu
* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS):: How to use @acronym{GPGME} with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling::

How @acronym{GPGME} affects signal handling.
* Multi-Threading:: How @acronym{GPGME} can be used in an MT environment.
@end menu

@node Header
@section Header
@cindex header file
@cindex include file

All interfaces (data types and functions) of the library are defined
in the header file `gpgme.h'. You must include this in all programs
using the library, either directly or through some other header file,
like this:

@example
#include <gpgme.h>
@end example

The name space of @acronym{GPGME} is @code{gpgme_*} for function names
and data types and @code{GPGME_*} for other symbols. Symbols internal
to @acronym{GPGME} take the form @code{_gpgme_*} and @code{_GPGME_*}.

Because @acronym{GPGME} makes use of the GPG Error library, using
@acronym{GPGME} will also use the @code{GPG_ERR_*} name space
directly, and the @code{gpg_err*}, @code{gpg_str*}, and @code{gpgrt_*}
name space indirectly.

@node Building the Source
@section Building the Source
@cindex compiler options
@cindex
compiler flags

If you want to compile a source file including the `gpgme.h' header
file, you must make sure that the compiler can find it in the
directory hierarchy. This is accomplished by adding the path to the
directory in which the header file is located to the compilers include
file search path (via the @option{-I} option).

However, the path to the include file is determined at the time the
source is configured. To solve this problem, gpgme ships with a small
helper program @command{gpgme-config} that knows about the path to the
include file and other configuration options. The options that need
to be added to the compiler invocation at compile time are output by
the @option{--cflags} option to @command{gpgme-config}. The following
example shows how it can be used at the command line:

@example
gcc -c foo.c `gpgme-config --cflags`
@end example

Adding the output of @samp{gpgme-config --cflags} to the compiler
command line will ensure that the compiler can find the
@acronym{GPGME}
 header file.

A similar problem occurs when linking the program with the library.
Again, the compiler has to find the library files. For this to work,
the path to the library files has to be added to the library search
path (via the @option{-L} option). For this, the option
@option{--libs} to @command{gpgme-config} can be used. For
convenience, this option also outputs all other options that are
required to link the program with @acronym{GPGME} (in particular, the
@samp{-lgpgme} option). The example shows how to link @file{foo.o}
with the @acronym{GPGME} library to a program @command{foo}.

@example
gcc -o foo foo.o `gpgme-config --libs`
@end example

Of course you can also combine both examples to a single command by
specifying both options to @command{gpgme-config}:

@example
gcc -o foo foo.c `gpgme-config --cflags --libs`
@end example

If you need to detect the installed language bindings you can use list
them using:

@example
gpgme-config --print-lang
@end example

or
 test for the availability using

@example
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
@end example

@node Largefile Support (LFS)
@section Largefile Support (LFS)

@cindex largefile support
@cindex LFS

@acronym{GPGME} is compiled with largefile support by default, if it is available on the system. This means that GPGME supports files larger than two gigabyte in size, if the underlying operating system can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those
new functions have the same name as their
smallfile counterparts, but with a suffix of 64.

An example: The data type @code{off_t} is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type @code{off64_t} is provided, which is 64 bit wide. Or you can replace the existing @code{off_t} data type with its 64 bit wide counterpart. All occurrences of @code{off_t} are then automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for @acronym{GPGME}, because
some data types it uses in
its interfaces are affected by that. For example, the @code{off_t} data type is used in the @code{gpgme_data_seek} function, to match its @acronym{POSIX} counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow for a transitional period.

On POSIX platforms @acronym{GPGME} is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the @file{gpgme.h} header file. All types in this header files refer to their largefile counterparts, if they are different from any default types on the system.

On 32 and 64 bit Windows platforms @code{off_t} is declared as 32 bit signed integer. There is no specific support for LFS in the C library. The recommendation from Microsoft is to use the native interface (@code{CreateFile} et al.) for large files. Released binary versions of @acronym{GPGME} (libgpgme-11.dll) have always been build with a 32 bit @code{off_t}. To avoid an ABI break we stick to this convention for 32 bit Windows by using @code{long} there. @acronym{GPGME} versions for 64 bit Windows have never been released and thus we are able to use @code{int64_t} instead of @code{off_t} there. For easier migration the typedef @code{gpgme_off_t} has been defined. The reason we cannot use @code{off_t} directly is that some toolchains (e.g. mingw64) introduce a POSIX compatible hack for @code{off_t}. Some widely used toolkits make use of this hack and in turn @acronym{GPGME} would need to use it also. However, this would introduce an ABI break and existing software making use of libgpgme might suffer from a severe break. Thus with version 1.4.2 we redefined all functions using @code{off_t} to use @code{gpgme_off_t} which is defined as explained above. This way we keep the ABI well defined and independent of any toolchain hacks. The bottom line is that LFS support in @acronym{GPGME} is only available on 64 bit versions of Windows.

On POSIX platforms you can enable largefile support, if it is different from the default on the system the application is compiled on, by using the Autoconf macro @code{AC_SYS_LARGEFILE}. If you do this, then you don't need to worry about anything else: It will just work. In this case you might also want to use @code{AC_FUNC_FSEEKO} to take advantage of some new interfaces, and @code{AC_TYPE_OFF_T} (just in case).

If you do not use Autoconf, you can define the preprocessor symbol @code{_FILE_OFFSET_BITS} to 64 @emph{before} including any header files, for example by specifying the option @code{-D_FILE_OFFSET_BITS=64} on the compiler command line. You will also want to define the preprocessor symbol @code{LARGEFILE_SOURCE} to 1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough
about the issue to invent your own solution. Just keep in mind that
the @acronym{GPGME} header file expects that largefile support is
enabled, if it is available. In particular, we do not support dual
mode (@code{_LARGEFILE64_SOURCE}).

@node Using Automake
@section Using Automake
@cindex automake
@cindex autoconf

It is much easier if you use GNU Automake instead of writing your own
Makefiles. If you do that you do not have to worry about finding and
invoking the @command{gpgme-config} script at all. @acronym{GPGME}
provides an extension to Automake that does all the work for you.

@c A simple macro for optional variables.
@macro ovar{varname}
@r{[}@var{\varname\}@r{]}
@end
 macro
@defmac AM_PATH_GPGME (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTH (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTHREAD (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
Check whether @acronym{GPGME} (at least version @var{minimum-version},
if given) exists on the host system. If it is found, execute
@var{action-if-found}, otherwise do @var{action-if-not-found}, if
given.

Additionally, the function defines @code{GPGME_CFLAGS} to the flags
needed for compilation of the program to find the @file{gpgme.h}
header file, and @code{GPGME_LIBS} to the linker flags needed to link
the program to the @acronym{GPGME} library. If the used helper script
does not match the target type you are building for a warning is
printed and the string @code{libgcrypt} is appended to the variable
@code{gpg_config_script_warn}.

@code{AM_PATH_GPGME_PTH}
 checks for the version of @acronym{GPGME}
that can be used with GNU Pth, and defines @code{GPGME_PTH_CFLAGS} and
@code{GPGME_PTH_LIBS}.

@code{AM_PATH_GPGME_PTHREAD} checks for the version of @acronym{GPGME}
that can be used with the native pthread implementation, and defines
@code{GPGME_PTHREAD_CFLAGS} and @code{GPGME_PTHREAD_LIBS}. Since

version 1.8.0 this is no longer required to GPGME_PTHREAD as
@acronym{GPGME} itself is thread safe.

This macro searches for @command{gpgme-config} along the PATH. If
you are cross-compiling, it is useful to set the environment variable
@code{SYSROOT} to the top directory of your target. The macro will
then first look for the helper program in the @file{bin} directory
below that top directory. An absolute directory name must be used for
@code{SYSROOT}. Finally, if the configure command line option
@code{--with-gpgme-prefix} is used, only its value is used for the top
directory below which the helper script is expected.

@end defmac

You can
use the defined Autoconf variables like this in your
@file{Makefile.am}:

@example
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
@end example

@node Using Libtool
@section Using Libtool
@cindex libtool

The easiest way is to just use GNU Libtool. If you use libtool, and
link to @code{libgpgme.la}, @code{libgpgme-pth.la} or
@code{libgpgme-pthread.la} respectively, everything will be done
automatically by Libtool.

@node Library Version Check
@section Library Version Check
@cindex version check, of the library

@deftypefun {const char *} gpgme_check_version (@w{const char *@var{required_version}})
The function @code{gpgme_check_version} has four purposes. It can be
used to retrieve the version number of the library. In addition it
can verify that the version number is higher than a certain required
version number. In either case, the function initializes some
sub-systems, and for this reason alone it must be invoked early in
your program, before you make use of the other functions
in
@acronym{GPGME}. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get
initialized.

If @var{required_version} is @code{NULL}, the function returns a
pointer to a statically allocated string containing the version number
of the library.

If @var{required_version} is not @code{NULL}, it should point to a
string containing a version number, and the function checks that the
version of the library is at least as high as the version number
provided. In this case, the function returns a pointer to a
statically allocated string containing the version number of the
library. If @var{REQUIRED_VERSION} is not a valid version number, or
if the version requirement is not met, the function returns
@code{NULL}.

If you use a version of a library that is backwards compatible with
older releases, but contains additional interfaces which your program
uses, this function provides a run-time check if the necessary
features are provided by the
 installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors
are returned later when invoking @code{gpgme_new} or
@code{gpgme-data_new}, so that a detailed error code can be returned
(historically, @code{gpgme_check_version} does not return a detailed
error code).
@end deftypefun

@deftypefun {int} gpgme_set_global_flag @
        (@w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.4.0}

On some systems it is not easy to set environment variables and thus
hard to use @acronym{GPGME}'s internal trace facility for debugging.
This function has been introduced as an alternative way to enable
debugging and for a couple of other rarely used tweaks. It is
important to assure that only one thread accesses @acronym{GPGME}
functions between a call to this function and after the return from
the call to @code{gpgme_check_version}.

All currently supported features require that this function is called
as early as possible

--- even before @code{gpgme_check_version}. The
features are identified by the following values for @var{name}:

@table @code
@item debug
To enable debugging use the string ``debug'' for @var{name} and
@var{value} identical to the value used with the environment variable
@code{GPGME_DEBUG}.

@item disable-gpgconf
Using this feature with any @var{value} disables the detection of the
gpgconf program and thus forces GPGME to fallback into the simple
OpenPGP only mode. It may be used to force the use of GnuPG-1 on
systems which have both GPG versions installed. Note that in general
the use of @code{gpgme_set_engine_info} is a better way to select a
specific engine version.

@item gpgconf-name
@itemx gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are
@code{GNU/GnuPG/gpgconf} and @code{GNU/GnuPG/gpg}. Under Unix the
leading directory part is ignored. Under Windows the leading
directory part is used as the default installation directory; the
@code{.exe} suffix
is added by GPGME. Use forward slashed even under
Windows.

@item require-gnupg
Set the minimum version of the required GnuPG engine. If that version
is not met, GPGME fails early instead of trying to use the existent
version. The given version must be a string with major, minor, and
micro number. Example: "2.1.0".

@item w32-inst-dir
On Windows GPGME needs to know its installation directory to find its
spawn helper. This is in general no problem because a DLL has this
information. Some applications however link statically to GPGME and
thus GPGME can only figure out the installation directory of this
application which may be wrong in certain cases. By supplying an
installation directory as value to this flag, GPGME will assume that
that directory is the installation directory. This flag has no effect
on non-Windows platforms.

@end table

This function returns @code{0} on success. In contrast to other
functions the non-zero return value on failure does not convey any
error

code. For setting ``debug'' the only possible error cause is an
out of memory condition; which would exhibit itself later anyway.
Thus the return value may be ignored.
@end deftypefun

After initializing @acronym{GPGME}, you should set the locale
information to the locale required for your output terminal. This
locale information is needed for example for the curses and Gtk
pinentry. Here is an example of a complete initialization:

@example
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
@{
 /* Initialize the locale environment. */
 setlocale (LC_ALL, "");
 gpgme_check_version (NULL);
 gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
#ifdef LC_MESSAGES
 gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
@}
@end example

Note that you are highly recommended to initialize the locale settings
like this. @acronym{GPGME} can not do this for you because it would
not be thread safe. The conditional on LC_MESSAGES is only necessary
for
 portability to W32 systems.

@node Signal Handling
@section Signal Handling
@cindex signals
@cindex signal handling

The @acronym{GPGME} library communicates with child processes (the
crypto engines). If a child process dies unexpectedly, for example
due to a bug, or system problem, a @code{SIGPIPE} signal will be
delivered to the application. The default action is to abort the
program. To protect against this, @code{gpgme_check_version} sets the
@code{SIGPIPE} signal action to @code{SIG_IGN}, which means that the
signal will be ignored.

@acronym{GPGME} will only do that if the signal action for
@code{SIGPIPE} is @code{SIG_DEF} at the time
@code{gpgme_check_version} is called. If it is something different,
@code{GPGME} will take no action.

This means that if your application does not install any signal
handler for @code{SIGPIPE}, you don't need to take any precautions.
If you do install a signal handler for @code{SIGPIPE}, you must be
prepared to handle any @code{SIGPIPE}
 events that occur due to
@acronym{GPGME} writing to a defunct pipe. Furthermore, if your
application is multi-threaded, and you install a signal action for
@code{SIGPIPE}, you must make sure you do this either before
@code{gpgme_check_version} is called or afterwards.

@node Multi-Threading
@section Multi-Threading
@cindex thread-safeness
@cindex multi-threading

The @acronym{GPGME} library is mostly thread-safe, and can be used
in a multi-threaded environment but there are some requirements
for multi-threaded use:

@itemize @bullet
@item
The function @code{gpgme_check_version} must be called before any
other function in the library, because it initializes the thread
support subsystem in @acronym{GPGME}. To achieve this in
multi-threaded programs, you must synchronize the memory with respect
to other threads that also want to use @acronym{GPGME}. For this, it
is sufficient to call @code{gpgme_check_version} before creating the
other threads using @acronym{GPGME}@footnote{At least
 this is true for
POSIX threads, as @code{pthread_create} is a function that
synchronizes memory with respects to other threads. There are many
functions which have this property, a complete list can be found in
POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the
definition of the term ``Memory Synchronization''. For other thread
packages other, more relaxed or more strict rules may apply.}.

@item
Any @code{gpgme_data_t} and @code{gpgme_ctx_t} object must only be
accessed by one thread at a time. If multiple threads want to deal
with the same object, the caller has to make sure that operations on
that object are fully synchronized.

@item
Only one thread at any time is allowed to call @code{gpgme_wait}. If
multiple threads call this function, the caller must make sure that
all invocations are fully synchronized. It is safe to start
asynchronous operations while a thread is running in gpgme_wait.

@item
The function @code{gpgme_strerror} is not thread safe. You have
to
use @code{gpgme_strerror_r} instead.
@end itemize

@node Protocols and Engines
@chapter Protocols and Engines
@cindex protocol
@cindex engine
@cindex crypto engine
@cindex backend
@cindex crypto backend

@acronym{GPGME} supports several cryptographic protocols, however, it
does not implement them. Rather it uses backends (also called
engines) which implement the protocol. @acronym{GPGME} uses
inter-process communication to pass data back and forth between the
application and the backend, but the details of the communication
protocol and invocation of the backend is completely hidden by the
interface. All complexity is handled by @acronym{GPGME}. Where an
exchange of information between the application and the backend is
necessary, @acronym{GPGME} provides the necessary callback function
hooks and further interfaces.

@deftp {Data type} {enum gpgme_protocol_t}
@tindex gpgme_protocol_t
The @code{gpgme_protocol_t} type specifies the set of possible protocol
values that are supported
by @acronym{GPGME}. The following protocols
are supported:

@table @code
@item GPGME_PROTOCOL_OpenPGP
@itemx GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

@item GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

@item GPGME_PROTOCOL_GPGCONF

Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_ASSUAN
@since{1.2.0}

This specifies the raw Assuan protocol.

@item GPGME_PROTOCOL_G13
@since{1.3.0}

Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_UISERVER
Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_SPAWN
@since{1.5.0}

Special protocol for use with @code{gpgme_op_spawn}.

@item GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the
used protocol is not known to the application. Currently,
@acronym{GPGME} does not accept this value in any operation, though,
except for @code{gpgme_get_protocol_name}.
@end
 table
@end deftp

@deftypefun {const char *} gpgme_get_protocol_name (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_get_protocol_name} returns a statically
allocated string describing the protocol @var{protocol}, or
@code{NULL} if the protocol number is not valid.
@end deftypefun

@menu
* Engine Version Check::   Verifying the engine version.
* Engine Information::   Obtaining more information about the engines.
* Engine Configuration::   Changing the engine configuration.
* OpenPGP::   Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan::   Support for the raw Assuan protocol.
@end menu

@node Engine Version Check
@section Engine Version Check

@cindex version check, of the engines

@deftypefun @w{const char *} gpgme_get_dirinfo (@w{cons char *@var{what}})
@since{1.5.0}

The function @code{gpgme_get_dirinfo} returns a statically
allocated
string with the value associated to @var{what}. The returned values
are the defaults and won't change even after
@code{gpgme_set_engine_info} has been used to configure a different
engine. @code{NULL} is returned if no value is available. Commonly
supported values for @var{what} are:

@table @code
@item homedir
Return the default home directory.

@item sysconfdir
Return the name of the system configuration directory

@item bindir
Return the name of the directory with GnuPG program files.

@item libdir
Return the name of the directory with GnuPG related library files.

@item libexecdir
Return the name of the directory with GnuPG helper program files.

@item datadir
Return the name of the directory with GnuPG shared data.

@item localedir
Return the name of the directory with GnuPG locale data.

@item agent-socket
Return the name of the socket to connect to the gpg-agent.

@item agent-ssh-socket
Return the name of the socket to connect to the ssh-agent component of
gpg-agent.

@item
dirmngr-socket
Return the name of the socket to connect to the dirmngr.

@item uiserver-socket
Return the name of the socket to connect to the user interface server.

@item gpgconf-name
Return the file name of the engine configuration tool.

@item gpg-name
Return the file name of the OpenPGP engine.

@item gpgsm-name
Return the file name of the CMS engine.

@item g13-name
Return the name of the file container encryption engine.

@item gpg-wks-client-name
Return the name of the Web Key Service tool.

@end table

@end deftypefun

@deftypefun gpgme_error_t gpgme_engine_check_version (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_engine_check_version} verifies that the
engine implementing the protocol @var{PROTOCOL} is installed in the
expected path and meets the version requirement of @acronym{GPGME}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if the
engine is available and @code{GPG_ERR_INV_ENGINE} if it is not.
@end deftypefun

@node Engine
Information
@section Engine Information
@cindex engine, information about

@deftp {Data type} {gpgme_engine_info_t}
@tindex gpgme_protocol_t
The @code{gpgme_engine_info_t} type specifies a pointer to a structure
describing a crypto engine. The structure contains the following
elements:

@table @code
@item gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_protocol_t protocol

This is the protocol for which the crypto engine is used. You can
convert this to a string with @code{gpgme_get_protocol_name} for
printing.

@item const char *file_name
This is a string holding the file name of the executable of the crypto
engine. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.

@item const char *home_dir
This is a string holding the directory name of the crypto engine's
configuration directory. If it is @code{NULL}, then
 the default
directory is used. See @code{gpgme_get_dirinfo} on how to get the
default directory.

@item const char *version
This is a string containing the version number of the crypto engine.
It might be @code{NULL} if the version number can not be determined,
for example because the executable doesn't exist or is invalid.

@item const char *req_version
This is a string containing the minimum required version number of the
crypto engine for @acronym{GPGME} to work correctly. This is the
version number that @code{gpgme_engine_check_version} verifies
against. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_get_engine_info (@w{gpgme_engine_info_t *@var{info}})
The function @code{gpgme_get_engine_info} returns a linked list of
engine info structures in @var{info}. Each info structure describes
the defaults of one configured backend.

The memory for the info
 structures is allocated the first time this
function is invoked, and must not be freed by the caller.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, and a system error if the memory could not be allocated.
@end deftypefun

Here is an example how you can provide more diagnostics if you receive
an error message which indicates that the crypto engine is invalid.

@example
gpgme_ctx_t ctx;

```
gpgme_error_t err;

[...]

if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
 @{
  gpgme_engine_info_t info;
  err = gpgme_get_engine_info (&info);
  if (!err)
    @{
      while (info && info->protocol != gpgme_get_protocol (ctx))
        info = info->next;
      if (!info)
        fprintf (stderr, "GPGME compiled without support for protocol %s",
                 gpgme_get_protocol_name (info->protocol));
      else if (info->file_name && !info->version)
        fprintf (stderr, "Engine %s not installed properly",
                 info->file_name);
       else if (info->file_name && info->version && info->req_version)
        fprintf (stderr, "Engine %s version %s installed, "
                 "but at least version %s required", info->file_name,
                 info->version, info->req_version);
      else
        fprintf (stderr, "Unknown problem with engine for protocol %s",
                 gpgme_get_protocol_name (info->protocol));
    @}
 @}
@end example


@node Engine Configuration
@section Engine Configuration
@cindex engine, configuration of
@cindex configuration of crypto backend

You can change the configuration of a backend engine, and thus change
the executable program and configuration directory to be used.  You
can make these changes the default or set them for some contexts
individually.

@deftypefun gpgme_error_t gpgme_set_engine_info (@w{gpgme_protocol_t @var{proto}}, @w{const char
*@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_set_engine_info} changes
 the default
configuration of the crypto engine implementing the protocol
@var{proto}.
```

@var{file_name} is the file name of the executable program
implementing this protocol, and @var{home_dir} is the directory name
of the configuration directory for this crypto engine. If
@var{home_dir} is @code{NULL}, the engine's default will be used.

The new defaults are not applied to already created GPGME contexts.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, or an error code on failure.
@end deftypefun

The functions @code{gpgme_ctx_get_engine_info} and
@code{gpgme_ctx_set_engine_info} can be used to change the engine
configuration per context. @xref{Crypto Engine}.

@node OpenPGP
@section OpenPGP
@cindex OpenPGP
@cindex GnuPG
@cindex protocol, GnuPG
@cindex engine, GnuPG

OpenPGP is implemented by GnuPG, the @acronym{GNU} Privacy Guard.
This is the first protocol that was supported by @acronym{GPGME}.

The OpenPGP protocol is specified by @code{GPGME_PROTOCOL_OpenPGP}.

@node
 Cryptographic Message Syntax
@section Cryptographic Message Syntax
@cindex CMS
@cindex cryptographic message syntax
@cindex GpgSM
@cindex protocol, CMS
@cindex engine, GpgSM
@cindex S/MIME
@cindex protocol, S/MIME

@acronym{CMS} is implemented by GpgSM, the S/MIME implementation for
GnuPG.

The @acronym{CMS} protocol is specified by @code{GPGME_PROTOCOL_CMS}.

@node Assuan

@section Assuan
@cindex ASSUAN
@cindex protocol, ASSUAN
@cindex engine, ASSUAN

Assuan is the RPC library used by the various @acronym{GnuPG}
components. The Assuan protocol allows one to talk to arbitrary
Assuan servers using @acronym{GPGME}. @xref{Using the Assuan
protocol}.

The ASSUAN protocol is specified by @code{GPGME_PROTOCOL_ASSUAN}.

@node Algorithms
@chapter Algorithms
@cindex algorithms

The crypto backends support a variety of algorithms used in public key
cryptography.@footnote{Some engines also provide symmetric only
encryption; see the description of the encryption function on
 how to use
this.} The following sections list the identifiers used to denote such
an algorithm.

@menu
* Public Key Algorithms::   A list of all public key algorithms.
* Hash Algorithms::   A list of all hash algorithms.
@end menu

@node Public Key Algorithms
@section Public Key Algorithms
@cindex algorithms, public key
@cindex public key algorithms

Public key algorithms are used for encryption, decryption, signing and
verification of signatures.

@deftp {Data type} {enum gpgme_pubkey_algo_t}
@tindex gpgme_pubkey_algo_t
The @code{gpgme_pubkey_algo_t} type specifies the set of all public key
algorithms that are supported by @acronym{GPGME}. Possible values
are:

@table @code
@item GPGME_PK_RSA
This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

@item GPGME_PK_RSA_E
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman)
algorithm for encryption and decryption only.

@item GPGME_PK_RSA_S
Deprecated. This value indicates the RSA (Rivest, Shamir,
Adleman)
algorithm for signing and verification only.

@item GPGME_PK_DSA
This value indicates DSA, the Digital Signature Algorithm.

@item GPGME_PK_ELG
This value indicates ElGamal.

@item GPGME_PK_ELG_E
This value also indicates ElGamal and is used specifically in GnuPG.

@item GPGME_PK_ECC
@since{1.5.0}

This value is a generic indicator for ellipic curve algorithms.

@item GPGME_PK_ECDSA
@since{1.3.0}

This value indicates ECDSA, the Elliptic Curve Digital Signature
Algorithm as defined by FIPS 186-2 and RFC-6637.

@item GPGME_PK_ECDH
@since{1.3.0}

This value indicates ECDH, the Eliptic Curve Diffie-Hellmann
encryption algorithm as defined by RFC-6637.

@item GPGME_PK_EDDSA
@since{1.7.0}

This value indicates the EdDSA algorithm.

@end table
@end deftp

@deftypefun {const char *} gpgme_pubkey_algo_name (@w{gpgme_pubkey_algo_t @var{algo}})
The function @code{gpgme_pubkey_algo_name} returns a pointer to a
statically allocated string containing a description of the public key
algorithm

@var{algo}. This string can be used to output the name of
the public key algorithm to the user.

If @var{algo} is not a valid public key algorithm, @code{NULL} is
returned.
@end deftypefun

@deftypefun {char *} gpgme_pubkey_algo_string (@w{gpgme_subkey_t @var{key}})
@since{1.7.0}

The function @code{gpgme_pubkey_algo_string} is a convenience function
to build and return an algorithm string in the same way GnuPG does
(e.g. ``rsa2048'' or ``ed25519''). The caller must free the result
using @code{gpgme_free}. On error (e.g. invalid argument or memory
exhausted), the function returns NULL and sets @code{ERRNO}.
@end deftypefun

@node Hash Algorithms
@section Hash Algorithms
@cindex algorithms, hash
@cindex algorithms, message digest
@cindex hash algorithms
@cindex message digest algorithms

Hash (message digest) algorithms are used to compress a long message
to make it suitable for public key cryptography.

@deftp {Data type} {enum gpgme_hash_algo_t}
@tindex gpgme_hash_algo_t
The
@code{gpgme_hash_algo_t} type specifies the set of all hash algorithms
that are supported by @acronym{GPGME}. Possible values are:

@table @code
@item GPGME_MD_MD5
@item GPGME_MD_SHA1
@item GPGME_MD_RMD160
@item GPGME_MD_MD2
@item GPGME_MD_TIGER
@item GPGME_MD_HAVAL
@item GPGME_MD_SHA256
@item GPGME_MD_SHA384
@item GPGME_MD_SHA512
@item GPGME_MD_SHA224
@since{1.5.0}

@item GPGME_MD_MD4

@item GPGME_MD_CRC32
@item GPGME_MD_CRC32_RFC1510
@item GPGME_MD_CRC24_RFC2440
@end table
@end deftp

@deftypefun {const char *} gpgme_hash_algo_name (@w{gpgme_hash_algo_t @var{algo}})
The function @code{gpgme_hash_algo_name} returns a pointer to a
statically allocated string containing a description of the hash
algorithm @var{algo}. This string can be used to output the name of
the hash algorithm to the user.

If @var{algo} is not a valid hash algorithm, @code{NULL} is returned.
@end deftypefun

@node Error Handling
@chapter Error Handling
@cindex error handling

Many functions in @acronym{GPGME}
 can return an error if they fail.
For this reason, the application should always catch the error
condition and take appropriate measures, for example by releasing the
resources and passing the error up to the caller, or by displaying a
descriptive message to the user and cancelling the operation.

Some error values do not indicate a system error or an error in the
operation, but the result of an operation that failed properly. For
example, if you try to decrypt a tempered message, the decryption will
fail. Another error value actually means that the end of a data
buffer or list has been reached. The following descriptions explain
for many error codes what they mean usually. Some error values have
specific meanings if returned by a certain functions. Such cases are
described in the documentation of those functions.

@acronym{GPGME} uses the @code{libgpg-error} library. This allows to
share the error codes with other components of the GnuPG system, and
thus pass error values transparently
 from the crypto engine, or some
helper application of the crypto engine, to the user. This way no
information is lost. As a consequence, @acronym{GPGME} does not use
its own identifiers for error codes, but uses those provided by
@code{libgpg-error}. They usually start with @code{GPG_ERR_}.

However, @acronym{GPGME} does provide aliases for the functions
defined in libgpg-error, which might be preferred for name space
consistency.

@menu
* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.
* Error Strings:: How to get a descriptive string from a value.
@end menu

@node Error Values
@section Error Values
@cindex error values
@cindex error codes
@cindex error sources

@deftp {Data type} {gpgme_err_code_t}
The @code{gpgme_err_code_t} type is an alias for the @code{libgpg-error}
type @code{gpg_err_code_t}. The
error code indicates the type of an
error, or the reason why an operation failed.

A list of important error codes can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_err_source_t}
The @code{gpgme_err_source_t} type is an alias for the
@code{libgpg-error} type @code{gpg_err_source_t}. The error source
has not a precisely defined meaning. Sometimes it is the place where
the error happened, sometimes it is the place where an error was
encoded into an error value. Usually the error source will give an
indication to where to look for the problem. This is not always true,
but it is attempted to achieve this goal.

A list of important error sources can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_error_t}
The @code{gpgme_error_t} type is an alias for the @code{libgpg-error}
type @code{gpg_error_t}. An error value like this has always two
components, an error code and an error source. Both together form the
error value.

Thus, the error value
can not be directly compared against an error
code, but the accessor functions described below must be used.
However, it is guaranteed that only 0 is used to indicate success
(@code{GPG_ERR_NO_ERROR}), and that in this case all other parts of
the error value are set to 0, too.

Note that in @acronym{GPGME}, the error source is used purely for
diagnostical purposes. Only the error code should be checked to test
for a certain outcome of a function. The manual only documents the
error code part of an error value. The error source is left
unspecified and might be anything.
@end deftp

@deftypefun {static inline gpgme_err_code_t} gpgme_err_code (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_code} returns the
@code{gpgme_err_code_t} component of the error value @var{err}. This
function must be used to extract the error code from an error value in
order to compare it with the @code{GPG_ERR_*} error code macros.
@end deftypefun

@deftypefun {static inline gpgme_err_source_t}
 gpgme_err_source (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_source} returns the
@code{gpgme_err_source_t} component of the error value @var{err}. This
function must be used to extract the error source from an error value in
order to compare it with the @code{GPG_ERR_SOURCE_*} error source macros.
@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_err_make (@w{gpgme_err_source_t @var{source}},
@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_err_make} returns the error
value consisting of the error source @var{source} and the error code
@var{code}.

This function can be used in callback functions to construct an error
value to return it to the library.
@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_error (@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_error} returns the error value
consisting of the default error source and the error code @var{code}.

For @acronym{GPGME}
 applications, the default error source is
@code{GPG_ERR_SOURCE_USER_1}. You can define
@code{GPGME_ERR_SOURCE_DEFAULT} before including @file{gpgme.h} to
change this default.

This function can be used in callback functions to construct an error
value to return it to the library.
@end deftypefun

The @code{libgpg-error} library provides error codes for all system

error numbers it knows about. If @var{err} is an unknown error
number, the error code @code{GPG_ERR_UNKNOWN_ERRNO} is used. The
following functions can be used to construct error values from system
errnor numbers.

@deftypefun {gpgme_error_t} gpgme_err_make_from_errno (@w{gpgme_err_source_t @var{source}}, @w{int @var{err}})
The function @code{gpgme_err_make_from_errno} is like
@code{gpgme_err_make}, but it takes a system error like @code{errno}
instead of a @code{gpgme_err_code_t} error code.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_error_from_errno (@w{int @var{err}})
The function @code{gpgme_error_from_errno}
is like @code{gpgme_error},
but it takes a system error like @code{errno} instead of a
@code{gpgme_err_code_t} error code.
@end deftypefun

Sometimes you might want to map system error numbers to error codes
directly, or map an error code representing a system error back to the
system error number. The following functions can be used to do that.

@deftypefun {gpgme_err_code_t} gpgme_err_code_from_errno (@w{int @var{err}})
The function @code{gpgme_err_code_from_errno} returns the error code
for the system error @var{err}. If @var{err} is not a known system
error, the function returns @code{GPG_ERR_UNKNOWN_ERRNO}.
@end deftypefun

@deftypefun {int} gpgme_err_code_to_errno (@w{gpgme_err_code_t @var{err}})
The function @code{gpgme_err_code_to_errno} returns the system error
for the error code @var{err}. If @var{err} is not an error code
representing a system error, or if this system error is not defined on
this system, the function returns @code{0}.
@end deftypefun

@node Error Sources
@section
Error Sources
@cindex error codes, list of

The library @code{libgpg-error} defines an error source for every
component of the GnuPG system. The error source part of an error
value is not well defined. As such it is mainly useful to improve the
diagnostic error message for the user.

If the error code part of an error value is @code{0}, the whole error

value will be @code{0}. In this case the error source part is of
course @code{GPG_ERR_SOURCE_UNKNOWN}.

The list of error sources that might occur in applications using
@acronym{GPGME} is:

@table @code
@item GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is
@code{0}.

@item GPG_ERR_SOURCE_GPGME
The error source is @acronym{GPGME} itself. This is the default for
errors that occur in the @acronym{GPGME} library.

@item GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the
OpenPGP protocol.

@item GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is
 the crypto engine used for the
CMS protocol.

@item GPG_ERR_SOURCE_GCRYPT
The error source is @code{libgcrypt}, which is used by crypto engines
to perform cryptographic operations.

@item GPG_ERR_SOURCE_GPGAGENT
The error source is @command{gpg-agent}, which is used by crypto
engines to perform operations with the secret key.

@item GPG_ERR_SOURCE_PINENTRY
The error source is @command{pinentry}, which is used by
@command{gpg-agent} to query the passphrase to unlock a secret key.

@item GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by
@command{gpg-agent} to delegate operations with the secret key to a
SmartCard.

@item GPG_ERR_SOURCE_KEYBOX
The error source is @code{libkbx}, a library used by the crypto
engines to manage local keyrings.

@item GPG_ERR_SOURCE_USER_1
@item GPG_ERR_SOURCE_USER_2
@item GPG_ERR_SOURCE_USER_3

@item GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be
used by other software. For example, applications
 using
@acronym{GPGME} can use them to mark error values coming from callback
handlers. Thus @code{GPG_ERR_SOURCE_USER_1} is the default for errors
created with @code{gpgme_error} and @code{gpgme_error_from_errno},
unless you define @code{GPGME_ERR_SOURCE_DEFAULT} before including
@file{gpgme.h}.
@end table

@node Error Codes
@section Error Codes
@cindex error codes, list of

The library @code{libgpg-error} defines many error values. Most of
them are not used by @code{GPGME} directly, but might be returned by
@acronym{GPGME} because it received them from the crypto engine. The
below list only includes such error codes that have a specific meaning
in @code{GPGME}, or which are so common that you should know about
them.

@table @code
@item GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

@item GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is
@code{0}. Also, it is guaranteed that an error value made from the
error code @code{0}
 will be @code{0} itself (as a whole). This means
that the error source information is lost for this error code,
however, as this error code indicates that no error occurred, this is
generally not a problem.

@item GPG_ERR_GENERAL
This value means that something went wrong, but either there is not
enough information about the problem to return a more useful error
value, or there is no separate error value for this type of problem.

@item GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

@item GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO where FOO is the symbol for
the system error.

@item GPG_ERR_INV_VALUE
This value means that some user provided data was out of range. This
can also refer to objects. For example, if an empty
@code{gpgme_data_t} object was expected, but one containing data was
provided, this error value is returned.

@item GPG_ERR_UNUSABLE_PUBKEY
This value means that some recipients for a message were invalid.

@item GPG_ERR_UNUSABLE_SECKEY
This
 value means that some signers were invalid.

@item GPG_ERR_NO_DATA
This value means that a @code{gpgme_data_t} object which was expected
to have content was found empty.

@item GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

@item GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is not
implemented. This error should never happen. It can only occur if
you use certain values or configuration options which do not work,
but for which we think that they should work at some later time.

@item GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

@item GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase
when requested.

@item GPG_ERR_CANCELED
This value means that the operation was canceled.

@item GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired protocol
is currently not available. This can either be because
 the sources
were configured to exclude support for this engine, or because the
engine is not installed properly.

@item GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify
a unique key.

@item GPG_ERR_WRONG_KEY_USAGE

This value indicates that a key is not used appropriately.

@item GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

@item GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

@item GPG_ERR_NO_CRL_KNOWN
This value indicates that no certificate revocation list is known for
the certificate.

@item GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

@item GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

@item GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the
issuer certificate is missing.

@item GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its
certificate
 chain is not good, for example it could be too long.

@item GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic
algorithm is not supported by the crypto backend.

@item GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

@item GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not
available.

@item GPG_ERR_USER_1
@item GPG_ERR_USER_2
@item ...
@item GPG_ERR_USER_16
These error codes are not used by any GnuPG component and can be
freely used by other software. Applications using @acronym{GPGME}
might use them to mark specific errors returned by callback handlers
if no suitable error codes (including the system errors) for
these errors exist already.
@end table

@node Error Strings
@section Error Strings
@cindex error values, printing of
@cindex error codes, printing of
@cindex error sources, printing of
@cindex error strings

@deftypefun {const char *} gpgme_strerror
(@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error code contained
in the error value @var{err}. This string can be used to output a
diagnostic message to the user.

This function is not thread safe. Use @code{gpgme_strerror_r} in
multi-threaded programs.
@end deftypefun

@deftypefun {int} gpgme_strerror_r (@w{gpgme_error_t @var{err}}, @w{char *@var{buf}}, @w{size_t @var{buflen}})
The function @code{gpgme_strerror_r} returns the error string for
@var{err} in the user-supplied buffer @var{buf} of size @var{buflen}.
This function is, in contrast to @code{gpgme_strerror}, thread-safe if
a thread-safe @code{strerror_r} function is provided by the system.
If the function succeeds, 0 is returned and @var{buf} contains the
string describing the error. If the buffer was not large enough,
ERANGE is returned and @var{buf} contains as much of the beginning of
the error string as fits into
the buffer.
@end deftypefun

@deftypefun {const char *} gpgme_strsource (@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error source
contained in the error value @var{err}. This string can be used to
output a diagnostic message to the user.
@end deftypefun

The following example illustrates the use of @code{gpgme_strerror}:

@example
gpgme_ctx_t ctx;
gpgme_error_t err = gpgme_new (&ctx);
if (err)

```
 @{
   fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",
            argv[0], gpgme_strsource (err), gpgme_strerror (err));
   exit (1);
 @}
@end example


@node Exchanging Data
@chapter Exchanging Data
@cindex data, exchanging

A lot of data has to be exchanged between the user and the crypto
engine, like plaintext messages, ciphertext, signatures and
information about the keys.  The technical details about exchanging
the data information are completely abstracted by @acronym{GPGME}.
The
 user provides and receives the data via @code{gpgme_data_t} objects,
regardless of the communication protocol between @acronym{GPGME} and
the crypto engine in use.

@deftp {Data type} {gpgme_data_t}
The @code{gpgme_data_t} type is a handle for a container for generic
data, which is used by @acronym{GPGME} to exchange data with the user.
@end deftp

@code{gpgme_data_t} objects do not provide notifications on events.
It is assumed that read and write operations are blocking until data
is available.  If this is undesirable, the application must ensure
that all GPGME data operations always have data available, for example
by using memory buffers or files rather than pipes or sockets.  This
might be relevant, for example, if the external event loop mechanism
is used.

@deftp {Data type} {gpgme_off_t}
@since{1.4.1}

On POSIX platforms the @code{gpgme_off_t} type is an alias for
@code{off_t}; it may be used interchangeable.  On Windows platforms
@code{gpgme_off_t} is defined as
 a long (i.e. 32 bit) for 32 bit
Windows and as a 64 bit signed integer for 64 bit Windows.
@end deftp

@deftp {Data type} {gpgme_ssize_t}
The @code{gpgme_ssize_t} type is an alias for @code{ssize_t}.  It has
only been introduced to overcome portability problems pertaining to
the declaration of @code{ssize_t} by different toolchains.
```

@end deftp

@menu
* Creating Data Buffers::   Creating new data buffers.
* Destroying Data Buffers::   Releasing data buffers.
* Manipulating Data Buffers::   Operations on data buffers.
@end menu

@node Creating Data Buffers
@section Creating Data Buffers
@cindex data buffer, creation

Data objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all
objects.

@menu
* Memory Based Data Buffers::   Creating memory based data buffers.
* File Based Data Buffers::   Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.
@end menu

@node
 Memory Based Data Buffers
@subsection Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is
convenient, but only practical for an amount of data that is a
fraction of the available physical memory. The data has to be copied
from its source and to its destination, which can often be avoided by
using one of the other data object

@deftypefun gpgme_error_t gpgme_data_new (@w{gpgme_data_t *@var{dh}})
The function @code{gpgme_data_new} creates a new @code{gpgme_data_t}
object and returns a handle for it in @var{dh}. The data object is
memory based and initially empty.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_mem (@w{gpgme_data_t *@var{dh}}, @w{const char

*@var{buffer}}, @w{size_t @var{size}},
 @w{int @var{copy}})
The function @code{gpgme_data_new_from_mem} creates a new
@code{gpgme_data_t} object and fills it with @var{size} bytes starting
from @var{buffer}.

If @var{copy} is not zero, a private copy of the data is made. If
@var{copy} is zero, the data is taken from the specified buffer as
needed, and the user has to ensure that the buffer remains valid for
the whole life span of the data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{buffer} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_file (@w{gpgme_data_t *@var{dh}}, @w{const char
*@var{filename}}, @w{int @var{copy}})
The function @code{gpgme_data_new_from_file} creates a new
@code{gpgme_data_t} object and fills it with the content of the file
@var{filename}.

If @var{copy} is not zero, the whole file is
 read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for @var{copy} might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{filename} is not a valid pointer,
@code{GPG_ERR_NOT_IMPLEMENTED} if @var{code} is zero, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_filepart (@w{gpgme_data_t *@var{dh}}, @w{const char
*@var{filename}}, @w{FILE *@var{fp}}, @w{off_t @var{offset}}, @w{size_t @var{length}})
The function @code{gpgme_data_new_from_filepart} creates a new
@code{gpgme_data_t} object and fills it with a part of the file specified
by @var{filename} or @var{fp}.

Exactly one of @var{filename} and @var{fp} must be non-zero, the other
must
 be zero. The argument that is not zero specifies the file from
which @var{length} bytes are read into the data object, starting from
@var{offset}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} and exactly one of @var{filename} and @var{fp} is not a valid
pointer, and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@node File Based Data Buffers
@subsection File Based Data Buffers

File based data objects operate directly on file descriptors or
streams. Only a small amount of data is stored in core at any time,
so the size of the data objects is not limited by @acronym{GPGME}.

@deftypefun gpgme_error_t gpgme_data_new_from_fd (@w{gpgme_data_t *@var{dh}}, @w{int @var{fd}})
The function @code{gpgme_data_new_from_fd} creates a new
@code{gpgme_data_t} object and uses the file descriptor @var{fd} to read
from (if used as an input data object) and write to (if used as
an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the file descriptor than is actually needed by the
crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking
mode. Errors during I/O operations, except for EINTR, are usually
fatal for crypto operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_stream (@w{gpgme_data_t *@var{dh}}, @w{FILE
*@var{stream}})
The function @code{gpgme_data_new_from_stream} creates a new
@code{gpgme_data_t} object and uses the I/O stream @var{stream} to read
from (if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the
stream than is actually needed by the crypto
engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors

during I/O operations, except for EINTR, are usually fatal for crypto
operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_estream (@w{gpgme_data_t *@var{dh}},
@w{gpgrt_stream_t @var{stream}})
The function @code{gpgme_data_new_from_estream} creates a new
@code{gpgme_data_t} object and uses the gpgrt stream @var{stream} to read
from (if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the stream than is actually needed by the crypto
engine in the desired operation because of internal buffering.

Note that GPGME
 assumes that the stream is in blocking mode. Errors
during I/O operations, except for EINTR, are usually fatal for crypto
operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@node Callback Based Data Buffers
@subsection Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your
application, you can implement the functions a data object provides
yourself and create a data object from these callback functions.

@deftp {Data type} {ssize_t (*gpgme_data_read_cb_t) (@w{void *@var{handle}}, @w{void @var{*buffer}},
@w{size_t @var{size}})}
@tindex gpgme_data_read_cb_t
The @code{gpgme_data_read_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to read data from a user-implemented
data object. The function should read up to @var{size} bytes from the
current read position into the space
 starting at @var{buffer}. The
@var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available.

Errors during I/O operations, except for EINTR, are usually fatal for
crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1
on error. If an error occurs, @var{errno} should be set to describe
the type of the error.
@end deftp

@deftp {Data type} {ssize_t (*gpgme_data_write_cb_t) (@w{void *@var{handle}}, @w{const void
@var{*buffer}}, @w{size_t @var{size}})}
@tindex gpgme_data_write_cb_t
The @code{gpgme_data_write_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to write data to a user-implemented
data object. The function should write up to @var{size} bytes to the
current write position from the space starting at @var{buffer}. The
@var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data
 is available.
Errors during I/O operations, except for EINTR, are usually fatal for
crypto operations.

The function should return the number of bytes written, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {off_t (*gpgme_data_seek_cb_t) (@w{void *@var{handle}}, @w{off_t @var{offset}},
@w{int @var{whence}})}
@tindex gpgme_data_seek_cb_t
The @code{gpgme_data_seek_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to change the current read/write
position in a user-implemented data object, just like the @code{lseek}
function.

The function should return the new read/write position, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {void (*gpgme_data_release_cb_t) (@w{void *@var{handle}})}
@tindex gpgme_data_release_cb_t
The @code{gpgme_data_release_cb_t} type is the type of functions which
@acronym{GPGME}
 calls if it wants to destroy a user-implemented data
object. The @var{handle} is provided by the user at data object
creation time.
@end deftp

@deftp {Data type} {struct gpgme_data_cbs}
This structure is used to store the data callback interface functions
described above. It has the following members:

@table @code
@item gpgme_data_read_cb_t read
This is the function called by @acronym{GPGME} to read data from the
data object. It is only required for input data object.

@item gpgme_data_write_cb_t write
This is the function called by @acronym{GPGME} to write data to the
data object. It is only required for output data object.

@item gpgme_data_seek_cb_t seek
This is the function called by @acronym{GPGME} to change the current
read/write pointer in the data object (if available). It is optional.

@item gpgme_data_release_cb_t release
This is the function called by @acronym{GPGME} to release a data
object. It is optional.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_data_new_from_cbs
 (@w{gpgme_data_t *@var{dh}}, @w{gpgme_data_cbs_t @var{cbs}}, @w{void *@var{handle}})
The function @code{gpgme_data_new_from_cbs} creates a new
@code{gpgme_data_t} object and uses the user-provided callback functions
to operate on the data object.

The handle @var{handle} is passed as first argument to the callback
functions. This can be used to identify this data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@node Destroying Data Buffers
@section Destroying Data Buffers
@cindex data buffer, destruction

@deftypefun void gpgme_data_release (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_release} destroys the data object with
the handle @var{dh}. It releases all associated resources that were
not provided by the user in the first place.
@end deftypefun

@deftypefun {char *} gpgme_data_release_and_get_mem (@w{gpgme_data_t
 @var{dh}}, @w{size_t *@var{length}})
The function @code{gpgme_data_release_and_get_mem} is like
@code{gpgme_data_release}, except that it returns the data buffer and
its length that was provided by the object.

The user has to release the buffer with @code{gpgme_free}. In case
the user provided the data buffer in non-copy mode, a copy will be
made for this purpose.

In case an error returns, or there is no suitable data buffer that can
be returned to the user, the function will return @code{NULL}. In any
case, the data object @var{dh} is destroyed.
@end deftypefun

@deftypefun void gpgme_free (@w{void *@var{buffer}})
@since{1.1.1}

The function @code{gpgme_free} releases the memory returned by
@code{gpgme_data_release_and_get_mem} and
@code{gpgme_pubkey_algo_string}. It should be used instead of the
system libraries @code{free} function in case different allocators are
used by a program. This is often the case if gpgme is used under
Windows as a DLL.
@end deftypefun

@node
 Manipulating Data Buffers
@section Manipulating Data Buffers
@cindex data buffer, manipulation

Data buffers contain data and meta-data. The following operations can
be used to manipulate both.

@menu
* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.
@end menu

@node Data Buffer I/O Operations
@subsection Data Buffer I/O Operations
@cindex data buffer, I/O operations

@cindex data buffer, read
@cindex data buffer, write
@cindex data buffer, seek

@deftypefun ssize_t gpgme_data_read (@w{gpgme_data_t @var{dh}}, @w{void *@var{buffer}}, @w{size_t @var{length}})
The function @code{gpgme_data_read} reads up to @var{length} bytes
from the data object with the handle @var{dh} into the space starting
at @var{buffer}.

If no error occurs, the actual amount read is returned. If the end of
the data object is reached, the function returns
0.

In all other cases, the function returns -1 and sets @var{errno}.
@end deftypefun

@deftypefun ssize_t gpgme_data_write (@w{gpgme_data_t @var{dh}}, @w{const void *@var{buffer}}, @w{size_t @var{size}})
The function @code{gpgme_data_write} writes up to @var{size} bytes
starting from @var{buffer} into the data object with the handle
@var{dh} at the current write position.

The function returns the number of bytes actually written, or -1 if an
error occurs. If an error occurs, @var{errno} is set.
@end deftypefun

@deftypefun off_t gpgme_data_seek (@w{gpgme_data_t @var{dh}}, @w{off_t @var{offset}}, @w{int @var{whence}})
The function @code{gpgme_data_seek} changes the current read/write
position.

The @var{whence} argument specifies how the @var{offset} should be
interpreted. It must be one of the following symbolic constants:

@table @code
@item SEEK_SET
Specifies that @var{offset} is a count of characters from the
beginning of the data object.

@item SEEK_CUR
Specifies that @var{offset}
is a count of characters from the current
file position. This count may be positive or negative.

@item SEEK_END
Specifies that @var{offset} is a count of characters from the end of
the data object. A negative count specifies a position within the

current extent of the data object; a positive count specifies a
position past the current end. If you set the position past the
current end, and actually write data, you will extend the data object
with zeros up to that position.
@end table

If successful, the function returns the resulting file position,
measured in bytes from the beginning of the data object. You can use
this feature together with @code{SEEK_CUR} to read the current
read/write position.

If the function fails, -1 is returned and @var{errno} is set.
@end deftypefun

@node Data Buffer Meta-Data
@subsection Data Buffer Meta-Data
@cindex data buffer, meta-data
@cindex data buffer, file name
@cindex data buffer, encoding

@deftypefun {char *} gpgme_data_get_file_name
 (@w{gpgme_data_t @var{dh}})
@since{1.1.0}

The function @code{gpgme_data_get_file_name} returns a pointer to a
string containing the file name associated with the data object. The
file name will be stored in the output when encrypting or signing the
data and will be returned to the user when decrypting or verifying the
output data.

If no error occurs, the string containing the file name is returned.
Otherwise, @code{NULL} will be returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_file_name (@w{gpgme_data_t @var{dh}}, @w{const char *@var{file_name}})
@since{1.1.0}

The function @code{gpgme_data_set_file_name} sets the file name
associated with the data object. The file name will be stored in the
output when encrypting or signing the data and will be returned to the
user when decrypting or verifying the output data.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{dh} is not a valid pointer and @code{GPG_ERR_ENOMEM} if not
enough memory is available.

@end
deftypefun

@deftp {Data type} {enum gpgme_data_encoding_t}
@tindex gpgme_data_encoding_t
The @code{gpgme_data_encoding_t} type specifies the encoding of a @code{gpgme_data_t} object. For input data objects, the encoding is useful to give the backend a hint on the type of data. For output data objects, the encoding can specify the output data format on certain operations. Please note that not all backends support all encodings on all operations. The following data types are available:

@table @code
@item GPGME_DATA_ENCODING_NONE
This specifies that the encoding is not known. This is the default for a new data object. The backend will try its best to detect the encoding automatically.

@item GPGME_DATA_ENCODING_BINARY
This specifies that the data is encoding in binary form; i.e. there is no special encoding.

@item GPGME_DATA_ENCODING_BASE64
This specifies that the data is encoded using the Base-64 encoding scheme as used by @acronym{MIME} and other protocols.

@item
GPGME_DATA_ENCODING_ARMOR
This specifies that the data is encoded in an armored form as used by OpenPGP and PEM.

@item GPGME_DATA_ENCODING_MIME
@since{1.7.0}

This specifies that the data is encoded as a MIME part.

@item GPGME_DATA_ENCODING_URL
@since{1.2.0}

The data is a list of linefeed delimited URLs. This is only useful with @code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URL0
@since{1.2.0}

The data is a list of binary zero delimited URLs. This is only useful with @code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URLESC
@since{1.2.0}

The data is a list of linefeed delimited URLs with all control and space
characters percent escaped. This mode is is not yet implemented.

@end table
@end deftp

@deftypefun gpgme_data_encoding_t gpgme_data_get_encoding (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_get_encoding} returns the encoding of
the data object with the handle @var{dh}. If @var{dh} is not a valid
pointer (e.g. @code{NULL}) @code{GPGME_DATA_ENCODING_NONE}
 is
returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_encoding (@w{gpgme_data_t @var{dh}, gpgme_data_encoding_t
@var{enc}})
The function @code{gpgme_data_set_encoding} changes the encoding of
the data object with the handle @var{dh} to @var{enc}.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_data_set_flag @
        (@w{gpgme_data_t @var{dh}}, @
        @w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the data object can be controlled with flags
set by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item size-hint
The value is a decimal number with the length gpgme shall assume for
this data object. This is useful if the data is provided by callbacks
or via file descriptors but the applications knows the total size of
the data. If this is set the OpenPGP engine may use this to decide on
buffer allocation strategies and to provide a total
 value for its
progress information.

@end table

This function returns @code{0} on success.

@end deftypefun

@node Data Buffer Convenience
@subsection Data Buffer Convenience Functions
@cindex data buffer, convenience
@cindex type of data
@cindex identify

@deftp {Data type} {enum gpgme_data_type_t}
@tindex gpgme_data_type_t
@since{1.4.3}

The @code{gpgme_data_type_t} type is used to return the detected type
of the content of a data buffer.
@end deftp

@table @code
@item GPGME_DATA_TYPE_INVALID
This is returned by @code{gpgme_data_identify} if it was not possible
to identify the data. Reasons for this might be a non-seekable stream
or a memory problem. The value is 0.
@item GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
@item GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary
signature, a detached one or a cleartext signature.
@item GPGME_DATA_TYPE_PGP_ENCRYPTED
@since{1.7.0}

The data is an OpenPGP encrypted message.
@item GPGME_DATA_TYPE_PGP_SIGNATURE
@since{1.7.0}

The
 data is an OpenPGP detached signature.
@item GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be
encrypted data.
@item GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
@item GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
@item GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
@item GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
@item GPGME_DATA_TYPE_X509_CERT

The data is a X.509 certificate
@item GPGME_DATA_TYPE_PKCS12
The data is a PKCS#12 message. This is commonly used to exchange
private keys for X.509.
@end table

@deftypefun gpgme_data_type_t gpgme_data_identify (@w{gpgme_data_t @var{dh}})
@since{1.4.3}

The function @code{gpgme_data_identify} returns the type of the data
with the handle @var{dh}. If it is not possible to perform the
identification, the function returns zero
(@code{GPGME_DATA_TYPE_INVALID}). Note that depending
 on how the data
object has been created the identification may not be possible or the
data object may change its internal state (file pointer moved). For
file or memory based data object, the state should not change.
@end deftypefun

@c
@c Chapter Contexts
@c
@node Contexts
@chapter Contexts
@cindex context

All cryptographic operations in @acronym{GPGME} are performed within a
context, which contains the internal state of the operation as well as
configuration parameters. By using several contexts you can run
several cryptographic operations in parallel, with different
configuration.

@deftp {Data type} {gpgme_ctx_t}
The @code{gpgme_ctx_t} type is a handle for a @acronym{GPGME} context,
which is used to hold the configuration, status and result of
cryptographic operations.
@end deftp

@menu
* Creating Contexts:: Creating new @acronym{GPGME} contexts.
* Destroying Contexts:: Releasing @acronym{GPGME} contexts.
* Result Management:: Managing the
 result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with @acronym{GPGME}.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations

* Run Control:: Controlling how operations are run.
@end menu

@node Creating Contexts
@section Creating Contexts
@cindex context, creation

@deftypefun gpgme_error_t gpgme_new (@w{gpgme_ctx_t *@var{ctx}})
The function @code{gpgme_new} creates a new @code{gpgme_ctx_t} object
and returns a handle for it in @var{ctx}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
context was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available. Also, it returns
@code{GPG_ERR_NOT_OPERATIONAL} if @code{gpgme_check_version} was not
called to initialize GPGME, and @code{GPG_ERR_SELFTEST_FAILED}
 if a
selftest failed. Currently, the only selftest is for Windows MingW32
targets to see if @code{-mms-bitfields} was used (as required).
@end deftypefun

@node Destroying Contexts
@section Destroying Contexts
@cindex context, destruction

@deftypefun void gpgme_release (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_release} destroys the context with the handle
@var{ctx} and releases all associated resources.
@end deftypefun

@node Result Management
@section Result Management
@cindex context, result of operation

The detailed result of an operation is returned in operation-specific
structures such as @code{gpgme_decrypt_result_t}. The corresponding
retrieval functions such as @code{gpgme_op_decrypt_result} provide
static access to the results after an operation completes. Those
structures shall be considered read-only and an application must not
allocate such a structure on its own. The following interfaces make
it possible to detach a result structure from its associated
 context
and give it a lifetime beyond that of the current operation or
context.

@deftypefun void gpgme_result_ref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_ref} acquires an additional reference
for the result @var{result}, which may be of any type
@code{gpgme_*_result_t}. As long as the user holds a reference, the
result structure is guaranteed to be valid and unmodified.
@end deftypefun

@deftypefun void gpgme_result_unref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_unref} releases a reference for the
result @var{result}. If this was the last reference, the result
structure will be destroyed and all resources associated to it will be
released.
@end deftypefun

Note that a context may hold its own references to result structures,
typically until the context is destroyed or the next operation is
started. In fact, these references are accessed through the
@code{gpgme_op_*_result} functions.

@node Context Attributes
@section
Context Attributes
@cindex context, attributes

@menu
* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
*
 Additional Logs:: Additional logs of a context.
@end menu

@node Protocol Selection
@subsection Protocol Selection
@cindex context, selecting protocol
@cindex protocol, selecting

@deftypefun gpgme_error_t gpgme_set_protocol (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t @var{proto}})
The function @code{gpgme_set_protocol} sets the protocol used within the context @var{ctx} to @var{proto}. All crypto operations will be performed by the crypto engine configured for that protocol. @xref{Protocols and Engines}.

Setting the protocol with @code{gpgme_set_protocol} does intentionally not check if the crypto engine for that protocol is available and installed correctly. @xref{Engine Version Check}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the protocol could be set successfully, and @code{GPG_ERR_INV_VALUE} if @var{protocol} is not a valid protocol.
@end deftypefun

@deftypefun gpgme_protocol_t gpgme_get_protocol (@w{gpgme_ctx_t @var{ctx}})
The
function @code{gpgme_get_protocol} retrieves the protocol currently use with the context @var{ctx}.
@end deftypefun

@node Crypto Engine
@subsection Crypto Engine
@cindex context, configuring engine
@cindex engine, configuration per context

The following functions can be used to set and retrieve the configuration of the crypto engines of a specific context. The default can also be retrieved without any particular context. @xref{Engine Information}. The default can also be changed globally. @xref{Engine Configuration}.

@deftypefun gpgme_engine_info_t gpgme_ctx_get_engine_info (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_ctx_get_engine_info} returns a linked list of engine info structures. Each info structure describes the configuration of one configured backend, as used by the context @var{ctx}.

The result is valid until the next invocation of
@code{gpgme_ctx_set_engine_info} for this particular context.

This function can not fail.
@end deftypefun

@deftypefun
 gpgme_error_t gpgme_ctx_set_engine_info (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t
@var{proto}}, @w{const char *@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_ctx_set_engine_info} changes the
configuration of the crypto engine implementing the protocol
@var{proto} for the context @var{ctx}.

@var{file_name} is the file name of the executable program
implementing this protocol, and @var{home_dir} is the directory name
of the configuration directory for this crypto engine. If
@var{home_dir} is @code{NULL}, the engine's default will be used.

Currently this function must be used before starting the first crypto
operation. It is unspecified if and when the changes will take effect
if the function is called after starting the first operation on the
context @var{ctx}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, or an error code on failure.
@end deftypefun

@node Setting the Sender
@subsection How to tell
 the engine the sender.
@cindex context, sender
@cindex sender
@cindex From:

Some engines can make use of the senders address, for example to
figure out the best user id in certain trust models. For verification
and signing of mails, it is thus suggested to let the engine know the
sender ("From:") address. @acronym{GPGME} provides two functions to
accomplish that. Note that the esoteric use of multiple "From:"
addresses is not supported.

@deftypefun gpgme_error_t gpgme_set_sender @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{int @var{address}})

@since{1.8.0}

The function @code{gpgme_set_sender} specifies the sender address for
use in sign and verify operations. @var{address} is expected to be
the ``addr-spec'' part of an address but my also be a complete mailbox
address, in which case this function extracts the ``addr-spec'' from
it. Using @code{NULL} for @var{address} clears the sender address.

The function returns 0 on success or an error code on failure. The
most likely
 failure is that no valid ``addr-spec'' was found in
@var{address}.

@end deftypefun

@deftypefun @w{const char *} gpgme_get_sender @
    (@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_get_sender} returns the current sender
address from the context, or NULL if none was set. The returned
value is valid as long as the @var{ctx} is valid and
@code{gpgme_set_sender} has not been called again.

@end deftypefun

@c FIXME: Unfortunately, using @acronym here breaks texi2dvi.
@node ASCII Armor
@subsection @acronym{ASCII} Armor
@cindex context, armor mode
@cindex @acronym{ASCII} armor
@cindex armor mode

@deftypefun void gpgme_set_armor (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_armor} specifies if the output should be
@acronym{ASCII} armored. By default, output is not @acronym{ASCII}
armored.

@acronym{ASCII} armored output is disabled if @var{yes} is zero, and
enabled otherwise.
@end deftypefun

@deftypefun int gpgme_get_armor (@w{gpgme_ctx_t

@var{ctx}})
The function @code{gpgme_get_armor} returns 1 if the output is
@acronym{ASCII} armored, and @code{0} if it is not, or if @var{ctx} is
not a valid pointer.
@end deftypefun

@node Text Mode
@subsection Text Mode
@cindex context, text mode
@cindex text mode
@cindex canonical text mode

@deftypefun void gpgme_set_textmode (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_textmode} specifies if canonical text mode
should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that
the updated RFC 3156 mandates that the mail user agent does some
preparations so that text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored
by all other engines.

Canonical text mode is disabled if @var{yes} is zero, and enabled
otherwise.
@end deftypefun

@deftypefun int gpgme_get_textmode (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_textmode} returns
1 if canonical text
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Offline Mode
@subsection Offline Mode
@cindex context, offline mode
@cindex offline mode

@deftypefun void gpgme_set_offline (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
@since{1.6.0}

The function @code{gpgme_set_offline} specifies if offline mode should
be used. Offline mode is disabled if @var{yes} is zero, and enabled
otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its
backend engine. It may eventually be extended to be more stricter and
for example completely disable the use of Dirmngr for any engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall
be used to do additional validation that might require connecting
external services (e.g. CRL / OCSP checks). Here the offline mode
only affects the keylist mode @code{GPGME_KEYLIST_MODE_VALIDATE}.

For the OpenPGP
 protocol offline mode entirely disables the use of the
Dirmngr and will thus guarantee that no network connections are done
as part of an operation on this context. It has only an effect with
GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

@end deftypefun

@deftypefun int gpgme_get_offline (@w{gpgme_ctx_t @var{ctx}})
@since{1.6.0}

The function @code{gpgme_get_offline} returns 1 if offline
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Pinentry Mode
@subsection Pinentry Mode
@cindex context, pinentry mode
@cindex pinentry mode

@deftypefun gpgme_error_t gpgme_set_pinentry_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_pinentry_mode_t @var{mode}})

@since{1.4.0}

The function @code{gpgme_set_pinentry_mode} specifies the pinentry mode
to be used.

For GnuPG >= 2.1 this option is required to be set to
@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback
mechanism in GPGME
 through @code{gpgme_set_passphrase_cb}.
@end deftypefun

@deftypefun gpgme_pinentry_mode_t gpgme_get_pinentry_mode (@w{gpgme_ctx_t @var{ctx}})

@since{1.4.0}

The function @code{gpgme_get_pinenty_mode} returns the
mode set for the context.
@end deftypefun

@deftp {Data type} {enum gpgme_pinentry_mode_t}
@tindex gpgme_pinentry_mode_t
@since{1.4.0}

The @code{gpgme_minentry_mode_t} type specifies the set of possible pinentry
modes that are supported by @acronym{GPGME} if GnuPG >= 2.1 is used.
The following modes are supported:

@table @code
@item GPGME_PINENTRY_MODE_DEFAULT
@since{1.4.0}

Use the default of the agent, which is ask.

@item GPGME_PINENTRY_MODE_ASK
@since{1.4.0}

Force the use of the Pinentry.

@item GPGME_PINENTRY_MODE_CANCEL
@since{1.4.0}

Emulate use of Pinentry's cancel button.

@item GPGME_PINENTRY_MODE_ERROR
@since{1.4.0}

Return a Pinentry error @code{No Pinentry}.

@item GPGME_PINENTRY_MODE_LOOPBACK
@since{1.4.0}

Redirect Pinentry queries to the caller.
This enables
 the use of @code{gpgme_set_passphrase_cb} because pinentry
queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires @code{allow-loopback-pinentry}
to be enabled in the @file{gpg-agent.conf} or an agent started with that option.

@end table
@end deftp

@node Included Certificates
@subsection Included Certificates
@cindex certificates, included

@deftypefun void gpgme_set_include_certs (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{nr_of_certs}})
The function @code{gpgme_set_include_certs} specifies how many
certificates should be included in an S/MIME signed message. By
default, only the sender's certificate is included. The possible
values of @var{nr_of_certs} are:

@table @code
@item GPGME_INCLUDE_CERTS_DEFAULT
@since{1.0.3}

Fall back to the default of the crypto backend. This is the default
for GPGME.
@item -2
Include all certificates except the root certificate.
@item -1
Include all certificates.
@item 0
Include no certificates.
@item 1
Include the sender's
 certificate only.
@item n
Include the first n certificates of the certificates path, starting
from the sender's certificate. The number @code{n} must be positive.
@end table

Values of @var{nr_of_certs} smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by
all other engines.
@end deftypefun

@deftypefun int gpgme_get_include_certs (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_include_certs} returns the number of
certificates to include into an S/MIME signed message.
@end deftypefun

@node Key Listing Mode
@subsection Key Listing Mode
@cindex key listing mode
@cindex key listing, mode of

@deftypefun gpgme_error_t gpgme_set_keylist_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_keylist_mode_t @var{mode}})
The function @code{gpgme_set_keylist_mode} changes the default
behaviour of the key listing functions. The value in @var{mode} is a
bitwise-or combination of one or multiple of the following bit values:

@table @code
@item GPGME_KEYLIST_MODE_LOCAL
The
 @code{GPGME_KEYLIST_MODE_LOCAL} symbol specifies that the local
keyring should be searched for keys in the keylisting operation. This
is the default.

Using only this option results in a @code{--list-keys}.

@item GPGME_KEYLIST_MODE_EXTERN
The @code{GPGME_KEYLIST_MODE_EXTERN} symbol specifies that an external
source should be searched for keys in the keylisting operation. The
type of external source is dependent on the crypto engine used and
whether it is combined with @code{GPGME_KEYLIST_MODE_LOCAL}. For
example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a @code{--search-keys} for
@code{GPGME_PROTOCOL_OpenPGP} and something similar to
@code{--list-external-keys} for @code{GPGME_PROTOCOL_CMS}.

@item GPGME_KEYLIST_MODE_LOCATE
This is a shortcut for the combination of
@code{GPGME_KEYLIST_MODE_LOCAL} and @code{GPGME_KEYLIST_MODE_EXTERN}, which
results in a @code{--locate-keys} for @code{GPGME_PROTOCOL_OpenPGP}.

@item
 GPGME_KEYLIST_MODE_SIGS
The @code{GPGME_KEYLIST_MODE_SIGS} symbol specifies that the key
signatures should be included in the listed keys.

@item GPGME_KEYLIST_MODE_SIG_NOTATIONS
@since{1.1.1}

The @code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} symbol specifies that the
signature notations on key signatures should be included in the listed
keys. This only works if @code{GPGME_KEYLIST_MODE_SIGS} is also
enabled.

@item GPGME_KEYLIST_MODE_WITH_TOFU
@since{1.7.0}

The @code{GPGME_KEYLIST_MODE_WITH_TOFU} symbol specifies that
information pertaining to the TOFU trust model should be included in
the listed keys.

@item GPGME_KEYLIST_MODE_WITH_KEYGRIP
@since{1.14.0}

The @code{GPGME_KEYLIST_MODE_WITH_KEYRIP} symbol specifies that the
keygrip is always included in the listing. The default depends on the
version of the backend and the used protocol.

@item GPGME_KEYLIST_MODE_WITH_SECRET
@since{1.5.1}

The @code{GPGME_KEYLIST_MODE_WITH_SECRET} returns information about
the presence of a corresponding
 secret key in a public key listing. A
public key listing with this mode is slower than a standard listing
but can be used instead of a second run to list the secret keys. This
is only supported for GnuPG versions >= 2.1. Note that using this
option also makes sure that the keygrip is available in the output.

@item GPGME_KEYLIST_MODE_EPHEMERAL
@since{1.2.0}

The @code{GPGME_KEYLIST_MODE_EPHEMERAL} symbol specifies that keys
flagged as ephemeral are included in the listing.

@item GPGME_KEYLIST_MODE_VALIDATE
@since{0.4.5}

The @code{GPGME_KEYLIST_MODE_VALIDATE} symbol specifies that the
backend should do key or certificate validation and not just get the
validity information from an internal cache. This might be an
expensive operation and is in general not useful. Currently only
implemented for the S/MIME backend and ignored for other backends.

@end table

At least one of @code{GPGME_KEYLIST_MODE_LOCAL} and
@code{GPGME_KEYLIST_MODE_EXTERN} must be specified. For future binary
compatibility,
 you should get the current mode with
@code{gpgme_get_keylist_mode} and modify it by setting or clearing the
appropriate bits, and then using that calculated value in the
@code{gpgme_set_keylisting_mode} operation. This will leave all other
bits in the mode value intact (in particular those that are not used
in the current version of the library).

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
mode could be set correctly, and @code{GPG_ERR_INV_VALUE} if @var{ctx}
is not a valid pointer or @var{mode} is not a valid mode.
@end deftypefun

@deftypefun gpgme_keylist_mode_t gpgme_get_keylist_mode (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_keylist_mode} returns the current key
listing mode of the context @var{ctx}. This value can then be
modified and used in a subsequent @code{gpgme_set_keylist_mode}
operation to only affect the desired bits (and leave all others
intact).

The function returns 0 if @var{ctx} is not a valid pointer, and
the
current mode otherwise. Note that 0 is not a valid mode value.
@end deftypefun

@node Passphrase Callback
@subsection Passphrase Callback
@cindex callback, passphrase
@cindex passphrase callback

@deftp {Data type} {gpgme_error_t (*gpgme_passphrase_cb_t)(void *@var{hook}, const char *@var{uid_hint},
const char *@var{passphrase_info}, @w{int @var{prev_was_bad}}, @w{int @var{fd}})}
@tindex gpgme_passphrase_cb_t
The @code{gpgme_passphrase_cb_t} type is the type of functions usable as
passphrase callback function.

The argument @var{uid_hint} might contain a string that gives an
indication for which user ID the passphrase is required. If this is
not available, or not applicable (in the case of symmetric encryption,
for example), @var{uid_hint} will be @code{NULL}.

The argument @var{passphrase_info}, if not @code{NULL}, will give
further information about the context in which the passphrase is
required. This information is engine and operation specific.

If this is the repeated attempt
to get the passphrase, because
previous attempts failed, then @var{prev_was_bad} is 1, otherwise it
will be 0.

The user must write the passphrase, followed by a newline character,
to the file descriptor @var{fd}. The function @code{gpgme_io_writen}
should be used for the write operation. Note that if the user returns

0 to indicate success, the user must at least write a newline
character before returning from the callback.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. You can use the error code @code{GPG_ERR_CANCELED} to abort
the operation. Otherwise, return @code{0}.

Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not
with the 2.0.x series. See @code{gpgme_set_pinentry_mode} for more
details on 2.1.x usage.
@end deftp

@deftypefun void gpgme_set_passphrase_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t
@var{passfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_passphrase_cb} sets the function that is
used
 when a passphrase needs to be provided by the user to
@var{passfunc}. The function @var{passfunc} needs to implemented by
the user, and whenever it is called, it is called with its first
argument being @var{hook_value}. By default, no passphrase callback
function is set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase from
a trusted agent (a daemon process), rather than having each user to
implement their own passphrase query. Some engines do not even
support an external passphrase callback at all, in this case the error
code @code{GPG_ERR_NOT_SUPPORTED} is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to
@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback.
See @code{gpgme_set_pinentry_mode}.

The user can disable the use of a passphrase callback function by
calling @code{gpgme_set_passphrase_cb} with @var{passfunc} being
@code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_passphrase_cb
 (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t *@var{passfunc}}, @w{void
**@var{hook_value}})
The function @code{gpgme_get_passphrase_cb} returns the function that
is used when a passphrase needs to be provided by the user in
@var{*passfunc}, and the first argument for this function in
@var{*hook_value}. If no passphrase callback is set, or @var{ctx} is
not a valid pointer, @code{NULL} is returned in both variables.

@var{passfunc} or @var{hook_value} can be @code{NULL}. In this case,

the corresponding value will not be returned.
@end deftypefun

@node Progress Meter Callback
@subsection Progress Meter Callback
@cindex callback, progress meter
@cindex progress meter callback

@deftp {Data type} {void (*gpgme_progress_cb_t)(void *@var{hook}, const char *@var{what}, int @var{type}, int @var{current}, int @var{total})}
@tindex gpgme_progress_cb_t
The @code{gpgme_progress_cb_t} type is the type of functions usable as progress callback function.

The arguments are
specific to the crypto engine. More information
about the progress information returned from the GnuPG engine can be found in the GnuPG source code in the file @file{doc/DETAILS} in the section PROGRESS.
@end deftp

@deftypefun void gpgme_set_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t @var{progfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_progress_cb} sets the function that is used when progress information about a cryptographic operation is available. The function @var{progfunc} needs to implemented by the user, and whenever it is called, it is called with its first argument being @var{hook_value}. By default, no progress callback function is set.

Setting a callback function allows an interactive program to display progress information about a long operation to the user.

The user can disable the use of a progress callback function by calling @code{gpgme_set_progress_cb} with @var{progfunc} being @code{NULL}.
@end deftypefun

@deftypefun void
gpgme_get_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t *@var{progfunc}}, @w{void **@var{hook_value}})
The function @code{gpgme_get_progress_cb} returns the function that is used to inform the user about the progress made in @var{*progfunc}, and the first argument for this function in @var{*hook_value}. If no progress callback is set, or @var{ctx} is not a valid pointer, @code{NULL} is returned in both variables.

@var{progfunc} or @var{hook_value} can be @code{NULL}. In this case,
the corresponding value will not be returned.
@end deftypefun

@node Status Message Callback
@subsection Status Message Callback
@cindex callback, status message
@cindex status message callback

@deftp {Data type} {gpgme_error_t (*gpgme_status_cb_t)(void *@var{hook}, const char *@var{keyword}, const char *@var{args})}
@tindex gpgme_status_cb_t
The @code{gpgme_status_cb_t} type is the type of function usable as
a status message callback function.

The argument @var{keyword} is the name
 of the status message while the
@var{args} argument contains any arguments for the status message.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. Otherwise, return @code{0}.
@end deftp

@deftypefun void gpgme_set_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t @var{statusfunc}}, @w{void *@var{hook_value}})
@since{1.6.0}

The function @code{gpgme_set_status_cb} sets the function that is used when a
status message is received from gpg to @var{statusfunc}. The function
@var{statusfunc} needs to be implemented by the user, and whenever it is
called, it is called with its first argument being @var{hook_value}. By
default, no status message callback function is set.

The user can disable the use of a status message callback function by calling
@code{gpgme_set_status_cb} with @var{statusfunc} being @code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t *@var{statusfunc}}, @w{void **@var{hook_value}})
@since{1.6.0}

The
 function @code{gpgme_get_status_cb} returns the function that is used to
process status messages from gpg in @var{*statusfunc}, and the first argument
for this function in @var{*hook_value}. If no status message callback is set,
or @var{ctx} is not a valid pointer, @code{NULL} is returned in both
variables.

@end deftypefun

@node Context Flags
@subsection Context Flags
@cindex flags, of a context

@deftypefun {gpgme_error_t} gpgme_set_ctx_flag @
        (@w{gpgme_ctx_t @var{ctx}}, @
        @w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the context can be controlled with flags set
by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item "redraw"
This flag is normally not changed by the caller because GPGME sets and
clears it automatically: The flag is cleared before an operation and
set if an operation noticed that the engine has launched
 a Pinentry.
A Curses based application may use this information to redraw the
screen; for example:

@example
  err = gpgme_op_keylist_start (ctx, "foo@@example.org", 0);
  while (!err)
    @{
      err = gpgme_op_keylist_next (ctx, &key);
      if (err)
        break;
      show_key (key);
      gpgme_key_release (key);
    @}
  if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
    redraw_screen ();
  gpgme_release (ctx);
@end example

@item "full-status"
Using a @var{value} of "1" the status callback set by
gpgme_set_status_cb returns all status lines with the exception of
PROGRESS lines. With the default of "0" the status callback is only
called in certain situations.

@item "raw-description"
Setting the @var{value} to "1" returns human readable strings in a raw format. For example the non breaking space characters ("~") will not be removed from the @code{description} field of the @code{gpgme_tofu_info_t} object.

@item "export-session-key"
Using a @var{value}
of "1" specifies that the context should try to
export the symmetric session key when decrypting data. By default, or when using an empty string or "0" for @var{value}, session keys are not exported.

@item "override-session-key"
The string given in @var{value} is passed to the GnuPG engine to override the session key for decryption. The format of that session key is specific to GnuPG and can be retrieved during a decrypt operation when the context flag "export-session-key" is enabled. Please be aware that using this feature with GnuPG < 2.1.16 will leak the session key on many platforms via ps(1).

@item "auto-key-retrieve"
Setting the @var{value} to "1" asks the backend to automatically retrieve a key for signature verification if possible. Note that this option makes a "web bug" like behavior possible. Keyserver or Web Key Directory operators can see which keys you request, so by sending you a message signed by a brand new key (which you naturally will not have on your
local keyring), the operator can tell both your IP address and the time when you verified the signature.

@item "auto-key-import"
Setting the @var{value} to "1" forces the GPG backend to automatically import a missing key for signature verification from the signature.

@item "include-key-block"
Setting the @var{value} to "1" forces the GPG backend to embed the signing key as well as an encryption subkey into the the signature.

@item "request-origin"
The string given in @var{value} is passed to the GnuPG engines to request restrictions based on the origin of the request. Valid values are documented in the GnuPG manual and the gpg man page under the option @option{--request-origin}. Requires at least GnuPG 2.2.6 to have an effect.

@item "no-symkey-cache"
For OpenPGP disable the passphrase cache used for symmetrical en- and

decryption. This cache is based on the message specific salt value.
Requires at least GnuPG 2.2.7 to have an effect.

@item "ignore-mdc-error"
This flag passes
 the option @option{--ignore-mdc-error} to gpg. This
can be used to force decryption of a message which failed due to a
missing integrity check. This flag must be used with great caution
and only if it is a known non-corrupted old message and the decryption
result of the former try had the decryption result flag
@code{legacy_cipher_nomdc} set. For failsafe reasons this flag is
reset after each operation.

@item "auto-key-locate"
The string given in @var{value} is passed to gpg. This can be used
to change the behavior of a @code{GPGME_KEYLIST_MODE_LOCATE} keylisting.
Valid values are documented in the GnuPG manual and the gpg man page under
the option @option{--auto-key-locate}.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through @code{auto-key-locate} are automatically
imported in the keyring.

@item trust-model
@since{1.11.2}

Change the trust-model for all GnuPG engine operations. An empty
string sets the trust-model back to the users default. If the
trust-model is not
 supported by GnuPG the behavior is undefined
and will likely cause all operations to fail. Example: "tofu+pgp".

This options should be used carefully with a strict version
requirement. In some versions of GnuPG setting the
trust-model changes the default trust-model for future operations.
A change in the trust-model also can have unintended side effects, like
rebuilding the trust-db.

@item "extended-edit"
This flag passes the option @option{--expert} to gpg key edit. This
can be used to get additional callbacks in @code{gpgme_op_edit}.

@end table

This function returns @code{0} on success.
@end deftypefun

@deftypefun {const char *} gpgme_get_ctx_flag @
        (@w{gpgme_ctx_t @var{ctx}}, @
        @w{const char *@var{name}})

@since{1.8.0}

The value of flags settable by @code{gpgme_set_ctx_flag} can be
retrieved by this function. If @var{name} is unknown the function
returns @code{NULL}. For boolean flags an empty string is returned
for False and the string "1" is
 returned for True; either atoi(3) or a
test for an empty string can be used to get the boolean value.

@end deftypefun

@node Locale
@subsection Locale
@cindex locale, default
@cindex locale, of a context

A locale setting can be associated with a context. This locale is
passed to the crypto engine, and used for applications like the PIN
entry, which is displayed to the user when entering a passphrase is
required.

The default locale is used to initialize the locale setting of all
contexts created afterwards.

@deftypefun gpgme_error_t gpgme_set_locale (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{category}},
@w{const char *@var{value}})
@since{0.4.3}

The function @code{gpgme_set_locale} sets the locale of the context
@var{ctx}, or the default locale if @var{ctx} is a null pointer.

The locale settings that should be changed are specified by
@var{category}. Supported categories are @code{LC_CTYPE},
@code{LC_MESSAGES}, and @code{LC_ALL}, which is a wildcard you can use
if you want to change
 all the categories at once.

The value to be used for the locale setting is @var{value}, which will
be copied to @acronym{GPGME}'s internal data structures. @var{value}
can be a null pointer, which disables setting the locale, and will
make PIN entry and other applications use their default setting, which
is usually not what you want.

Note that the settings are only used if the application runs on a text
terminal, and that the settings should fit the configuration of the
output terminal. Normally, it is sufficient to initialize the default
value at startup.

The function returns an error if not enough memory is available.
@end deftypefun

@node Additional Logs
@subsection Additional Logs
@cindex auditlog, of the engine
@cindex auditlog

Additional logs can be associated with a context. These logs are
engine specific and can be be obtained with @code{gpgme_op_getauditlog}.

@deftypefun gpgme_error_t gpgme_op_getauditlog @
        (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}},
 @
        @w{unsigned int @var{flags}})
@since{1.1.1}

The function @code{gpgme_op_getauditlog} is used to obtain additional
logs as specified by @var{flags} into the @var{output} data. If

The function returns the error code @code{GPG_ERR_NO_ERROR} if a
log could be queried from the engine, and @code{GPG_ERR_NOT_IMPLEMENTED}
if the log specified in @var{flags} is not available for this engine.
If no log is available @code{GPG_ERR_NO_DATA} is returned.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_AUDITLOG_DIAG
@since{1.11.2}

Obtain diagnostic output which would be written to @code{stderr} in
interactive use of the engine. This can be used to provide additional
diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will
be empty and @code{GPG_ERR_NO_DATA} will be returned.

Implemented for: @code{GPGME_PROTOCOL_OpenPGP}

@item

GPGME_AUDITLOG_DEFAULT
@since{1.11.2}

This flag has the value 0 for compatibility reasons. Obtains additional
information from the engine by issuing the @code{GETAUDITLOG} command.
For @code{GPGME_PROTOCOL_CMS} this provides additional information about
the X509 certificate chain.

Implemented for: @code{GPGME_PROTOCOL_CMS}

@item GPGME_AUDITLOG_HTML
@since{1.1.1}

Same as @code{GPGME_AUDITLOG_DEFAULT} but in HTML.

Implemented for: @code{GPGME_PROTOCOL_CMS}
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_getauditlog_start @
(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}}, @
@w{unsigned int @var{flags}})
@since{1.1.1}

This is the asynchronous variant of @code{gpgme_op_getauditlog}.
@end deftypefun

@node Key Management
@section Key Management
@cindex key management

Some of the cryptographic operations require that recipients or
signers are specified. This is always done by specifying the
respective keys that should be used
for the operation. The following
section describes how such keys can be selected and manipulated.

@menu
* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.

* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.
@end menu

@node Key objects
@subsection Key objects

The keys are represented in GPGME by
structures which may only be read
by the application but never be allocated or changed. They are valid
as long as the key object itself is valid.

@deftp {Data type} gpgme_key_t

The @code{gpgme_key_t} type is a pointer to a key object. It has the
following members:

@table @code
@item gpgme_keylist_mode_t keylist_mode
@since{0.9.0}

The keylist mode that was active when the key was retrieved.

@item unsigned int revoked : 1
This is true if the key is revoked.

@item unsigned int expired : 1
This is true if the key is expired.

@item unsigned int disabled : 1
This is true if the key is disabled.

@item unsigned int invalid : 1
This is true if the key is invalid. This might have several reasons,
for a example for the S/MIME backend, it will be set during key
listings if the key could not be validated due to missing
certificates or unmatched policies.

@item unsigned int can_encrypt : 1
This is true if the key (ie one of its subkeys) can be used for
encryption.

@item unsigned int can_sign
: 1
This is true if the key (ie one of its subkeys) can be used to create
data signatures.

@item unsigned int can_certify : 1
This is true if the key (ie one of its subkeys) can be used to create
key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the key (ie one of its subkeys) can be used for
authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the key can be used for qualified signatures according
to local government regulations.

@item unsigned int secret : 1
This is true if the key is a secret key. Note, that this will always
be true even if the corresponding subkey flag may be false
(offline/stub keys). This is only set if a listing of secret keys has
been requested or if @code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this key.

@item gpgme_protocol_t protocol
This is the protocol supported by this key.

@item char *issuer_serial
If
 @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer serial.

@item char *issuer_name
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer name.

@item char *chain_id
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
chain ID, which can be used to built the certificate chain.

@item gpgme_validity_t owner_trust
If @code{protocol} is @code{GPGME_PROTOCOL_OpenPGP}, then this is the
owner trust.

@item gpgme_subkey_t subkeys

This is a linked list with the subkeys of the key. The first subkey
in the list is the primary key and usually available.

@item gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first user ID
in the list is the main (or primary) user ID.

@item char *fpr
@since{1.7.0}

This field gives the fingerprint of the primary key. Note that
this is a copy of the fingerprint of the first subkey. For an
incomplete key (for example from a verification result) a subkey may
be missing but this field
 may be set nevertheless.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this key.

@end table
@end deftp

@deftp {Data type} gpgme_subkey_t
@since{1.5.0}

The @code{gpgme_subkey_t} type is a pointer to a subkey structure.
Subkeys are one component of a @code{gpgme_key_t} object. In fact,
subkeys are those parts that contains the real information about the
individual cryptographic keys that belong to the same key object. One
@code{gpgme_key_t} can contain several subkeys. The first subkey in
the linked list is also called the primary key.

The subkey structure has the following members:

@table @code
@item gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked list, or
@code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the subkey is revoked.

@item unsigned int expired : 1
This is true if the subkey is expired.

@item unsigned int disabled : 1
This is true if the subkey
 is disabled.

@item unsigned int invalid : 1
This is true if the subkey is invalid.

@item unsigned int can_encrypt : 1
This is true if the subkey can be used for encryption.

@item unsigned int can_sign : 1
This is true if the subkey can be used to create data signatures.

@item unsigned int can_certify : 1
This is true if the subkey can be used to create key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the subkey can be used for authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the subkey can be used for qualified signatures
according to local government regulations.

@item unsigned int is_de_vs : 1
@since{1.8.0}

This is true if the subkey complies with the rules for classified
information in Germany at the restricted level (VS-NfD). This are
currently RSA keys of at least 2048 bits or ECDH/ECDSA keys using a
Brainpool curve.

@item unsigned int secret : 1
This is true if the subkey is a secret key. Note that
 it will be
false if the key is actually a stub key; i.e. a secret key operation
is currently not possible (offline-key). This is only set if a
listing of secret keys has been requested or if
@code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

@item unsigned int length
This is the length of the subkey (in bits).

@item char *keyid
This is the key ID of the subkey in hexadecimal digits.

@item char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if
available.

@item char *keygrip
@since{1.7.0}

The keygrip of the subkey in hex digit form or @code{NULL} if not
available.

@item long int timestamp
This is the creation timestamp of the subkey. This is -1 if the
timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey
does not expire.

@item unsigned int is_cardkey : 1
@since{1.2.0}

True if
 the secret key is stored on a smart card.

@item char *card_number
@since{1.2.0}

The serial number of a smart card holding this key or @code{NULL}.

@item char *curve
For ECC algorithms the name of the curve.

@end table
@end deftp

@deftp {Data type} gpgme_user_id_t

A user ID is a component of a @code{gpgme_key_t} object. One key can
have many user IDs. The first one in the list is the main (or
primary) user ID.

The user ID structure has the following members.

@table @code

@item gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or
@code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the user ID is revoked.

@item unsigned int invalid : 1
This is true if the user ID is invalid.

@item gpgme_validity_t validity
This specifies the validity of the user ID.

@item char *uid
This is the user ID string.

@item char *name
This is the name component of @code{uid}, if available.

@item char *comment
This is the comment
component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item char *address;
The mail address (addr-spec from RFC-5322) of the user ID string.
This is general the same as the @code{email} part of this structure
but might be slightly different. If no mail address is available
@code{NULL} is stored.

@item gpgme_tofu_info_t tofu
@since{1.7.0}

If not @code{NULL} information from the TOFU database pertaining to
this user id.

@item gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this user ID.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this user ID.

@item char *uidhash;
A string used by gpg to identify a user ID. This string can be used
at certain prompts of @code{gpgme_op_edit} to select a user ID. Users
must be prepared to see a @code{NULL} value here. The format
 of the
value is not specified and may depend on the GPGME or GnuPG version.

@end table
@end deftp

@deftp {Data type} gpgme_tofu_info_t

@since{1.7.0}

The @code{gpgme_tofu_info_t} type is a pointer to a tofu info
structure. Tofu info structures are one component of a
@code{gpgme_user_id_t} object, and provide information from the TOFU
database pertaining to the user ID.

The tofu info structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int validity : 3
This is the TOFU validity. It can have the following values:

@table @code
@item 0
The value @code{0} indicates a conflict.

@item 1
The value @code{1} indicates a key without history.

@item 2
The value @code{2} indicates a key with too little history.

@item 3
The value @code{3} indicates a key with enough history for basic trust.

@item 4
The value @code{4} indicates a key

with a lot of history.

@end table

@item unsigned int policy : 4
This is the TOFU policy, see @code{gpgme_tofu_policy_t}.

@item unsigned short signcount
This is the number of signatures seen for this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned short encrcount
This is the number of encryptions done with this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with
this binding.

@item unsigned long signlast
Number of seconds since Epoch when the last signature was seen with
this binding.

@item unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with
this binding.

@item unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with
this binding.

@item char *description
A human-readable string summarizing the TOFU data (or NULL).

@end table
@end deftp

@deftp {Data type} gpgme_key_sig_t

The
@code{gpgme_key_sig_t} type is a pointer to a key signature structure.
Key signatures are one component of a @code{gpgme_key_t} object, and
validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved
via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS} mode
enabled, because it can be expensive to retrieve all signatures of a

key.

The signature notations on a key signature are only available if the
key was retrieved via a listing operation with the
@code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} mode enabled, because it can
be expensive to retrieve all signature notations.

The key signature structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next key signature structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the key signature is a revocation signature.

@item unsigned int expired : 1
This is
true if the key signature is expired.

@item unsigned int invalid : 1
This is true if the key signature is invalid.

@item unsigned int exportable : 1
This is true if the key signature is exportable.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm used to create the signature.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used to create
the signature.

@item long int timestamp
This is the creation timestamp of the key signature. This is -1 if
the timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the key signature, or 0 if the key
signature does not expire.

@item gpgme_error_t status
This is the status of the signature and has the same meaning as the
member of the same name in a @code{gpgme_signature_t} object.

@item unsigned int sig_class
This specifies the signature class of the key signature. The meaning

is specific to the crypto engine.

@item char *uid
This is the main
 user ID of the key used to create the signature.

@item char *name
This is the name component of @code{uid}, if available.

@item char *comment
This is the comment component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.
@end table
@end deftp

@node Listing Keys
@subsection Listing Keys
@cindex listing keys
@cindex key listing
@cindex key listing, start
@cindex key ring, list
@cindex key ring, search

@deftypefun gpgme_error_t gpgme_op_keylist_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}}, @w{int @var{secret_only}})

The function @code{gpgme_op_keylist_start} initiates a key listing
operation inside the context @var{ctx}. It sets everything up so that
subsequent invocations of @code{gpgme_op_keylist_next} return the keys
in the list.

If @var{pattern} is @code{NULL}, all available keys are returned.
Otherwise,
 @var{pattern} contains an engine specific expression that
is used to limit the list to all keys matching the pattern. Note that
the total length of the pattern is restricted to an engine-specific
maximum (a couple of hundred characters are usually accepted). The
pattern should be used to restrict the search to a certain common name
or user, not to list many specific keys at once by listing their
fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list is restricted to secret
keys only.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{int @var{secret_only}}, @w{int @var{reserved}})

The function @code{gpgme_op_keylist_ext_start} initiates an extended
key listing operation inside the context @var{ctx}. It sets
everything up so that subsequent invocations of
@code{gpgme_op_keylist_next} return the keys in the list.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys
are returned. Otherwise, @var{pattern} is a @code{NULL} terminated
array of strings that are used to limit the list to all keys matching
at least one of the patterns verbatim. Note that the total length of
all patterns is restricted to an engine-specific maximum (the exact
limit also depends on the number of patterns and amount of quoting
required, but a couple of hundred characters are usually accepted).
Patterns should be used to restrict the search to a certain common
name or user, not to list many specific keys at once by listing their
fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list
is restricted to secret
keys only.

The value of @var{reserved} must be @code{0}.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_from_data_start @
(@w{gpgme_ctx_t @var{ctx}}, @

@w{gpgme_data_t @var{data}}, @
@w{int @var{reserved}})

@since{1.8.0}

The function @code{gpgme_op_keylist_from_data_start} initiates a key
listing operation inside the context @var{ctx}. In contrast to the
other key listing operation the keys are read from the supplied
@var{data} and not from the local key database. The keys are also not
imported into the local key database. The function
 sets everything up
so that subsequent invocations of @code{gpgme_op_keylist_next} return
the keys from @var{data}.

The value of @var{reserved} must be @code{0}.

This function requires at least GnuPG version 2.1.14 and currently
works only with OpenPGP keys.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.
While the context is busy @var{data} may not be released.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_next (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{r_key}})

The function @code{gpgme_op_keylist_next} returns the next key in the
list created by a previous @code{gpgme_op_keylist_start} operation in
the context @var{ctx}. The key will have
 one reference for the user.
@xref{Manipulating Keys}.

This is the only way to get at @code{gpgme_key_t} objects in
@acronym{GPGME}.

If the last key in the list has already been returned,
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{r_key} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if there is not enough memory for the operation.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_end (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_keylist_end} ends a pending key list
operation in the context @var{ctx}.

After the operation completed successfully, the result of the key
listing operation can be retrieved with
@code{gpgme_op_keylist_result}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if at some
time during the operation there was not enough memory available.
@end deftypefun

The following
 example illustrates how all keys containing a certain
string (@code{g10code}) can be listed with their key ID and the name
and email address of the main user ID:

```
@example
gpgme_ctx_t ctx;
gpgme_key_t key;
gpgme_error_t err = gpgme_new (&ctx);

if (!err)
 @{
   err = gpgme_op_keylist_start (ctx, "g10code", 0);
   while (!err)
     @{
       err = gpgme_op_keylist_next (ctx, &key);
       if (err)
         break;
       printf ("%s:", key->subkeys->keyid);
       if (key->uids && key->uids->name)
         printf (" %s", key->uids->name);
       if (key->uids && key->uids->email)
         printf (" <%s>", key->uids->email);
       putchar ('\n');
       gpgme_key_release (key);
     @}
   gpgme_release (ctx);
 @}
if (gpg_err_code (err) != GPG_ERR_EOF)
 @{
   fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
   exit (1);
 @}
```

@end example

@deftp {Data type} {gpgme_keylist_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_keylist_*}
operation. After successfully ending a key
listing operation, you can retrieve the pointer to the result with
@code{gpgme_op_keylist_result}. The structure contains the following
member:

@table @code
@item unsigned int truncated : 1
This is true if the crypto backend had to truncate the result, and
less than the desired keys could be listed.
@end table
@end deftp

@deftypefun gpgme_keylist_result_t gpgme_op_keylist_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_keylist_result} returns a
@code{gpgme_keylist_result_t} pointer to a structure holding the
result of a @code{gpgme_op_keylist_*} operation. The pointer is only
valid if the last operation on the context was a key listing
operation, and if this operation finished successfully. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

In a simple program, for which a blocking operation is acceptable, the
following function can be used to retrieve
a single key.

@deftypefun gpgme_error_t gpgme_get_key (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{fpr}},
@w{gpgme_key_t *@var{r_key}}, @w{int @var{secret}})
The function @code{gpgme_get_key} gets the key with the fingerprint
(or key ID) @var{fpr} from the crypto backend and return it in
@var{r_key}. If @var{secret} is true, get the secret key. The
currently active keylist mode is used to retrieve the key. The key
will have one reference for the user.

If the key is not found in the keyring, @code{gpgme_get_key} returns
the error code @code{GPG_ERR_EOF} and *@var{r_key} will be set to
@code{NULL}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{r_key} is not a valid pointer or @var{fpr} is not a
fingerprint or key ID, @code{GPG_ERR_AMBIGUOUS_NAME} if the key ID was
not a unique specifier for a key, and @code{GPG_ERR_ENOMEM} if at some
time during the operation there was not enough memory available.

@end deftypefun

@node Information About Keys
@subsection
Information About Keys
@cindex key, information about
@cindex key, attributes
@cindex attributes, of a key

Please see the beginning of this section for more information about
@code{gpgme_key_t} objects.

@deftp {Data type} gpgme_validity_t
The @code{gpgme_validity_t} type is used to specify the validity of a user ID
in a key. The following validities are defined:

@table @code
@item GPGME_VALIDITY_UNKNOWN
The user ID is of unknown validity. The string representation of this
validity is ``?''.

@item GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this
validity is ``q''.

@item GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this
validity is ``n''.

@item GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this
validity is ``m''.

@item GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this
validity is ``f''.

@item GPGME_VALIDITY_ULTIMATE
The
user ID is ultimately valid. The string representation of this
validity is ``u''.
@end table
@end deftp

@node Manipulating Keys
@subsection Manipulating Keys
@cindex key, manipulation

@deftypefun void gpgme_key_ref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_ref} acquires an additional reference for
the key @var{key}.
@end deftypefun

@deftypefun void gpgme_key_unref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_unref} releases a reference for the key
@var{key}. If this was the last reference, the key will be destroyed
and all resources associated to it will be released.
@end deftypefun

@c
@c gpgme_op_setexpire
@c
@deftypefun gpgme_error_t gpgme_op_setexpire @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{unsigned long @var{expires}}, @
     @w{const char *@var{subfprs}}, @
     @w{unsigned int @var{reserved}});

@since{1.14.1}

The function @code{gpgme_op_setexpire} sets the expiration time of
the
 key @var{key} or of the specified subkeys.
This function requires at least version 2.1.22 of GnuPG.

@var{key} specifies the key to operate on.

@var{expires} specifies the expiration time in seconds from now.
To be similar to other usages where expiration times are provided
in unsigned long this is similar to the key creation date
and so it is in seconds from NOW.

The common case is to use 0 to not set an expiration time.
Note that this parameter takes an unsigned long value and not
a @code{time_t} to avoid problems on systems which use a signed
32 bit @code{time_t}. Note further that the OpenPGP protocol
uses 32 bit values for timestamps and thus can
only encode dates up to the year 2106.

@var{subfprs} selects the subkey(s) for which the expiration time
should be set. If @var{subfprs} is set to @code{NULL}, then the

expiration time of the primary key is set. If @var{subfprs} is
an asterisk (@code{*}), then the expiration times of all non-revoked
and not yet expired subkeys are set.
  To select more than one subkey
put all subkey fingerprints into one string separated by linefeeds
characters (@code{\n}).

@var{reserved} is reserved for later use and must be @code{0}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_setexpire_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{unsigned long @var{expires}}, @
     @w{const char *@var{subfprs}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire}
 operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@node Generating Keys
@subsection Generating Keys

@cindex key, creation
@cindex key ring, add

GPGME provides a set of functions to create public key pairs. Most of these functions require the use of GnuPG 2.1 and later; for older GnuPG versions the @code{gpgme_op_genkey} function can be used. Existing code which wants to update to the new functions or new code which shall supports older GnuPG versions may try the new functions first and provide a fallback to the old function if the error code @code{GPG_ERR_NOT_SUPPORTED} is received.

@c
@c gpgme_op_createkey
@c
@deftypefun gpgme_error_t gpgme_op_createkey @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const char *@var{userid}}, @
@w{const char *@var{algo}}, @
@w{unsigned long @var{reserved}}, @
@w{unsigned long @var{expires}}, @
@w{gpgme_key_t @var{extrakey}},
@
@w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey} generates a new key for the procotol active in the context @var{ctx}. As of now this function does only work for OpenPGP and requires at least version 2.1.13 of GnuPG.

@var{userid} is commonly the mail address associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested. The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

@var{algo} specifies the algorithm for the new key (actually a keypair of public and private key). For a list of supported algorithms, see the GnuPG manual. If @var{algo} is @code{NULL} or the string "default", the key is generated using the default algorithm of the engine. If the string "future-default" is used the engine may use an algorithm which is planned to be the default in a future release of the engine;
however existing implementation of the protocol may not be able to already handle such future algorithms. For the OpenPGP protocol, the specification of a default algorithm, without requesting a non-default usage via @var{flags}, triggers the creation of a

primary key plus a secondary key (subkey).

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode dates up to the year
2106.

@var{extrakey} is currently not used and must be set to @code{NULL}.
A future version of GPGME may use this parameter to create X.509 keys.

@var{flags} can be set to the bit-wise OR of the following
 flags:

@table @code
@item GPGME_CREATE_SIGN
@itemx GPGME_CREATE_ENCR
@itemx GPGME_CREATE_CERT
@itemx GPGME_CREATE_AUTH
@since{1.7.0}

Do not create the key with the default capabilities (key usage) of the
requested algorithm but use those explicitly given by these flags:
``signing", ``encryption", ``certification", or ``authentication".
The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been
selected only one key is created in the case of the OpenPGP
protocol.

@item GPGME_CREATE_NOPASSWD
@since{1.7.0}

Request generation of the key without password protection.

@item GPGME_CREATE_SELFSIGNED
@since{1.7.0}

For an X.509 key do not create a CSR but a self-signed certificate.
This has not yet been implemented.

@item GPGME_CREATE_NOSTORE
@since{1.7.0}

Do not store the created key in the local key database.
This has not yet been implemented.

@item GPGME_CREATE_WANTPUB
@itemx GPGME_CREATE_WANTSEC
@since{1.7.0}

Return
 the public or secret key as part of the result structure.
This has not yet been implemented.

@item GPGME_CREATE_FORCE
@since{1.7.0}

The engine does not allow the creation of a key with a user ID
already existing in the local key database. This flag can be used to
override this check.

@item GPGME_CREATE_NOEXPIRE
@since{1.9.0}

Request generation of keys that do not expire.

@end table

After the operation completed successfully, information about the
created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{userid}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{gpgme_key_t @var{extrakey}}, @
     @w{unsigned int
 @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey_start} initiates a
@code{gpgme_op_createkey} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_createsubkey
@c
@deftypefun gpgme_error_t gpgme_op_createsubkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey} creates and adds a new
subkey to the primary OpenPGP key given by @var{KEY}. The only
allowed protocol in @var{ctx} is @code{GPGME_PROTOCOL_OPENPGP}.
Subkeys (aka secondary keys) are a concept in the OpenPGP protocol to
bind several keys to a primary key. As of now this function requires
at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate
 on.

@var{algo} specifies the algorithm for the new subkey. For a list of
supported algorithms, see the GnuPG manual. If @var{algo} is
@code{NULL} or the string "default", the subkey is generated using the
default algorithm for an encryption subkey of the engine. If the
string "future-default" is used the engine may use an encryption
algorithm which is planned to be the default in a future release of
the engine; however existing implementation of the protocol may not be
able to already handle such future algorithms.

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode

dates up to the year
2106.

@var{flags} takes the same values as described above for
@code{gpgme_op_createkey}.

After the operation completed successfully, information about the
created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createsubkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey_start} initiates a
@code{gpgme_op_createsubkey} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_adduid
@c
@deftypefun gpgme_error_t
 gpgme_op_adduid @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid} adds a new user ID to the OpenPGP
key given by @var{KEY}. Adding additional user IDs after key creation

is a feature of the OpenPGP protocol and thus the protocol for the context @var{ctx} must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to add to the key. A user ID is commonly the mail address to be associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested. The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

@var{flags} are currently not used and must be set to zero.

The function returns zero
 on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_adduid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid_start} initiates a @code{gpgme_op_adduid} operation; see there for details. It must be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revuid
@c
@deftypefun gpgme_error_t gpgme_op_revuid @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_revuid} revokes a user ID from the OpenPGP
key given by @var{KEY}. Revoking user IDs after key creation is a
feature of the OpenPGP protocol and thus the protocol
 for the context
@var{ctx} must be set to OpenPGP. As of now this function requires at
least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to be revoked from the key. The user ID
must be given verbatim because the engine does an exact and case
sensitive match. Thus the @code{uid} field from the user ID object
(@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{flags} are currently not used and must be set to zero.

Note that the engine won't allow to revoke the last valid user ID. To
change a user ID is better to first add the new user ID, then revoke
the old one, and finally publish the key.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}},
 @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_revuid_start} initiates a
@code{gpgme_op_revuid} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_set_uid_flag
@c
@deftypefun gpgme_error_t gpgme_op_set_ui_flag @

(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{cons char * @var{name}}, @
@w{cons char * @var{value}});

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag} is used to set flags on a user ID from the OpenPGP key given by @var{KEY}. Setting flags on user IDs after key creation is a feature of the OpenPGP protocol and thus the protocol for the context @var{ctx} must be set to OpenPGP.

@var{key} specifies the key to operate on. This parameters is required.

@var{userid} is the user ID of the key to be manipulated. This user ID must
be given verbatim because the engine does an exact and case sensitive match. Thus the @code{uid} field from the user ID object (@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{name} names the flag which is to be changed. The only currently supported flag is:

@table @code
@item primary
This sets the primary key flag on the given user ID. All other primary key flag on other user IDs are removed. @var{value} must be given as NULL. For technical reasons this functions bumps the creation timestamp of all affected self-signatures up by one second. At least GnuPG version 2.1.20 is required.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if the engine does not support the command, or a bunch of other error codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_set_uid_flag_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{cons char * @var{name}},
@
@w{cons char * @var{value}});

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag_start} initiates a @code{gpgme_op_set_uid_flag} operation; see there for details. It must be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_genkey
@c
@deftypefun gpgme_error_t gpgme_op_genkey @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const char *@var{parms}}, @
@w{gpgme_data_t @var{public}}, @
@w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey} generates a new key pair in the context @var{ctx}. The meaning of @var{public} and @var{secret} depends on the crypto backend.

GPG does not support @var{public} and @var{secret}, they should be @code{NULL}. GnuPG will generate a key pair and add it to the standard key ring. The fingerprint of the generated key is available with @code{gpgme_op_genkey_result}.

GpgSM requires @var{public} to be a writable data object. GpgSM will generate
a secret key (which will be stored by @command{gpg-agent}, and return a certificate request in @var{public}, which then needs to be signed by the certification authority and imported before it can be used. GpgSM does not make the fingerprint available.

The argument @var{parms} specifies parameters for the key in an string that looks something like XML. The details about the format of @var{parms} are specific to the crypto engine used by @var{ctx}. The first line of the parameters must be @code{<GnupgKeyParams format="internal">} and the last line must be @code{</GnupgKeyParams>}. Every line in between the first and last lines is treated as a Header: Value pair. In particular, no XML escaping is necessary if you need to include the characters @code{<}, @code{>}, or @code{&}.

Here is an example for GnuPG as the crypto engine (all parameters of OpenPGP key generation are documented in the GPG manual):

@example

<GnupgKeyParms format="internal">
Key-Type: default
Subkey-Type: default
Name-Real:
Joe Tester
Name-Comment: with stupid passphrase
Name-Email: joe@@foo.bar
Expire-Date: 0
Passphrase: abc
</GnupgKeyParms>
@end example

Here is an example for GpgSM as the crypto engine (all parameters of
OpenPGP key generation are documented in the GPGSM manual):

@example
<GnupgKeyParms format="internal">
Key-Type: RSA
Key-Length: 1024
Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
Name-Email: joe@@foo.bar
</GnupgKeyParms>
@end example

Strings should be given in UTF-8 encoding. The only format supported
for now is ``internal''. The content of the @code{GnupgKeyParms}
container is passed verbatim to the crypto backend. Control
statements are not allowed.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_genkey_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a well-formed string (e.g. does not have the
expected
tag-like headers and footers), @code{GPG_ERR_NOT_SUPPORTED}
if @var{public} or @var{secret} is not valid, and
@code{GPG_ERR_GENERAL} if no key was created by the backend.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_genkey_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{parms}}, @w{gpgme_data_t @var{public}}, @w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey_start} initiates a
@code{gpgme_op_genkey} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a valid XML string, and
@code{GPG_ERR_NOT_SUPPORTED} if @var{public} or @var{secret} is not
@code{NULL}.
@end deftypefun

@c
@c gpgme_op_genkey_result
@c
@deftp {Data type} {gpgme_genkey_result_t}

This is a pointer to a structure used to store the result of a
@code{gpgme_op_genkey} operation.
 After successfully generating a
key, you can retrieve the pointer to the result with
@code{gpgme_op_genkey_result}. The structure contains the following
members:

@table @code
@item unsigned int primary : 1
This flag is set to 1 if a primary key was created and to 0
if not.

@item unsigned int sub : 1
This flag is set to 1 if a subkey was created and to 0 if not.

@item unsigned int uid : 1
This flag is set to 1 if a user ID was created and to 0 if not.

@item char *fpr
This is the fingerprint of the key that was created. If both a
primary and a subkey were generated, the fingerprint of the primary
key will be returned. If the crypto engine does not provide the
fingerprint, @code{fpr} will be a null pointer.

@item gpgme_data_t pubkey
@since{1.7.0}

This will eventually be used to return the public key. It is
currently not used.

@item gpgme_data_t seckey
@since{1.7.0}

This will eventually be used to return the secret key. It is
currently not used.

@end table
@end deftp

@deftypefun
 gpgme_genkey_result_t gpgme_op_genkey_result (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_genkey_result} returns a
@code{gpgme_genkey_result_t} pointer to a structure holding the result of
a @code{gpgme_op_genkey} operation. The pointer is only valid if the
last operation on the context was a @code{gpgme_op_genkey} or
@code{gpgme_op_genkey_start} operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.

@end deftypefun

@c
@c SIGNING KEYS
@c
@node Signing Keys
@subsection Signing Keys
@cindex key, signing

Key signatures are a unique concept of the OpenPGP protocol. They can
be used to certify the validity of a key and are used to create the
Web-of-Trust (WoT). Instead of using the @code{gpgme_op_interact}
function along with a finite state machine, GPGME provides a
convenient function to create key signatures when using modern GnuPG
versions.

@c
@c gpgme_op_keysign
@c
@deftypefun
 gpgme_error_t gpgme_op_keysign @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign} adds a new key signature to the
public key @var{KEY}. This function requires at least version 2.1.12 of

GnuPG.

@var{CTX} is the usual context which describes the protocol to use
(which must be OpenPGP) and has also the list of signer keys to be
used for the signature. The common case is to use the default key for
signing other keys. If another key or more than one key shall be used
for a key signature, @code{gpgme_signers_add} can be used.
@xref{Selecting Signers}.

@var{key} specifies the key to operate on.

@var{userid} selects the user ID or user IDs to be signed. If
@var{userid} is set to @code{NULL} all valid user IDs are signed. The
user ID must be given verbatim because the engine does an exact
 and
case sensitive match. Thus the @code{uid} field from the user ID
object (@code{gpgme_user_id_t}) is to be used. To select more than
one user ID put them all into one string separated by linefeeds
characters (@code{\n}) and set the flag @code{GPGME_KEYSIGN_LFSEP}.

@var{expires} specifies the expiration time of the new signature in
seconds. The common case is to use 0 to not set an expiration date.
However, if the configuration of the engine defines a default
expiration for key signatures, that is still used unless the flag
@code{GPGME_KEYSIGN_NOEXPIRE} is used. Note that this parameter takes
an unsigned long value and not a @code{time_t} to avoid problems on
systems which use a signed 32 bit @code{time_t}. Note further that
the OpenPGP protocol uses 32 bit values for timestamps and thus can
only encode dates up to the year 2106.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_KEYSIGN_LOCAL
@since{1.7.0}

Instead of creating an exportable
 key signature, create a key
signature which is is marked as non-exportable.

@item GPGME_KEYSIGN_LFSEP
@since{1.7.0}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@item GPGME_KEYSIGN_NOEXPIRE

Force the creation of a key signature without an expiration date. This
overrides @var{expire} and any local configuration of the engine.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keysign_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign_start} initiates a
@code{gpgme_op_keysign} operation; see there for details. It must
be
 completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revsig
@c
@deftypefun gpgme_error_t gpgme_op_revsig @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig} revokes key signatures of the
public key @var{key} made with the key @var{signing_key}. This
function requires at least version 2.2.24 of GnuPG.

@var{key} specifies the key to operate on.

@var{signing_key} specifies the key whose signatures shall be revoked.

@var{userid} selects the user ID or user IDs whose signatures shall
be revoked. If @var{userid} is set to @code{NULL} the signatures
on all user IDs are revoked. The user ID must be given verbatim
because the engine does an exact and case sensitive match. Thus the
@code{uid} field from the user ID object
 (@code{gpgme_user_id_t}) is to
be used. To select more than one user ID put them all into one string
separated by linefeeds characters (@code{\n}) and set the flag
@code{GPGME_REVSIG_LFSEP}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_REVSIG_LFSEP
@since{1.14.1}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revsig_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig_start} initiates a
@code{gpgme_op_revsig} operation; see there
 for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c EXPORTING KEYS
@c
@node Exporting Keys
@subsection Exporting Keys
@cindex key, export
@cindex key ring, export from

Exporting keys means the same as running @command{gpg} with the command
@option{--export}. However, a mode flag can be used to change the way
the export works. The available mode flags are described below, they
may be or-ed together.

@table @code

@item GPGME_EXPORT_MODE_EXTERN
If this bit is set, the output is send directly to the default
keyserver. This is currently only allowed for OpenPGP keys. It is good
practise to not send more than a few dozens key to a keyserver at one
time. Using this flag requires that the @var{keydata} argument of the
export function is set to @code{NULL}.

@item GPGME_EXPORT_MODE_MINIMAL
@since{1.3.1}

If this bit is set, the smallest possible key is exported. For OpenPGP
keys it removes all signatures
 except for the latest self-signatures.
For X.509 keys it has no effect.

@item GPGME_EXPORT_MODE_SSH
@since{1.4.0}

If this bit is set, the latest authentication key of the requested
OpenPGP key is exported in the OpenSSH public key format. This
accepts just a single key; to force the export of a specific subkey
a fingerprint pattern with an appended exclamation mark may be used.

@item GPGME_EXPORT_MODE_SECRET
@since{1.6.0}

Instead of exporting the public key, the secret key is exported. This
may not be combined with @code{GPGME_EXPORT_MODE_EXTERN}. For X.509
the export format is PKCS#8.

@item GPGME_EXPORT_MODE_RAW

@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509 key the export format will be changed to PKCS#1. This flag may not be used with OpenPGP.

@item GPGME_EXPORT_MODE_PKCS12
@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509 key the export format will be changed to PKCS#12 which also includes the certificate. This flag may not be used with OpenPGP.

@item GPGME_EXPORT_MODE_NOUID
@since{1.12.0 - experimental}
Do not export user ids. Works only with certain gpg version.

@end table

@deftypefun gpgme_error_t gpgme_op_export (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public keys and returns them in the data buffer @var{keydata}. The output format of the key data returned is determined by the @acronym{ASCII} armor attribute set for the context @var{ctx}, or, if that is not set, by the encoding specified for @var{keydata}.

If @var{pattern} is @code{NULL}, all available keys are returned. Otherwise, @var{pattern} contains an engine specific expression that is used to limit the list to all keys matching the pattern.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation completed successfully, @code{GPG_ERR_INV_VALUE} if @var{keydata} is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export_start} initiates a @code{gpgme_op_export} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public
keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys
are returned. Otherwise, @var{pattern} is a @code{NULL} terminated
array of strings that are used to limit the list to all keys matching
at least one of the patterns verbatim.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_export_ext_start} initiates a
@code{gpgme_op_export_ext} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t keys[]},
@w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys} extracts public keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set

for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

The keys to export are taken form the @code{NULL} terminated array
@var{keys}. Only
keys of the currently selected protocol of
@var{ctx} which do have a fingerprint set are considered for export.
Other keys specified by the @var{keys} are ignored. In particular
OpenPGP keys retrieved via an external key listing are not included.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA}
if no useful keys are in @var{keys} and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{keys}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys_start} initiates a
@code{gpgme_op_export_ext} operation. It can be completed by calling
@code{gpgme_wait} on the
context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA}
if no useful keys are in @var{keys} and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@node Importing Keys
@subsection Importing Keys
@cindex key, import
@cindex key ring, import to

Importing keys means the same as running @command{gpg} with the command
@option{--import}.

@deftypefun gpgme_error_t gpgme_op_import (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_import} adds the keys in the data buffer

@var{keydata} to the key ring of the crypto engine used by @var{ctx}.
The format of @var{keydata} can be @acronym{ASCII} armored, for example,
but the details are specific to the crypto engine.

After the operation completed successfully, the result
can be
retrieved with @code{gpgme_op_import_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx} or @var{keydata} is not a valid pointer,
and @code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_import_start} initiates a
@code{gpgme_op_import} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{keydata} is not a valid pointer, and
@code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t *@var{keys}})
@since{1.2.0}

The
function @code{gpgme_op_import_keys} adds the keys described by
the @code{NULL} terminated array @var{keys} to the key ring of the
crypto engine used by @var{ctx}. It is used to actually import and
make keys permanent which have been retrieved from an external source
(i.e. using @code{GPGME_KEYLIST_MODE_EXTERN}) earlier. The external
keylisting must have been made with the same context configuration (in
particular the same home directory). @footnote{Thus it is a
replacement for the usual workaround of exporting and then importing a
key to make an X.509 key permanent.} Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of @var{ctx} are
considered for import. Other keys specified by the @var{keys} are
ignored. As of now all considered keys must have been retrieved using
the same method, i.e. the used key listing mode must be identical.

After the operation completed successfully,

the result can be
retrieved with @code{gpgme_op_import_result}.

To move keys from one home directory to another, export and import the
keydata using @code{gpgme_op_export} and @code{gpgme_op_import}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, @code{GPG_ERR_CONFLICT} if the key
listing mode does not match, and @code{GPG_ERR_NO_DATA} if no keys are
considered for export.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{keys}})
@since{1.2.0}

The function @code{gpgme_op_import_keys_start} initiates a
@code{gpgme_op_import_keys} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx}
or @var{keydata} is not a valid pointer,
@code{GPG_ERR_CONFLICT} if the key listing mode does not match, and
@code{GPG_ERR_NO_DATA} if no keys are considered for export.
@end deftypefun

@deftp {Data type} {gpgme_import_status_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_import} operation. For each considered key one
status is added that contains information about the result of the
import. The structure contains the following members:

@table @code
@item gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or
@code{NULL} if this is the last element.

@item char *fpr
This is the fingerprint of the key that was considered.

@item gpgme_error_t result
If the import was not successful, this is the error value that caused
the import to fail. Otherwise the error code is
@code{GPG_ERR_NO_ERROR}.

@item unsigned int status
This is a bit-wise OR of the following flags that give more
information about what
part of the key was imported. If the key was
already known, this might be 0.

@table @code
@item GPGME_IMPORT_NEW
The key was new.

@item GPGME_IMPORT_UID
The key contained new user IDs.

@item GPGME_IMPORT_SIG
The key contained new signatures.

@item GPGME_IMPORT_SUBKEY
The key contained new sub keys.

@item GPGME_IMPORT_SECRET
The key contained a secret key.
@end table
@end table
@end deftp

@deftp {Data type} {gpgme_import_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_import} operation. After a successful import
operation, you can retrieve the pointer to the result with
@code{gpgme_op_import_result}. The structure contains the following
members:

@table @code
@item int considered
The total number of considered keys.

@item int no_user_id
The number of keys without user ID.

@item int imported
The total number of imported keys.

@item int imported_rsa
The number of imported RSA keys.

@item int unchanged
The number of unchanged keys.

@item
int new_user_ids
The number of new user IDs.

@item int new_sub_keys
The number of new sub keys.

@item int new_signatures
The number of new signatures.

@item int new_revocations
The number of new revocations.

@item int secret_read
The total number of secret keys read.

@item int secret_imported
The number of imported secret keys.

@item int secret_unchanged
The number of unchanged secret keys.

@item int not_imported
The number of keys not imported.

@item gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more information
about the keys for which an import was attempted.

@item int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore support
v3 keys (created with PGP 2.x) and ignores them on import. This
counter provides the number of such skipped v3 keys.

@end table
@end deftp

@deftypefun gpgme_import_result_t gpgme_op_import_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_import_result} returns a
@code{gpgme_import_result_t}
pointer to a structure holding the result
of a @code{gpgme_op_import} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_import} or
@code{gpgme_op_import_start} operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.
@end deftypefun

@node Deleting Keys
@subsection Deleting Keys
@cindex key, delete
@cindex key ring, delete from

@deftypefun gpgme_error_t gpgme_op_delete_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}}, @w{unsigned int @var{flags}})
@since{1.9.1}

The function @code{gpgme_op_delete_ext} deletes the key @var{key} from the key ring of the crypto engine used by @var{ctx}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_DELETE_ALLOW_SECRET
@since{1.9.1}

If not set, only public keys are deleted. If set, secret keys are deleted as well, if that is supported.

@item
GPGME_DELETE_FORCE
@since{1.9.1}

If set, the user is not asked to confirm the deletion.
@end table

The function returns the error code @code{GPG_ERR_NO_ERROR} if the key was deleted successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{key} is not a valid pointer, @code{GPG_ERR_NO_PUBKEY} if @var{key} could not be found in the keyring, @code{GPG_ERR_AMBIGUOUS_NAME} if the key was not specified unambiguously, and @code{GPG_ERR_CONFLICT} if the secret key for @var{key} is available, but @var{allow_secret} is zero.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}}, @w{unsigned int @var{flags}})
@since{1.9.1}

The function @code{gpgme_op_delete_ext_start} initiates a @code{gpgme_op_delete} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation was started successfully,

and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

The following functions allow only to use one particular flag.

@deftypefun gpgme_error_t gpgme_op_delete (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}}, @w{int @var{allow_secret}})
Similar to @code{gpgme_op_delete_ext}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}}, @w{int @var{allow_secret}})
Similar to @code{gpgme_op_delete_ext_start}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@node Changing Passphrases
@subsection Changing Passphrases
@cindex passphrase, change

@deftypefun gpgme_error_t gpgme_op_passwd @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd}
changes the passphrase of the
private key associated with @var{key}. The only allowed value for
@var{flags} is @code{0}. The backend engine will usually popup a window
to ask for the old and the new passphrase. Thus this function is not
useful in a server application (where passphrases are not required
anyway).

Note that old @code{gpg} engines (before version 2.0.15) do not support
this command and will silently ignore it.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_passwd_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd_start} initiates a
@code{gpgme_op_passwd} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the
 oepration
could not be started.
@end deftypefun

@c
@c CHANGING TOFU DATA
@c
@node Changing TOFU Data
@subsection Changing TOFU Data
@cindex validity, TOFU

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation
model. For resolving conflicts it is necessary to declare the policy
for a key. See the GnuPG manual for details on the TOFU
implementation.

@deftp {Data type} {enum gpgme_tofu_policy_t}
@since{1.7.0}

@tindex gpgme_tofu_policy_t
The @code{gpgme_tofu_policy_t} type specifies the set of possible
policy values that are supported by @acronym{GPGME}:

@table @code
@item GPGME_TOFU_POLICY_AUTO
Set the policy to ``auto''.
@item GPGME_TOFU_POLICY_GOOD
Set the policy to ``good''.
@item GPGME_TOFU_POLICY_BAD
Set the policy to ``bad''.
@item GPGME_TOFU_POLICY_ASK
Set the policy to ``ask''.
@item GPGME_TOFU_POLICY_UNKNOWN
Set the policy to ``unknown''.
@end table

@end deftp

To change the policy for a key the following functions can be used:

@deftypefun gpgme_error_t
 gpgme_op_tofu_policy @
          (@w{gpgme_ctx_t @var{ctx}},   @
           @w{const gpgme_key_t @var{key}}, @
           @w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}

The function @code{gpgme_op_tofu_policy} changes the TOFU policy of
@var{key}. The valid values for @var{policy} are listed above. As of
now this function does only work for OpenPGP and requires at least
version 2.1.10 of GnuPG.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_tofu_policy_start @
          (@w{gpgme_ctx_t @var{ctx}},   @
           @w{const gpgme_key_t @var{key}}, @
           @w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}

The function @code{gpgme_op_tofu_policy_start} initiates a
@code{gpgme_op_tofu_policy} operation.   It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The
 function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the oepration
could not be started.

@end deftypefun

@node Advanced Key Editing
@subsection Advanced Key Editing
@cindex key, edit

@deftp {Data type} {gpgme_error_t (*gpgme_interact_cb_t) @
  (@w{void *@var{handle}}, @
   @w{const char *@var{status}}, @
   @w{const char *@var{args}}, @
   @w{int @var{fd}})}

@since{1.7.0}

@tindex gpgme_interact_cb_t
The @code{gpgme_interact_cb_t} type is the type of functions which
@acronym{GPGME} calls if it a key interact operation is on-going. The
status keyword @var{status} and the argument line @var{args} are
passed through by @acronym{GPGME} from the crypto engine. An empty
string represents EOF. The file descriptor @var{fd} is -1 for normal
status messages. If @var{status} indicates a command rather than a
status message, the response to the command should be written to
@var{fd}. The @var{handle} is
provided by the user at start of
operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_interact (@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}}, @
@w{gpgme_interact_cb_t @var{fnc}}, @
@w{void *@var{handle}}, @
@w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact} processes the key @var{KEY}
interactively, using the interact callback function @var{FNC} with the
handle @var{HANDLE}. The callback is invoked for every status and
command request from the crypto engine. The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.

@var{flags} modifies the behaviour
of the function; the only defined
bit value is:

@table @code
@item GPGME_INTERACT_CARD
@since{1.7.0}

This is used for smartcard based keys and uses gpgs
@code{--card-edit} command.

@end table

The function returns @code{0} if the edit operation completes
successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{key} is
not a valid pointer, and any error returned by the crypto engine or
the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_interact_start (@w{gpgme_ctx_t @var{ctx}}, @
  @w{gpgme_key_t @var{key}}, @
  @w{unsigned int @var{flags}}, @
  @w{gpgme_interact_cb_t @var{fnc}}, @
  @w{void *@var{handle}}, @
  @w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact_start} initiates a
@code{gpgme_op_interact} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started
successfully, and @code{GPG_ERR_INV_VALUE}
 if @var{ctx} or @var{key}
is not a valid pointer.
@end deftypefun

@node Crypto Operations
@section Crypto Operations
@cindex cryptographic operation

Sometimes, the result of a crypto operation returns a list of invalid
keys encountered in processing the request. The following structure
is used to hold information about such a key.

@deftp {Data type} {gpgme_invalid_key_t}
This is a pointer to a structure used to store a part of the result of
a crypto operation which takes user IDs as one input parameter. The
structure contains the following members:

@table @code
@item gpgme_invalid_key_t next
This is a pointer to the next invalid key structure in the linked
list, or @code{NULL} if this is the last element.

@item char *fpr

The fingerprint or key ID of the invalid key encountered.

@item gpgme_error_t reason
An error code describing the reason why the key was found invalid.
@end table
@end deftp

@menu
* Decrypt:: Decrypting a ciphertext.
* Verify::
  Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.
@end menu

@node Decrypt
@subsection Decrypt
@cindex decryption
@cindex cryptographic operation, decryption

@deftypefun gpgme_error_t gpgme_op_decrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt} decrypts the ciphertext in the data object @var{cipher} and stores it into the data object @var{plain}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer, @code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to decrypt, @code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the secret key could not be retrieved, and passes through some errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_start} initiates a @code{gpgme_op_decrypt} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be started successfully, and @code{GPG_ERR_INV_VALUE}

if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext (@
    @w{gpgme_ctx_t @var{ctx}}, @
    @w{gpgme_decrypt_flags_t @var{flags}}, @
    @w{gpgme_data_t @var{cipher}}, @
    @w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext} is the same as
@code{gpgme_op_decrypt}
but has an additional argument
@var{flags}. If @var{flags} is 0 both function behave identically.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_DECRYPT_VERIFY
@since{1.8.0}

The @code{GPGME_DECRYPT_VERIFY} symbol specifies that this function
shall exactly act as @code{gpgme_op_decrypt_verify}.

@item GPGME_DECRYPT_UNWRAP
@since{1.8.0}

The @code{GPGME_DECRYPT_UNWRAP} symbol specifies that the output shall
be an OpenPGP message with only the encryption layer removed. This
requires GnuPG 2.1.12 and works only for OpenPGP. This is the
counterpart to @code{GPGME_ENCRYPT_WRAP}.

@end table

The function returns the error codes as described for
@code{gpgme_op_decrypt}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext_start (@
    @w{gpgme_ctx_t @var{ctx}}, @
    @w{gpgme_decrypt_flags_t @var{flags}}, @
    @w{gpgme_data_t @var{cipher}}, @

 @w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext_start} initiates a
@code{gpgme_op_decrypt_ext} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_recipient_t}
@since{1.1.0}

This is a pointer to a structure used to store information about the
recipient of an encrypted text which is decrypted in a
@code{gpgme_op_decrypt} operation. This information (except for the
status field) is even available before the operation finished
successfully, for example in a passphrase callback. The structure
contains the following members:

@table @code
@item gpgme_recipient_t next
This is a pointer to the next recipient structure in the linked list,
or @code{NULL} if this is
 the last element.

@item gpgme_pubkey_algo_t
The public key algorithm used in the encryption.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used as
recipient.

@item gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY if the
secret key for this recipient is not available, and 0 otherwise.
@end table
@end deftp

@deftp {Data type} {gpgme_decrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_decrypt} operation. After successfully decrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_decrypt_result}. As with all result structures, it
this structure shall be considered read-only and an application must
not allocate such a strucure on its own. The structure contains the

following members:

@table @code
@item char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the
algorithm that is not supported.

@item unsigned int wrong_key_usage
: 1
@since{0.9.0}
This is true if the key was not used according to its policy.

@item unsigned int legacy_cipher_nomdc : 1
@since{1.11.2}
The message was made by a legacy algorithm without any integrity
protection. This might be an old but legitimate message.

@item unsigned int is_mime : 1;
@since{1.11.0}
The message claims that the content is a MIME object.

@item unsigned int is_de_vs : 1;
@since{1.10.0}
The message was encrypted in a VS-NfD compliant way. This is a
specification in Germany for a restricted communication level.

@item gpgme_recipient_t recipients
@since{1.1.0}

This is a linked list of recipients to which this message was encrypted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer.

@item char *session_key
@since{1.8.0}

A textual representation (nul-terminated string) of the session key
used in symmetric encryption of the message, if the context has been
set to export session
keys (see @code{gpgme_set_ctx_flag,
"export-session-key"}), and a session key was available for the most
recent decryption operation. Otherwise, this is a null pointer.

You must not try to access this member of the struct unless
@code{gpgme_set_ctx_flag (ctx, "export-session-key")} returns success
or @code{gpgme_get_ctx_flag (ctx, "export-session-key")} returns true

(non-empty string).

@item char *symkey_algo
@since{1.11.0}

A string with the symmetric encryption algorithm and mode using the
format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of
OpenPGP is given as "PGPCFB".

@end table
@end deftp

@deftypefun gpgme_decrypt_result_t gpgme_op_decrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_decrypt_result} returns a
@code{gpgme_decrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_decrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_decrypt} or @code{gpgme_op_decrypt_start}
operation.
If the operation failed this might be a @code{NULL} pointer. The
returned pointer is only valid until the next operation is started on
the context.
@end deftypefun

@node Verify
@subsection Verify
@cindex verification
@cindex signature, verification
@cindex cryptographic operation, verification
@cindex cryptographic operation, signature check
@cindex signature notation data
@cindex notation data

@deftypefun gpgme_error_t gpgme_op_verify (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{sig}},
@w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify} verifies that the signature in the
data object @var{sig} is a valid signature. If @var{sig} is a
detached signature, then the signed text should be provided in
@var{signed_text} and @var{plain} should be a null pointer.
Otherwise, if @var{sig} is a normal (or cleartext) signature,
@var{signed_text} should be a null pointer and @var{plain} should be a
writable data object
that will contain the plaintext after successful
verification.

The results of the individual signature verifications can be retrieved
with @code{gpgme_op_verify_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{sig} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{sig} does not contain any data to
verify, and passes through any errors that are reported by the crypto
engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{sig}}, @w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify_start} initiates a
@code{gpgme_op_verify} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started
 successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{sig} or @var{plain} is not a valid pointer, and
@code{GPG_ERR_NO_DATA} if @var{sig} or @var{plain} does not contain
any data to verify.
@end deftypefun

@deftp {Data type} {gpgme_sig_notation_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_verify} operation. The structure contains the
following members:

@table @code
@item gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure in the
linked list, or @code{NULL} if this is the last element.

@item char *name
The name of the notation field. If this is @code{NULL}, then the
member @code{value} will contain a policy URL.

@item int name_len
The length of the @code{name} field. For strings the length is
counted without the trailing binary zero.

@item char *value
The value of the notation field. If @code{name} is @code{NULL}, then
this is a policy URL.

@item int value_len
The length of the @code{value}

field. For strings the length is
counted without the trailing binary zero.

@item gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags associated
with the notation data in an accumulated form which can be used as an
argument to the function @code{gpgme_sig_notation_add}. The value
@code{flags} is a bitwise-or combination of one or multiple of the
following bit values:

@table @code
@item GPGME_SIG_NOTATION_HUMAN_READABLE
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_HUMAN_READABLE} symbol specifies that the
notation data is in human readable form

@item GPGME_SIG_NOTATION_CRITICAL
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_CRITICAL} symbol specifies that the
notation data is critical.

@end table

@item unsigned int human_readable : 1
This is true if the @code{GPGME_SIG_NOTATION_HUMAN_READABLE} flag is
set and false otherwise. This flag is only valid for notation data,
not for policy URLs.

@item unsigned int critical : 1
This is true if the
 @code{GPGME_SIG_NOTATION_CRITICAL} flag is set and
false otherwise. This flag is valid for notation data and policy URLs.

@end table
@end deftp

@deftp {Data type} {gpgme_signature_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_verify} operation. The structure contains the
following members:

@table @code
@item gpgme_signature_t next
This is a pointer to the next new signature structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status. It
provides an easy interface to a defined semantic of the signature
status. Checking just one bit is sufficient to see whether a
signature is valid without any restrictions. This means that
you can check for GPGME_SIGSUM_VALID like this:

@example
if ((sig.summary & GPGME_SIGSUM_VALID))
@{
..do stuff if valid..
@}
else
@{
..do stuff if not fully valid..
@}
@end example

The defined bits are:
@table @code
@item GPGME_SIGSUM_VALID
The signature is fully valid.

@item GPGME_SIGSUM_GREEN
The signature is good but one might want to display some extra
information. Check the other bits.

@item GPGME_SIGSUM_RED
The signature is bad. It might be useful to check other bits and
display more information, i.e. a revoked certificate might not render a
signature invalid when the message was received prior to the cause for
the revocation.

@item GPGME_SIGSUM_KEY_REVOKED
The key or at least one certificate has been revoked.

@item GPGME_SIGSUM_KEY_EXPIRED
The key or one of the certificates has expired. It is probably a good
idea to display the date of the expiration.

@item GPGME_SIGSUM_SIG_EXPIRED
The signature has expired.

@item GPGME_SIGSUM_KEY_MISSING
Can't verify due to a missing key or certificate.

@item GPGME_SIGSUM_CRL_MISSING
The CRL (or an equivalent mechanism) is not available.

@item GPGME_SIGSUM_CRL_TOO_OLD
Available CRL is too
old.

@item GPGME_SIGSUM_BAD_POLICY
A policy requirement was not met.

@item GPGME_SIGSUM_SYS_ERROR
A system error occurred.

@item GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.
@end table

@item char *fpr
This is the fingerprint or key ID of the signature.

@item gpgme_error_t status
This is the status of the signature. In particular, the following
status codes are of interest:

@table @code
@item GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that
there is no signature. For the combined result this status
means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check
the @code{summary} field for that.

For example a @code{gpgme_op_decrypt_verify} returns a verification
result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

@item GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For
the combined result this
status means that all signatures are valid
and expired.

@item GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to
verify the signature has expired. For the combined result this status
means that all signatures are valid and all keys are expired.

@item GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used
to verify the signature has been revoked. For the combined result

this status means that all signatures are valid and all keys are
revoked.

@item GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined
result this status means that all signatures are invalid.

@item GPG_ERR_NO_PUBKEY
This status indicates that the signature could not be verified due to
a missing key. For the combined result this status means that all
signatures could not be checked due to missing keys.

@item GPG_ERR_GENERAL
This status indicates that there was some other
error which prevented
the signature verification.
@end table

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

@item unsigned long timestamp
The creation timestamp of this signature.

@item unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature does
not expire.

@item unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

@item unsigned int pka_trust : 2
This is set to the trust information gained by means of the PKA system.
Values are:
@table @code
@item 0
No PKA information available or verification not possible.
@item 1
PKA verification failed.
@item 2
PKA verification succeeded.
@item 3
Reserved for future use.
@end table
Depending on the configuration of the engine, this metric may also be
reflected by the validity of the signature.

@item unsigned int chain_model : 1

@since{1.1.6}

This is true if the
validity of the signature has been checked using the
chain model. In the chain model the time the signature has been created
must be within the validity period of the certificate and the time the
certificate itself has been created must be within the validity period
of the issuing certificate. In contrast the default validation model
checks the validity of signature as well at the entire certificate chain
at the current time.

@item gpgme_validity_t validity
The validity of the signature.

@item gpgme_error_t validity_reason
If a signature is not valid, this provides a reason why.

@item gpgme_pubkey_algo_t
The public key algorithm used to create this signature.

@item gpgme_hash_algo_t
The hash algorithm used to create this signature.

@item char *pka_address
The mailbox from the PKA information or @code{NULL}.

@item gpgme_key_t key
@since{1.7.0}

An object describing the key used to create the signature. This key
object may be incomplete in that it only conveys information
availabale
directly with a signature. It may also be @code{NULL} if
such information is not readily available.

@end table
@end deftp

@deftp {Data type} {gpgme_verify_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_verify} operation. After verifying a signature, you
can retrieve the pointer to the result with
@code{gpgme_op_verify_result}. If the operation failed this might be
a @code{NULL} pointer. The structure contains the following member:

@table @code
@item gpgme_signature_t signatures

A linked list with information about all signatures for which a
verification was attempted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer. Warning: The filename is
not covered by the signature.

@item unsigned int is_mime : 1;
@since{1.11.0}

The message claims that the content is a MIME object. Warning: This
flag is not covered by the signature.

@end table
@end deftp

@deftypefun
 gpgme_verify_result_t gpgme_op_verify_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_verify_result} returns a
@code{gpgme_verify_result_t} pointer to a structure holding the result
of a @code{gpgme_op_verify} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_verify},
@code{gpgme_op_verify_start}, @code{gpgme_op_decrypt_verify} or
@code{gpgme_op_decrypt_verify_start} operation, and if this operation
finished successfully (for @code{gpgme_op_decrypt_verify} and
@code{gpgme_op_decrypt_verify_start}, the error code
@code{GPG_ERR_NO_DATA} counts as successful in this context). The
returned pointer is only valid until the next operation is started on
the context.
@end deftypefun

@node Decrypt and Verify
@subsection Decrypt and Verify
@cindex decryption and verification
@cindex verification and decryption
@cindex signature check
@cindex cryptographic operation, decryption and verification

@deftypefun gpgme_error_t gpgme_op_decrypt_verify
 (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify} decrypts the ciphertext in
the data object @var{cipher} and stores it into the data object
@var{plain}. If @var{cipher} contains signatures, they will be
verified.

After the operation completed, @code{gpgme_op_decrypt_result} and

@code{gpgme_op_verify_result} can be used to retrieve more information
about the signatures.

If the error code @code{GPG_ERR_NO_DATA} is returned, @var{cipher}
does not contain any data to decrypt. However, it might still be
signed. The information about detected signatures is available with
@code{gpgme_op_verify_result} in this case.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to
decrypt,
 @code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid
cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the
secret key could not be retrieved, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify_start} initiates a
@code{gpgme_op_decrypt_verify} operation. It can be completed by
calling @code{gpgme_wait} on the context. @xref{Waiting For
Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{cipher}, @var{plain} or @var{r_stat} is not a valid
pointer, and @code{GPG_ERR_NO_DATA} if @var{cipher} does not contain
any data to decrypt.
@end deftypefun

When processing mails it is sometimes useful to extract the actual
mail
 address (the ``addr-spec'') from a string. GPGME provides this
helper function which uses the same semantics as the internal
functions in GPGME and GnuPG:

@deftypefun @w{char *} gpgme_addrspec_from_uid (@w{const char *@var{uid}})

@since{1.7.1}

Return the mail address (called ``addr-spec'' in RFC-5322) from the
string @var{uid} which is assumed to be a user id (called ``address''
in RFC-5322). All plain ASCII characters (i.e. those with bit 7
cleared) in the result are converted to lowercase. Caller must free
the result using @code{gpgme_free}. Returns @code{NULL} if no valid

address was found (in which case @code{ERRNO} is set to @code{EINVAL})
or for other errors.

@end deftypefun

@node Sign
@subsection Sign
@cindex signature, creation
@cindex sign
@cindex cryptographic operation, signing

A signature can contain signatures by one or more keys. The set of
keys used to create a signatures is contained in a context, and is
applied to all following signing operations in
this context (until the
set is changed).

@menu
* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.
@end menu

@node Selecting Signers
@subsubsection Selecting Signers
@cindex signature, selecting signers
@cindex signers, selecting

The key or the keys used to create a signature are stored in the
context. The following functions can be used to manipulate this list.
If no signer has been set into the context a default key is used for
signing.

@deftypefun void gpgme_signers_clear (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_signers_clear} releases a reference for each
key on the signers list and removes the list of signers from the
context @var{ctx}.

Every context starts with an empty list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_signers_add (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}})
The function
@code{gpgme_signers_add} adds the key @var{key} to the
list of signers in the context @var{ctx}.

Calling this function acquires an additional reference for the key.
@end deftypefun

@deftypefun @w{unsigned int} gpgme_signers_count (@w{const gpgme_ctx_t @var{ctx}})
@since{1.4.3}

The function @code{gpgme_signers_count} returns the number of signer keys in
the context @var{ctx}.
@end deftypefun

@deftypefun gpgme_key_t gpgme_signers_enum (@w{const gpgme_ctx_t @var{ctx}}, @w{int @var{seq}})
The function @code{gpgme_signers_enum} returns the @var{seq}th key in
the list of signers in the context @var{ctx}. An additional reference
is acquired for the user.

If @var{seq} is out of range, @code{NULL} is returned.
@end deftypefun

@node Creating a Signature
@subsubsection Creating a Signature

@deftp {Data type} {enum gpgme_sig_mode_t}
@tindex gpgme_sig_mode_t
The @code{gpgme_sig_mode_t} type is used to specify the desired type of a
signature. The following modes are available:

@table @code
@item
GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the
signature.

@item GPGME_SIG_MODE_DETACH
A detached signature is made.

@item GPGME_SIG_MODE_CLEAR
A clear text signature is made. The @acronym{ASCII} armor and text
mode settings of the context are ignored.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{plain}},
@w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign} creates a signature for the text in
the data object @var{plain} and returns it in the data object
@var{sig}. The type of the signature created is determined by the

@acronym{ASCII} armor (or, if that is not set, by the encoding
specified for @var{sig}), the text mode attributes set for the context
@var{ctx} and the requested signature mode @var{mode}.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_sign_result}.

If an S/MIME
signed message is created using the CMS crypto engine,
the number of certificates to include in the message can be specified
with @code{gpgme_set_include_certs}. @xref{Included Certificates}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
signature could be created successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{plain} or @var{sig} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if the signature could not be created,
@code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the secret key
could not be retrieved, @code{GPG_ERR_UNUSABLE_SECKEY} if there are
invalid signers, and passes through any errors that are reported by the
crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{plain}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign_start} initiates a
@code{gpgme_op_sign} operation. It can be completed by calling
@code{gpgme_wait}
on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be
started successfully, and @code{GPG_ERR_INV_VALUE} if @var{ctx},
@var{plain} or @var{sig} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_new_signature_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_sign} operation. The structure contains the
following members:

@table @code
@item gpgme_new_signature_t next
This is a pointer to the next new signature structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_sig_mode_t type
The type of this signature.

@item gpgme_pubkey_algo_t pubkey_algo

The public key algorithm used to create this signature.

@item gpgme_hash_algo_t hash_algo
The hash algorithm used to create this signature.

@item unsigned int sig_class
The signature class of this signature.

@item long int timestamp
The creation timestamp of this signature.

@item
 char *fpr
The fingerprint of the key which was used to create this signature.
@end table
@end deftp

@deftp {Data type} {gpgme_sign_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_sign} operation. After successfully generating a
signature, you can retrieve the pointer to the result with
@code{gpgme_op_sign_result}. The structure contains the following
members:

@table @code
@item gpgme_invalid_key_t invalid_signers
A linked list with information about all invalid keys for which a
signature could not be created.

@item gpgme_new_signature_t signatures
A linked list with information about all signatures created.
@end table
@end deftp

@deftypefun gpgme_sign_result_t gpgme_op_sign_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_sign_result} returns a
@code{gpgme_sign_result_t} pointer to a structure holding the result
of a @code{gpgme_op_sign} operation. The pointer is only valid if the
last operation on the context was
 a @code{gpgme_op_sign},
@code{gpgme_op_sign_start}, @code{gpgme_op_encrypt_sign} or
@code{gpgme_op_encrypt_sign_start} operation. If that operation
failed, the function might return a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@node Signature Notation Data
@subsubsection Signature Notation Data
@cindex notation data
@cindex signature notation data
@cindex policy URL

Using the following functions, you can attach arbitrary notation data
to a signature. This information is then available to the user when
the signature is verified.

@deftypefun void gpgme_sig_notation_clear (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_clear} removes the notation data
from the context @var{ctx}. Subsequent signing operations from this
context will not include any notation data.

Every context starts with an empty notation data list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_sig_notation_add
 (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{name}}, @w{const char *@var{value}},
@w{gpgme_sig_notation_flags_t @var{flags}})
@since{1.1.0}

The function @code{gpgme_sig_notation_add} adds the notation data with
the name @var{name} and the value @var{value} to the context
@var{ctx}.

Subsequent signing operations will include this notation data, as well
as any other notation data that was added since the creation of the
context or the last @code{gpgme_sig_notation_clear} operation.

The arguments @var{name} and @var{value} must be @code{NUL}-terminated
strings in human-readable form. The flag
@code{GPGME_SIG_NOTATION_HUMAN_READABLE} is implied
(non-human-readable notation data is currently not supported). The
strings must be in UTF-8 encoding.

If @var{name} is @code{NULL}, then @var{value} should be a policy URL.

The function @code{gpgme_sig_notation_add} returns the error code
@code{GPG_ERR_NO_ERROR} if the notation data could be added
successfully, @code{GPG_ERR_INV_VALUE}
 if @var{ctx} is not a valid
pointer, or if @var{name}, @var{value} and @var{flags} are an invalid
combination. The function also passes through any errors that are
reported by the crypto engine support routines.

@end deftypefun

@deftypefun gpgme_sig_notation_t gpgme_sig_notation_get (@w{const gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_get} returns the linked list of
notation data structures that are contained in the context @var{ctx}.

If @var{ctx} is not a valid pointer, or there is no notation data
added for this context, @code{NULL} is returned.
@end deftypefun

@node Encrypt
@subsection Encrypt
@cindex encryption
@cindex cryptographic operation, encryption

One plaintext can be encrypted for several recipients at the same
time. The list of recipients is created independently of any context,
and then passed to the encryption operation.

@menu
* Encrypting a Plaintext:: How to encrypt a plaintext.
@end menu

@node Encrypting a
Plaintext
@subsubsection Encrypting a Plaintext

@deftypefun gpgme_error_t gpgme_op_encrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t
@var{cipher}})
The function @code{gpgme_op_encrypt} encrypts the plaintext in the
data object @var{plain} for the recipients @var{recp} and stores the
ciphertext in the data object @var{cipher}. The type of the
ciphertext created is determined by the @acronym{ASCII} armor (or, if
that is not set, by the encoding specified for @var{cipher}) and the
text mode attributes set for the context @var{ctx}.

@var{recp} must be a @code{NULL}-terminated array of keys. The user
must keep references for all keys during the whole duration of the
call (but see @code{gpgme_op_encrypt_start} for the requirements with
the asynchronous variant).

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_ENCRYPT_ALWAYS_TRUST
The
 @code{GPGME_ENCRYPT_ALWAYS_TRUST} symbol specifies that all the
recipients in @var{recp} should be trusted, even if the keys do not
have a high enough validity in the keyring. This flag should be used
with care; in general it is not a good idea to use any untrusted keys.

@item GPGME_ENCRYPT_NO_ENCRYPT_TO
@since{1.2.0}

The @code{GPGME_ENCRYPT_NO_ENCRYPT_TO} symbol specifies that no
default or hidden default recipients as configured in the crypto
backend should be included. This can be useful for managing different
user profiles.

@item GPGME_ENCRYPT_NO_COMPRESS
@since{1.5.0}

The @code{GPGME_ENCRYPT_NO_COMPRESS} symbol specifies that the
plaintext shall not be compressed before it is encrypted. This is
in some cases useful if the length of the encrypted message
may reveal information about the plaintext.

@item GPGME_ENCRYPT_PREPARE
@itemx GPGME_ENCRYPT_EXPECT_SIGN
The @code{GPGME_ENCRYPT_PREPARE} symbol is used with the UI Server
protocol to prepare an encryption
 (i.e. sending the
@code{PREP_ENCRYPT} command). With the
@code{GPGME_ENCRYPT_EXPECT_SIGN} symbol the UI Server is advised to
also expect a sign command.

@item GPGME_ENCRYPT_SYMMETRIC
@since{1.7.0}

The @code{GPGME_ENCRYPT_SYMMETRIC} symbol specifies that the
output should be additionally encrypted symmetrically even
if recipients are provided. This feature is only supported
for the OpenPGP crypto engine.

@item GPGME_ENCRYPT_THROW_KEYIDS
@since{1.8.0}

The @code{GPGME_ENCRYPT_THROW_KEYIDS} symbols requests that the
identifiers for the decrption keys are not included in the ciphertext.
On the receiving side, the use of this flag may slow down the

decryption process because all available secret keys must be tried.
This flag is only honored for OpenPGP encryption.

@item GPGME_ENCRYPT_WRAP
@since{1.8.0}

The @code{GPGME_ENCRYPT_WRAP} symbol specifies that the input is an
OpenPGP message and not a plain data. This is the counterpart to
@code{GPGME_DECRYPT_UNWRAP}.

@item GPGME_ENCRYPT_WANT_ADDRESS
@since{1.11.0}

The
 @code{GPGME_ENCRYPT_WANT_ADDRESS} symbol requests that all
supplied keys or key specifications include a syntactically valid mail
address. If this is not the case the operation is not even tried and
the error code @code{GPG_ERR_INV_USER_ID} is returned. Only the
address part of the key specification is conveyed to the backend. As
of now the key must be specified using the @var{recpstring} argument
of the extended encrypt functions. This feature is currently only
supported for the OpenPGP crypto engine.

@end table

If @code{GPG_ERR_UNUSABLE_PUBKEY} is returned, some recipients in
@var{recp} are invalid, but not all. In this case the plaintext might
be encrypted for all valid recipients and returned in @var{cipher} (if
this happens depends on the crypto engine). More information about
the invalid recipients is available with
@code{gpgme_op_encrypt_result}.

If @var{recp} is @code{NULL}, symmetric rather than public key
encryption is performed.
 Symmetrically encrypted cipher text can be
deciphered with @code{gpgme_op_decrypt}. Note that in this case the
crypto backend needs to retrieve a passphrase from the user.
Symmetric encryption is currently only supported for the OpenPGP
crypto backend.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be created successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{recp}, @var{plain} or @var{cipher} is not a valid
pointer, @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{recp} contains some
invalid recipients, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase
for the symmetric key could not be retrieved, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_start} initiates
a
@code{gpgme_op_encrypt} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

References to the keys only need to be held for the duration of this
call. The user can release its references to the keys after this
function returns, even if the operation is not yet finished.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid
pointer, and @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{rset} does not
contain any valid recipients.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_ext @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended
version of @code{gpgme_op_encrypt} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there is no need
to first create key objects. Leading and trailing white space is
remove from each line in @var{recpstring}. The keys are then passed
verbatim to the backend engine.

For the OpenPGP backend several special keywords are supported to
modify the operation. These keywords are given instead of a key
specification. The currently supported keywords are:

@table @code
@item --hidden
@itemx --no-hidden
These keywords toggle between normal and hidden recipients for all
following key specifications. When a hidden recipient is requested

the gpg option @option{-R} (or @option{-F} in file mode) is used
instead of @option{-r} (@option{-f} in file mode).

@item --file
@itemx
 --no-file
These keywords toggle between regular and file mode for all following
key specification. In file mode the option @option{-f} or @option{-F}
is passed to gpg. At least GnuPG version 2.1.14 is required to handle
these options. The @code{GPGME_ENCRYPT_WANT_ADDRESS} flag is ignored
in file mode.

@item --
This keyword disables all keyword detection up to the end of the
string. All keywords are treated as verbatim arguments.

@end table

To create a @var{recpstring} it is often useful to employ a strconcat
style function. For example this function creates a string to encrypt
to two keys:

@example
char *
xbuild_recpstring (const char *key1, const char *key2)
@{
 char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
 if (!result)
   @{ perror ("strconcat failed"); exit (2); @}
 return result;
@}
@end example

Note the use of the double dash here; unless you want to specify a
keyword, it is a good idea to avoid any possible trouble with key
specifications starting
 with a double dash. The used strconcat
function is available in Libgpg-error 1.28 and later; Libgpg-error
(aka Gpgrt) is a dependency of GPGME. The number of arguments to
@code{gpgrt_strconcat} is limited to 47 but that should always be
sufficient. In case a larger and non-fixed number of keys are to be
supplied the following code can be used:

@example
char *
xbuild_long_recpstring (void)
@{
 gpgrt_stream_t memfp;

```
const char *s;
void *result;

memfp = gpgrt_fopenmem (0, "w+b");
if (!memfp)
  @{ perror ("fopenmem failed"); exit (2); @}
gpgrt_fputs ("--", memfp);
while ((s = get_next_keyspec ()))
  @{
    gpgrt_fputc ('\n', memfp);
    gpgrt_fputs (s, memfp);
  @}
gpgrt_fputc (0, memfp);
if (gpgrt_ferror (memfp))
  @{ perror ("writing to memstream failed"); exit (2); @}
if (gpgrt_fclose_snatch (memfp, &result, NULL))
  @{ perror ("fclose_snatch failed"); exit (2); @}
return result;
@}
@end example

In this example @code{get_next_keyspec} is expected
 to return the next
key to be added to the string.  Please take care: Encrypting to a
large number of recipients is often questionable due to security
reasons and also for the technicality that all keys are currently
passed on the command line to @command{gpg} which has as a platform
specific length limitation.
@end deftypefun


@deftypefun gpgme_error_t gpgme_op_encrypt_ext_start @
        (@w{gpgme_ctx_t @var{ctx}}, @
         @w{gpgme_key_t @var{recp}[]}, @
         @w{const char *@var{recpstring}}, @
         @w{gpgme_encrypt_flags_t @var{flags}}, @
         @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_start} with
@var{recpstring} as additional parameter.  If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications.  In contrast to
@var{recp} the keys are given directly as strings and there
 is no need
to first create key objects.  The keys are passed verbatim to the
backend engine.
```

@end deftypefun

@deftp {Data type} {gpgme_encrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_encrypt} operation. After successfully encrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_encrypt_result}. The structure contains the following
members:

@table @code
@item gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which
the data could not be encrypted.
@end table
@end deftp

@deftypefun gpgme_encrypt_result_t gpgme_op_encrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_encrypt_result} returns a
@code{gpgme_encrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_encrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_encrypt}, @code{gpgme_op_encrypt_start},
@code{gpgme_op_sign} or
 @code{gpgme_op_sign_start} operation. If this
operation failed, this might be a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t
@var{cipher}})
The function @code{gpgme_op_encrypt_sign} does a combined encrypt and
sign operation. It is used like @code{gpgme_op_encrypt}, but the
ciphertext also contains signatures for the signers listed in
@var{ctx}.

The combined encrypt and sign operation is currently only available
for the OpenPGP crypto engine.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t
@var{cipher}})
The function @code{gpgme_op_encrypt_sign_start}

initiates a
@code{gpgme_op_encrypt_sign} operation. It can be completed by
calling @code{gpgme_wait} on the context. @xref{Waiting For
Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid
pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp}
the keys are given directly as strings and there is no need
to first create the key objects. The keys are passed verbatim to the
backend engine.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign_start} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there is no need
to first create the key objects. The keys are passed verbatim to the
backend engine.

@end deftypefun

@node Miscellaneous
@section Miscellaneous
operations

Here are some support functions which are sometimes useful.

@menu
* Running other Programs::   Running other Programs
* Using the Assuan protocol::   Using the Assuan protocol
* Checking for updates::   How to check for software updates
@end menu

@node Running other Programs
@subsection Running other Programs

GPGME features an internal subsystem to run the actual backend
engines. Along with data abstraction object this subsystem can be
used to run arbitrary simple programs which even need not be related
to cryptographic features. It may for example be used to run tools
which are part of the GnuPG system but are not directly accessible
with the GPGME API.

@deftypefun gpgme_error_t gpgme_op_spawn @
        (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
         @w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @
         @w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
         @w{unsigned int @var{flags}})

@since{1.5.0}

The
function @code{gpgme_op_spawn} runs the program @var{file} with
the arguments taken from the NULL terminated array @var{argv}. If no
arguments are required @var{argv} may be given as @code{NULL}. In the
latter case or if @code{argv[0]} is the empty string, GPGME uses the
basename of @var{file} for @code{argv[0]}. The file descriptors
@code{stdin}, @code{stdout}, and @code{stderr} are connected to the
data objects @var{datain}, @var{dataout}, and @var{dataerr}. If NULL
is passed for one of these data objects the corresponding file
descriptor is connected to @file{/dev/null}.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_SPAWN_DETACHED
@since{1.5.0}

Under Windows this flag inhibits the allocation of a new console for
the program. This is useful for a GUI application which needs to call
a command line helper tool.

@item GPGME_SPAWN_ALLOW_SET_FG
@since{1.5.0}

Under Windows
 this flag allows the called program to put itself into
the foreground.
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_spawn_start @
        (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
         @w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @
         @w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
         @w{unsigned int @var{flags}})

@since{1.5.0}

This is the asynchronous variant of @code{gpgme_op_spawn}.
@end deftypefun

@node Using the Assuan protocol
@subsection Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers.
By default it is connected to the GnuPG agent, but it may be connected
to arbitrary servers by using @code{gpgme_ctx_set_engine_info},
passing the location of the servers socket as @var{file_name}
argument, and an empty string as @var{home_dir} argument.

The Assuan protocol functions use three kinds of callbacks to transfer
data:

@deftp {Data type}
 {gpgme_error_t (*gpgme_assuan_data_cb_t) @
    (@w{void *@var{opaque}}, @w{const void *@var{data}}, @
     @w{size_t @var{datalen}})}

@since{1.2.0}

This callback receives any data sent by the server. @var{opaque} is
the pointer passed to @code{gpgme_op_assuan_transact_start},
@var{data} of length @var{datalen} refers to the data sent.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_inquire_cb_t) @
    (@w{void *@var{opaque}}, @w{const char *@var{name}}, @
     @w{const char *@var{args}}, @w{gpgme_data_t *@var{r_data}})}

@since{1.2.0}

This callback is used to provide additional data to the Assuan server.
@var{opaque} is the pointer passed to
@code{gpgme_op_assuan_transact_start}, @var{name} and @var{args}
specify what kind of data the server requested, and @var{r_data} is
used to return the actual data.

Note: Returning data is currently not implemented in @acronym{GPGME}.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_status_cb_t) @

 (@w{void *@var{opaque}}, @w{const char *@var{status}}, @
    @w{const char *@var{args}})}

@since{1.2.0}

This callback receives any status lines sent by the server.
@var{opaque} is the pointer passed to
@code{gpgme_op_assuan_transact_start}, @var{status} and @var{args}
denote the status update sent.
@end deftp

@deftypefun gpgme_error_t gpgme_op_assuan_transact_start @
       (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
        @w{gpgme_assuan_data_cb_t @var{data_cb}}, @
        @w{void * @var{data_cb_value}}, @
        @w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
        @w{void * @var{inquire_cb_value}}, @
        @w{gpgme_assuan_status_cb_t @var{status_cb}}, @
        @w{void * @var{status_cb_value}})

@since{1.2.0}

Send the Assuan @var{command} and return results via the callbacks.
Any callback may be @code{NULL}. The result of the operation may be
retrieved using @code{gpgme_wait_ext}.

Asynchronous variant.
@end deftypefun

@deftypefun
gpgme_error_t gpgme_op_assuan_transact_ext @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
@w{gpgme_assuan_data_cb_t @var{data_cb}}, @
@w{void * @var{data_cb_value}}, @
@w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
@w{void * @var{inquire_cb_value}}, @
@w{gpgme_assuan_status_cb_t @var{status_cb}}, @
@w{void * @var{status_cb_value}}, @
@w{gpgme_error_t *@var{op_err}})

Send the Assuan @var{command} and return results via the callbacks.
The result of the operation is returned in @var{op_err}.

Synchronous variant.
@end deftypefun

@node Checking for updates
@subsection How to check for software updates

The GnuPG Project operates a server to query the current versions of
software packages related to GnuPG. GPGME can be used to
access this online database and check whether a new version of a
software package is available.

@deftp {Data type} {gpgme_query_swdb_result_t}
@since{1.8.0}

This
is a pointer to a structure used to store the result of a
@code{gpgme_op_query_swdb} operation. After success full call to that
function, you can retrieve the pointer to the result with
@code{gpgme_op_query_swdb_result}. The structure contains the
following member:

@table @code
@item name
This is the name of the package.

@item iversion
The currently installed version or an empty string. This value is
either a copy of the argument given to @code{gpgme_op_query_swdb} or
the version of the installed software as figured out by GPGME or GnuPG.

@item created
This gives the date the file with the list of version numbers has
originally be created by the GnuPG project.

@item retrieved
This gives the date the file was downloaded.

@item warning
If this flag is set either an error has occurred or some of the
information in this structure are not properly set. For example if
the version number of the installed software could not be figured out,
the
 @code{update} flag may not reflect a required update status.

@item update
If this flag is set an update of the software is available.

@item urgent
If this flag is set an available update is important.

@item noinfo
If this flag is set, no valid information could be retrieved.

@item unknown
If this flag is set the given @code{name} is not known.

@item tooold
If this flag is set the available information is not fresh enough.

@item error
If this flag is set some other error has occurred.

@item version
The version string of the latest released version.

@item reldate
The release date of the latest released version.

@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_query_swdb @
        (@w{gpgme_ctx_t @var{ctx}},   @
         @w{const char *@var{name}},   @
         @w{const char *@var{iversion}}, @
         @w{gpgme_data_t @var{reserved}})

@since{1.8.0}

Query the software version database for software package @var{name}
and check against the installed
 version given by @var{iversion}. If
@var{iversion} is given as @code{NULL} a check is only done if GPGME
can figure out the version by itself (for example when using
"gpgme" or "gnupg"). If @code{NULL} is used for @var{name} the
current gpgme version is checked. @var{reserved} must be set to 0.

@end deftypefun

@deftypefun gpgme_query_swdb_result_t gpgme_op_query_swdb_result @
        (@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_op_query_swdb_result} returns a
@code{gpgme_query_swdb_result_t} pointer to a structure holding the
result of a @code{gpgme_op_query_swdb} operation. The pointer is only
valid if the last operation on the context was a successful call to
@code{gpgme_op_query_swdb}. If that call failed, the result might
be a @code{NULL} pointer. The returned pointer is only valid until
the next operation is started on the context @var{ctx}.
@end deftypefun

@noindent
Here is an example on how to check whether GnuPG is current:

@example
#include
 <gpgme.h>

int
main (void)
@{
 gpg_error_t err;
 gpgme_ctx_t ctx;
 gpgme_query_swdb_result_t result;

 gpgme_check_version (NULL);
 err = gpgme_new (&ctx);
 if (err)
   fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
 else
   @{
     gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

```
    err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
    if (err)
      fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
    else
      @{
        result = gpgme_op_query_swdb_result (ctx);
        if (!result)
          fprintf (stderr, "error querying swdb\n");
        if (!result->warning && !result->update)
          printf ("GnuPG version %s is current\n",
                  result->iversion);
        else if (!result->warning && result->update)
          printf ("GnuPG version %s can be updated to %s\n",
                  result->iversion, result->version);
        else
          fprintf (stderr, "error finding the
 update status\n");
      @}
    gpgme_release (ctx);
  @}
 return 0;
@}
@end example


@node Run Control
@section Run Control
@cindex run control
@cindex cryptographic operation, running

@acronym{GPGME} supports running operations synchronously and
asynchronously.  You can use asynchronous operation to set up a
context up to initiating the desired operation, but delay performing
it to a later point.

Furthermore, you can use an external event loop to control exactly
when @acronym{GPGME} runs.  This ensures that @acronym{GPGME} only
runs when necessary and also prevents it from blocking for a long
time.

@menu
* Waiting For Completion::        Waiting until an operation is completed.
* Using External Event Loops::    Advanced control over what happens when.
* Cancellation::                  How to end pending operations prematurely.
@end menu


@node Waiting For Completion
```

@subsection Waiting For Completion
@cindex cryptographic operation, wait for
@cindex wait for completion

@deftypefun
 gpgme_ctx_t gpgme_wait (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_error_t *@var{status}}, @w{int @var{hang}})
The function @code{gpgme_wait} continues the pending operation within the context @var{ctx}. In particular, it ensures the data exchange between @acronym{GPGME} and the crypto backend and watches over the run time status of the backend process.

If @var{hang} is true, the function does not return until the operation is completed or cancelled. Otherwise the function will not block for a long time.

The error status of the finished operation is returned in @var{status} if @code{gpgme_wait} does not return @code{NULL}.

The @var{ctx} argument can be @code{NULL}. In that case, @code{gpgme_wait} waits for any context to complete its operation.

@code{gpgme_wait} can be used only in conjunction with any context that has a pending operation initiated with one of the @code{gpgme_op_*_start} functions except @code{gpgme_op_keylist_start} and @code{gpgme_op_trustlist_start} (for which you should use the corresponding @code{gpgme_op_*_next} functions). If @var{ctx} is @code{NULL}, all of such contexts are waited upon and possibly returned. Synchronous operations running in parallel, as well as key and trust item list operations, do not affect @code{gpgme_wait}.

In a multi-threaded environment, only one thread should ever call @code{gpgme_wait} at any time, regardless of whether @var{ctx} is specified or not. This means that all calls to this function should be fully synchronized by locking primitives. It is safe to start asynchronous operations while a thread is running in @code{gpgme_wait}.

The function returns the @var{ctx} of the context which has finished the operation. If @var{hang} is false, and the timeout expires, @code{NULL} is returned and @code{*status} will be set to 0. If an error occurs, @code{NULL} is returned and the error is returned in @code{*status}.
@end deftypefun

@node Using External Event Loops
@subsection Using External Event

Loops
@cindex event loop, external

@acronym{GPGME} hides the complexity of the communication between the library and the crypto engine. The price of this convenience is that the calling thread can block arbitrary long waiting for the data returned by the crypto engine. In single-threaded programs, in particular if they are interactive, this is an unwanted side-effect. OTOH, if @code{gpgme_wait} is used without the @var{hang} option being enabled, it might be called unnecessarily often, wasting CPU time that could be used otherwise.

The I/O callback interface described in this section lets the user take control over what happens when. @acronym{GPGME} will provide the user with the file descriptors that should be monitored, and the callback functions that should be invoked when a file descriptor is ready for reading or writing. It is then the user's responsibility to decide when to check the file descriptors and when to invoke the callback functions. Usually this is done in an event loop, that also checks for events in other parts of the program. If the callback functions are only called when the file descriptors are ready, @acronym{GPGME} will never block. This gives the user more control over the program flow, and allows to perform other tasks when @acronym{GPGME} would block otherwise.

By using this advanced mechanism, @acronym{GPGME} can be integrated smoothly into GUI toolkits like GTK+ even for single-threaded programs.

@menu
* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use @acronym{GPGME} with GTK+.
* I/O Callback Example GDK:: How to use @acronym{GPGME} with GDK.
* I/O Callback Example Qt:: How to use @acronym{GPGME} with Qt.
@end menu

@node I/O Callback Interface
@subsubsection I/O Callback Interface

@deftp {Data type} {gpgme_error_t (*gpgme_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}})}
@tindex gpgme_io_cb_t
The @code{gpgme_io_cb_t} type is the type of functions which @acronym{GPGME} wants to register as I/O callback handlers using the

@code{gpgme_register_io_cb_t} functions provided by the user.

@var{data} and @var{fd} are provided by @acronym{GPGME} when the I/O
callback handler is registered, and should be passed through to the
handler when it is invoked by the user because it noticed activity on
the file descriptor @var{fd}.

The callback handler always returns @code{0}, but you should consider
the return value to be reserved for later use.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_register_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}},
@w{int @var{dir}}, @w{gpgme_io_cb_t @var{fnc}}, @w{void *@var{fnc_data}}, @w{void **@var{tag}})}
@tindex gpgme_register_io_cb_t
The @code{gpgme_register_io_cb_t} type is the type of functions which can
be called by @acronym{GPGME} to register an I/O callback
function
@var{fnc} for the file descriptor @var{fd} with the user.
@var{fnc_data} should be passed as the first argument to @var{fnc}
when the handler is invoked (the second argument should be @var{fd}).
If @var{dir} is 0, @var{fnc} should be called by the user when
@var{fd} is ready for writing. If @var{dir} is 1, @var{fnc} should be
called when @var{fd} is ready for reading.

@var{data} was provided by the user when registering the
@code{gpgme_register_io_cb_t} function with @acronym{GPGME} and will always
be passed as the first argument when registering a callback function.
For example, the user can use this to determine the event loop to
which the file descriptor should be added.

@acronym{GPGME} will call this function when a crypto operation is
initiated in a context for which the user has registered I/O callback
handler functions with @code{gpgme_set_io_cbs}. It can also call this
function when it is in an I/O callback handler for a file descriptor
associated to this context.

The
user should return a unique handle in @var{tag} identifying this
I/O callback registration, which will be passed to the
@code{gpgme_register_io_cb_t} function without interpretation when the file
descriptor should not be monitored anymore.
@end deftp

@deftp {Data type} {void (*gpgme_remove_io_cb_t) (@w{void *@var{tag}})}
The @code{gpgme_remove_io_cb_t} type is the type of functions which can be
called by @acronym{GPGME} to remove an I/O callback handler that was
registered before. @var{tag} is the handle that was returned by the
@code{gpgme_register_io_cb_t} for this I/O callback.

@acronym{GPGME} can call this function when a crypto operation is in
an I/O callback. It will also call this function when the context is
destroyed while an operation is pending.
@end deftp

@deftp {Data type} {enum gpgme_event_io_t}
@tindex gpgme_event_io_t
The @code{gpgme_event_io_t} type specifies the type of an event that is
reported to the user by @acronym{GPGME} as a consequence of an I/O
operation.
 The following events are defined:

@table @code
@item GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the
registered I/O callback handlers now. Note that registered I/O
callback handlers must not be run before this event is signalled.
@var{type_data} is @code{NULL} and reserved for later use.

@item GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation
was removed. The accompanying @var{type_data} points to a
@code{struct gpgme_io_event_done_data} variable that contains the
status of the operation that finished. This event is signalled after
the last I/O callback has been removed.

@item GPGME_EVENT_NEXT_KEY
In a @code{gpgme_op_keylist_start} operation, the next key was
received from the crypto engine. The accompanying @var{type_data} is
a @code{gpgme_key_t} variable that contains the key with one reference
for the user.

@end table
@end deftp

@deftp {Data type} {void (*gpgme_event_io_cb_t) (@w{void *@var{data}},
 @w{gpgme_event_io_t @var{type}}, @w{void *@var{type_data}})}
The @code{gpgme_event_io_cb_t} type is the type of functions which can be
called by @acronym{GPGME} to signal an event for an operation running
in a context which has I/O callback functions registered by the user.

@var{data} was provided by the user when registering the
@code{gpgme_event_io_cb_t} function with @acronym{GPGME} and will always be
passed as the first argument when registering a callback function.
For example, the user can use this to determine the context in which
this event has occurred.

@var{type} will specify the type of event that has occurred.
@var{type_data} specifies the event further, as described in the above
list of possible @code{gpgme_event_io_t} types.

@acronym{GPGME} can call this function in an I/O callback handler.
@end deftp

@node Registering I/O Callbacks
@subsubsection Registering I/O Callbacks

@deftp {Data type} {struct gpgme_io_cbs}
@tindex gpgme_event_io_t
This structure
 is used to store the I/O callback interface functions
described in the previous section. It has the following members:

@table @code
@item gpgme_register_io_cb_t add
This is the function called by @acronym{GPGME} to register an I/O
callback handler. It must be specified.

@item void *add_priv
This is passed as the first argument to the @code{add} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine the event loop to which the file descriptor should be added.

@item gpgme_remove_io_cb_t remove
This is the function called by @acronym{GPGME} to remove an I/O
callback handler. It must be specified.

@item gpgme_event_io_cb_t event
This is the function called by @acronym{GPGME} to signal an event for
an operation. It must be specified, because at least the start event
must be processed.

@item void *event_priv
This is passed as the first argument to the @code{event} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine
 the context in which the event has occurred.
@end table
@end deftp

@deftypefun void gpgme_set_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_set_io_cbs} enables the I/O callback
interface for the context @var{ctx}. The I/O callback functions are
specified by @var{io_cbs}.

If @var{io_cbs}->@code{add} is @code{NULL}, the I/O callback interface
is disabled for the context, and normal operation is restored.
@end deftypefun

@deftypefun void gpgme_get_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_get_io_cbs} returns the I/O callback
functions set with @code{gpgme_set_io_cbs} in @var{io_cbs}.
@end deftypefun

@node I/O Callback Example
@subsubsection I/O Callback Example

To actually use an external event loop, you have to implement the I/O
callback functions that are used by @acronym{GPGME} to register and
unregister file descriptors. Furthermore, you have to actually
monitor these
 file descriptors for activity and call the appropriate
I/O callbacks.

The following example illustrates how to do that. The example uses
locking to show in which way the callbacks and the event loop can
run concurrently. For the event loop, we use a fixed array. For a
real-world implementation, you should use a dynamically sized
structure because the number of file descriptors needed for a crypto
operation in @acronym{GPGME} is not predictable.

@example
#include <assert.h>
#include <errno.h>
#include <stdlib.h>
#include <pthread.h>
#include <sys/types.h>
#include <gpgme.h>

/* The following structure holds the result of a crypto operation. */
struct op_result
@{
 int done;
 gpgme_error_t err;
@};

/* The following structure holds the data associated with one I/O
callback. */
struct one_fd
@{
 int fd;

```
 int dir;
 gpgme_io_cb_t fnc;
 void *fnc_data;
 void *loop;
@};

struct event_loop
@{
 pthread_mutex_t lock;
#define MAX_FDS 32
 /* Unused slots are marked with FD being
 -1.  */
 struct one_fd fds[MAX_FDS];
@};
@end example
```

The following functions implement the I/O callback interface.

```
@example
gpgme_error_t
add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
    void **r_tag)
@{
 struct event_loop *loop = data;
 struct one_fd *fds = loop->fds;
 int i;

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS; i++)
   @{
     if (fds[i].fd == -1)
 @{
   fds[i].fd = fd;
   fds[i].dir = dir;
   fds[i].fnc = fnc;
   fds[i].fnc_data = fnc_data;
   fds[i].loop = loop;
   break;
 @}
   @}
 pthread_mutex_unlock (&loop->lock);
 if (i == MAX_FDS)
   return gpg_error (GPG_ERR_GENERAL);
 *r_tag = &fds[i];
 return 0;
@}

void
```

```
remove_io_cb (void *tag)
@{
 struct one_fd *fd = tag;
 struct event_loop *loop = fd->loop;

 pthread_mutex_lock (&loop->lock);
 fd->fd = -1;
 pthread_mutex_unlock (&loop->lock);
@}

void
event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
@{
 struct op_result *result = data;

 /* We
 don't support list operations here.  */
 if (type == GPGME_EVENT_DONE)
   @{
     result->done = 1;
     result->err = *type_data;
   @}
@}
@end example
```

The final missing piece is the event loop, which will be presented
next. We only support waiting for the success of a single operation.

```
@example
int
do_select (struct event_loop *loop)
@{
 fd_set rfds;
 fd_set wfds;
 int i, n;
 int any = 0;
 struct timeval tv;
 struct one_fd *fdlist = loop->fds;

 pthread_mutex_lock (&loop->lock);
 FD_ZERO (&rfds);
 FD_ZERO (&wfds);
 for (i = 0; i < MAX_FDS; i++)
   if (fdlist[i].fd != -1)
     FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
 pthread_mutex_unlock (&loop->lock);

 tv.tv_sec = 0;
```

```
 tv.tv_usec = 1000;

 do
   @{
     n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
   @}
 while (n < 0 && errno == EINTR);

 if (n < 0)
   return n; /* Error or timeout.  */

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS && n; i++)
   @{
     if (fdlist[i].fd
!= -1)
@{
   if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
     @{
       assert (n);
       n--;
       any = 1;
           /* The I/O callback handler can register/remove callbacks,
              so we have to unlock the file descriptor list.  */
           pthread_mutex_unlock (&loop->lock);
       (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
           pthread_mutex_lock (&loop->lock);
     @}
 @}
   @}
 pthread_mutex_unlock (&loop->lock);
 return any;
@}

void
wait_for_op (struct event_loop *loop, struct op_result *result)
@{
 int ret;

 do
   @{
     ret = do_select (loop);
   @}
 while (ret >= 0 && !result->done);
@}
@end example
```

The main function shows how to put it all together.

```
@example
int
main (int argc, char *argv[])
@{
 struct event_loop loop;
 struct op_result result;
 gpgme_ctx_t ctx;
 gpgme_error_t err;
 gpgme_data_t sig, text;
 int i;
 pthread_mutexattr_t attr;
 struct gpgme_io_cbs io_cbs =
 @{
   add_io_cb,
    &loop,
   remove_io_cb,
   event_io_cb,
   &result
 @};

 init_gpgme ();

 /* Initialize the loop structure.  */

 /* The mutex must be recursive, since remove_io_cb (which acquires a
    lock) can be called while holding a lock acquired in do_select.  */
 pthread_mutexattr_init (&attr);
 pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
 pthread_mutex_init (&loop.lock, &attr);
 pthread_mutexattr_destroy (&attr);

 for (i = 0; i < MAX_FDS; i++)
   loop.fds[i].fd = -1;

 /* Initialize the result structure.  */
 result.done = 0;

 err = gpgme_data_new_from_file (&sig, "signature", 1);
 if (!err)
   err = gpgme_data_new_from_file (&text, "text", 1);
 if (!err)
   err = gpgme_new (&ctx);
 if (!err)
   @{
     gpgme_set_io_cbs (ctx, &io_cbs);
     err = gpgme_op_verify_start (ctx, sig, text, NULL);
   @}
```

```
 if (err)
   @{
     fprintf (stderr, "gpgme error: %s: %s\n",
              gpgme_strsource (err), gpgme_strerror (err));
     exit (1);

   @}

 wait_for_op (&loop, &result);
 if (!result.done)
   @{
     fprintf (stderr, "select error\n");
     exit (1);
   @}
 if (!result.err)
   @{
     fprintf (stderr, "verification failed: %s: %s\n",
              gpgme_strsource (result.err), gpgme_strerror (result.err));
     exit (1);
   @}
 /* Evaluate verify result.  */
 @dots{}
 return 0;
@}
@end example
```

```
@node I/O Callback Example GTK+
@subsubsection I/O Callback Example GTK+
@cindex GTK+, using @acronym{GPGME} with
```

The I/O callback interface can be used to integrate @acronym{GPGME} with the GTK+ event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GTK+ specific setup.

```
@example
#include <gtk/gtk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 guint input_handler_id
@};
```

```
void
my_gpgme_io_cb
 (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gtk_input_remove (data->input_handler_id);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;
 iocb->data = fnc_data;
 iocb->input_handler_id = gtk_input_add_full (fd, dir
                                              ? GDK_INPUT_READ
                                              : GDK_INPUT_WRITE,
                                             my_gpgme_io_callback,
                                             0, iocb, NULL);
 *tag = iocb;
 return 0;
@}
@end example


@node I/O Callback Example GDK
@subsubsection I/O Callback Example
 GDK
@cindex GDK, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the GDK event loop.  The following code snippets
shows how this can be done using the appropriate register and remove
I/O callback functions.  In this example, the private data of the
register I/O callback function is unused.  The event notifications is
missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

@example
```

```
#include <gdk/gdk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 gint tag;
@};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gdk_input_remove (data->tag);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,

               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;
 iocb->data = fnc_data;
 iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                 my_gpgme_io_callback, iocb, NULL);
 *tag = iocb;
 return 0;
@}
@end example


@node I/O Callback Example Qt
@subsubsection I/O Callback Example Qt
@cindex Qt, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the Qt event loop.  The following code snippets
show how this can be done using the appropriate register and remove
I/O callback functions.  In this example, the private data of the
register I/O callback function is unused.  The event notifications is
```

missing because it does not require any Qt specific setup.

@example
#include <qsocketnotifier.h>
#include <qapplication.h>

struct IOCB @{
 IOCB(GpgmeIOCb f, void * d, QSocketNotifier * n)
   : func(
 f), data(d), notifier(n) @{@}
 GpgmeIOCb func;
 void * data;
 QSocketNotifier * notifier;
@}

class MyApp : public QApplication @{

 // ...

 static void registerGpgmeIOCallback(void * data, int fd, int dir,
                                      GpgmeIOCb func, void * func_data,
                                      void ** tag) @{
   QSocketNotifier * n =
     new QSocketNotifier(fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write);
   connect(n, SIGNAL(activated(int)),
            qApp, SLOT(slotGpgmeIOCallback(int)));
   qApp->mIOCBs.push_back(IOCB(func, func_data, n));
   tag = (void)n;
 @}

 static void removeGpgmeIOCallback(void * tag) @{
   if (!tag) return;
   QSocketNotifier * n = static_cast<QSocketNotifier*>(tag);
   for (QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
         it != qApp->mIOCBs.end() ; ++it)
     if (it->notifier == n) @{
       delete it->notifier;
       qApp->mIOCBs.erase(
 it);
       return;
     @}
 @}

public slots:
 void slotGpgmeIOCallback(int fd) @{
   for (QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
         it != mIOCBs.end() ; ++it)

```
    if ( it->notifier && it->notifier->socket() == fd )
      (*(it->func)) ( it->func_data, fd );
 @}

 // ...

private:
 QValueList<IOCB> mIOCBs;
 // ...
@};
@end example


@node Cancellation
@subsection Cancellation
@cindex cryptographic operation, aborting
@cindex cryptographic operation, cancelling
@cindex aborting operations
@cindex cancelling operations

Sometimes you do not want to wait for an operation to finish.
@acronym{GPGME} provides two different functions to achieve that.  The
function @code{gpgme_cancel} takes effect immediately.  When it
returns, the operation is effectively canceled.  However, it has some
limitations and can not be used with synchronous operations.  In
contrast, the function @code{gpgme_cancel_async} can be used with any
context and from
 any thread, but it is not guaranteed to take effect
immediately.  Instead, cancellation occurs at the next possible time
(typically the next time I/O occurs in the target context).

@deftypefun gpgme_ctx_t gpgme_cancel (@w{gpgme_ctx_t @var{ctx}})
@since{0.4.5}

The function @code{gpgme_cancel} attempts to cancel a pending
operation in the context @var{ctx}.  This only works if you use the
global event loop or your own event loop.

If you use the global event loop, you must not call @code{gpgme_wait}
during cancellation.  After successful
cancellation, you can call @code{gpgme_wait} (optionally waiting on
@var{ctx}), and the context @var{ctx} will appear as if it had
finished with the error code @code{GPG_ERR_CANCEL}.

If you use an external event loop, you must ensure that no I/O
callbacks are invoked for this context (for example by halting the
event loop).  On successful cancellation, all registered I/O callbacks
for this context will be unregistered, and a @code{GPGME_EVENT_DONE}
```

event
 with the error code @code{GPG_ERR_CANCEL} will be signalled.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@deftypefun gpgme_ctx_t gpgme_cancel_async (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.7}

The function @code{gpgme_cancel_async} attempts to cancel a pending
operation in the context @var{ctx}. This can be called by any thread
at any time after starting an operation on the context, but will not
take effect immediately. The actual cancellation happens at the next
time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@c **
@c ******************** Appendices **************************
@c **

@include uiserver.texi

@node Debugging
@appendix How to solve problems
@cindex
 debug
@cindex GPGME_DEBUG

Everyone knows that software often does not do what it should do and thus
there is a need to track down problems. This is in particular true
for applications using a complex library like @acronym{GPGME} and of
course also for the library itself. Here we give a few hints on how
to solve such problems.

First of all you should make sure that the keys you want to use are
installed in the GnuPG engine and are usable. Thus the first test is
to run the desired operation using @command{gpg} or @command{gpgsm} on
the command line. If you can't figure out why things don't work, you
may use @acronym{GPGME}'s built in trace feature. This feature is
either enabled using the environment variable @code{GPGME_DEBUG} or,
if this is not possible, by calling the function
@code{gpgme_set_global_flag}. The value is the trace level and
an optional file name. If no file name is given the trace output is

printed to @code{stderr}.

@noindent
For example
@smallexample
GPGME_DEBUG=9:/home/user/mygpgme.log
@end
 smallexample
@noindent
(Note that under Windows you use a semicolon in place of the colon to
separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start
off with a lower level. The exact definition of the trace levels and
the output format may change with any release; you need to check the
source code for details. In any case the trace log should be helpful
to understand what is going going on. Warning: The trace log may
reveal sensitive details like passphrases or other data you use in
your application. If you are asked to send a log file, make sure that
you run your tests only with play data.

@node Deprecated Functions
@appendix Deprecated Functions
@cindex deprecated

For backward compatibility @acronym{GPGME} has a number of functions,
data types and constants which are deprecated and should not be used
anymore. We document here those which are really old to help
understanding old code and to allow migration
 to their modern
counterparts.

@strong{Warning:} These interfaces will be removed in a future version
of @acronym{GPGME}.

@deftypefun void gpgme_key_release (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_release} is equivalent to
@code{gpgme_key_unref}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_ext (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}}, @w{int *@var{nr}})
@since{0.3.9}

The function @code{gpgme_op_import_ext} is equivalent to:

@example

```
 gpgme_error_t err = gpgme_op_import (ctx, keydata);
 if (!err)
   @{
     gpgme_import_result_t result = gpgme_op_import_result (ctx);
     *nr = result->considered;
   @}
@end example
@end deftypefun


@deftp {Data type} {gpgme_error_t (*gpgme_edit_cb_t) @
  (@w{void *@var{handle}}, @
   @w{gpgme_status_code_t @var{status}}, @
   @w{const char *@var{args}}, @
   @w{int @var{fd}})}
@tindex gpgme_edit_cb_t
The @code{gpgme_edit_cb_t} type is the type of functions which
@acronym{GPGME} calls
 if it a key edit operation is on-going.  The
status code @var{status} and the argument line @var{args} are passed
through by @acronym{GPGME} from the crypto engine.  The file
descriptor @var{fd} is -1 for normal status messages.  If @var{status}
indicates a command rather than a status message, the response to the
command should be written to @var{fd}.  The @var{handle} is provided
by the user at start of operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}},
@w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact} instead.

The function @code{gpgme_op_edit} processes the key @var{KEY}
interactively, using the edit callback function @var{FNC} with the
handle @var{HANDLE}.  The callback
 is invoked for every status and
command request from the crypto engine.  The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.
```

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
edit operation completes successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer, and any error returned
by the crypto engine or the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})

@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact_start} instead.

The function @code{gpgme_op_edit_start} initiates a
@code{gpgme_op_edit} operation.
It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated, please use @code{gpgme_op_interact}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit} is analogous to
@code{gpgme_op_edit}, but should be used to process the smart card corresponding to the key @var{key}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated,
please use @code{gpgme_op_interact_start}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit_start} initiates a
@code{gpgme_op_card_edit} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_with_read_cb (@w{gpgme_data_t *@var{dh}}, @w{int (*@var{readfunc})} (@w{void *@var{hook}}, @w{char *@var{buffer}}, @w{size_t @var{count}}, @w{size_t *@var{nread}}), @w{void *@var{hook_value}})
The function @code{gpgme_data_new_with_read_cb} creates a new @code{gpgme_data_t} object and uses the callback function @var{readfunc} to retrieve the data on demand. As the callback function can supply the data in any way it wants, this is the most flexible data type @acronym{GPGME} provides. However, it can not be used to write data.

The callback function receives @var{hook_value} as its first argument whenever it is invoked. It should return up to @var{count} bytes in @var{buffer}, and return the number of bytes actually read in @var{nread}. It may return @code{0} in @var{nread} if no data is currently available. To indicate @code{EOF} the function should return with an error code of @code{-1} and set @var{nread} to @code{0}. The callback function may support to reset its internal read pointer if it is invoked with @var{buffer} and @var{nread} being @code{NULL} and @var{count} being @code{0}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the data object was successfully created, @code{GPG_ERR_INV_VALUE} if @var{dh} or @var{readfunc} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_rewind (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_rewind} is equivalent to:

@example
return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
  ? gpgme_error_from_errno (errno) : 0;
@end example
@end deftypefun

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key or trust item attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of a sub key. It is representable as a string.

@item GPGME_ATTR_FPR
This is the fingerprint of a sub key. It is representable as a
string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm for which the sub key can be used. It
is representable as a string and as a number. The numbers correspond
to the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a
number.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is
representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration time of
 a sub key. It is representable as a
number.

@item GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a
@var{gpgme_key_t} object. The first one (with index 0) is the primary
user ID. The user ID is representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable
as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a
string.

@item GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a
string and as a number. See below for a list of available validities.

@item GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a
number, and is @code{1} if the user ID is revoked, and @code{0}
otherwise.

@item GPGME_ATTR_UID_INVALID

This specifies if a user ID is invalid. It is representable as a
number,
 and is @code{1} if the user ID is invalid, and @code{0}
otherwise.

@item GPGME_ATTR_TYPE
This returns information about the type of key. For the string function
this will eother be "PGP" or "X.509". The integer function returns 0
for PGP and 1 for X.509.

@item GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable as a
number, and is @code{1} if the key is invalid, and @code{0} otherwise.

@item GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable as a
number, and is @code{1} if the key is expired, and @code{0} otherwise.

@item GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled.
 It is representable as a
number, and is @code{1} if the key is disabled, and @code{0} otherwise.

@item GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is
representable as a string. The string contains the letter ``e'' if
the key can be used for encryption, ``s'' if the key can be used for
signatures, and ``c'' if the key can be used for certifications.

@item GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is
representable as a number, and is @code{1} if the sub key can be used
for encryption, and @code{0} otherwise.

@item GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data signatures. It
is representable as a number, and is @code{1} if the sub key can be
used for signatures, and @code{0} otherwise.

@item GPGME_ATTR_CAN_CERTIFY

This specifies if a sub key can be used to create key certificates.
It is representable as a number, and is @code{1} if the sub key can be
used for certifications,
 and @code{0} otherwise.

@item GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is representable as
a string.

@item GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is representable as a
string.

@item GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification chain. It
is representable as a string.
@end table
@end deftp

@deftypefun {const char *} gpgme_key_get_string_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t
@var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_string_attr} returns the value of the
string-representable attribute @var{what} of key @var{key}. If the
attribute is an attribute of a sub key or an user ID, @var{idx}
specifies the sub key or user ID of which the attribute value is
returned. The argument @var{reserved} is reserved for later use and
should be @code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0}
 if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{idx} out of range,
or @var{reserved} not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t
@var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_ulong_attr} returns the value of the
number-representable attribute @var{what} of key @var{key}. If the
attribute is an attribute of a sub key or an user ID, @var{idx}
specifies the sub key or user ID of which the attribute value is
returned. The argument @var{reserved} is reserved for later use and
should be @code{NULL}.

The function returns @code{0} if the attribute can't be returned as a
number, @var{key} is not a valid pointer, @var{idx} out of range, or
@var{reserved} not @code{NULL}.

@end deftypefun

@c
@c Key Signatures
@c
The signatures on a key are only available if the key was retrieved
via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS}
mode
enabled, because it is expensive to retrieve all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a
key, you have to make sure that the key was listed with signatures
enabled. One convenient, but blocking, way to do this is to use the
function @code{gpgme_get_key}.

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key signature
attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of the key which was used for the signature. It is
representable as a string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It is
representable as a string and as a number. The numbers correspond to
the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It is
representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration
time of the signature. It is representable as
a number.

@item GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is
representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable

as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a
string.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature. It is
representable as a number, and is @code{1} if the key is revoked, and
@code{0} otherwise.

@c @item GPGME_ATTR_KEY_EXPIRED
@c This specifies if a key signature is expired. It is representable as
@c a number, and is @code{1} if the key is revoked, and @code{0}
@c otherwise.
@c
@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific
 to the crypto
engine.

@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific to the crypto
engine.

@item GPGME_ATTR_SIG_STATUS
This is the same value as returned by @code{gpgme_get_sig_status}.
@end table
@end deftp

@deftypefun {const char *} gpgme_key_sig_get_string_attr (@w{gpgme_key_t @var{key}}, @w{int
@var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_string_attr} returns the value of
the string-representable attribute @var{what} of the signature
@var{idx} on the user ID @var{uid_idx} in the key @var{key}. The
argument @var{reserved} is reserved for later use and should be
@code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0} if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx}
out of range, or @var{reserved}
 not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_sig_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{int @var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_ulong_attr} returns the value of the number-representable attribute @var{what} of the signature @var{idx} on the user ID @var{uid_idx} in the key @var{key}. The argument @var{reserved} is reserved for later use and should be @code{NULL}.

The function returns @code{0} if an attribute can't be returned as a string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx} out of range, or @var{reserved} not @code{NULL}.
@end deftypefun

@deftp {Data type} {enum gpgme_sig_stat_t}
@tindex gpgme_sig_stat_t
The @code{gpgme_sig_stat_t} type holds the result of a signature check, or the combined result of all signatures. The following results are possible:

@table @code
@item GPGME_SIG_STAT_NONE
This status should not occur in normal operation.

@item GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined result this status means that all signatures are valid.

@item GPGME_SIG_STAT_GOOD_EXP
This status indicates that the signature is valid but expired. For the combined result this status means that all signatures are valid and expired.

@item GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

@item GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

@item GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be checked due to missing keys.

@item GPGME_SIG_STAT_NOSIG
This
status indicates that the signature data provided was not a real
signature.

@item GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented
the signature verification.

@item GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures
have a different status. You can get each key's status with
@code{gpgme_get_sig_status}.
@end table
@end deftp

@deftypefun {const char *} gpgme_get_sig_status (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_sig_stat_t *@var{r_stat}}, @w{time_t *@var{r_created}})
The function @code{gpgme_get_sig_status} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
     sig = sig->next;
     idx--;
   @}
 if (!sig || idx)
   return NULL;

 if (r_stat)
   @{
     switch (gpg_err_code (sig->status))
 @{
 case GPG_ERR_NO_ERROR:
   *r_stat = GPGME_SIG_STAT_GOOD;

  break;

 case GPG_ERR_BAD_SIGNATURE:
   *r_stat = GPGME_SIG_STAT_BAD;
   break;

```
case GPG_ERR_NO_PUBKEY:
  *r_stat = GPGME_SIG_STAT_NOKEY;
  break;

case GPG_ERR_NO_DATA:
  *r_stat = GPGME_SIG_STAT_NOSIG;
  break;

case GPG_ERR_SIG_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXP;
  break;

case GPG_ERR_KEY_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
  break;

default:
  *r_stat = GPGME_SIG_STAT_ERROR;
  break;
@}
  @}
if (r_created)
  *r_created = sig->timestamp;
return sig->fpr;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_string_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_string_attr} is equivalent to:

@example
gpgme_verify_result_t result;
gpgme_signature_t sig;

result = gpgme_op_verify_result (ctx);
sig = result->signatures;

while (sig && idx)
  @{
    sig = sig->next;
    idx--;
  @}
if (!sig || idx)
  return
NULL;

switch (what)
```

```
  @{
  case GPGME_ATTR_FPR:
    return sig->fpr;

  case GPGME_ATTR_ERRTOK:
    if (whatidx == 1)
      return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
    else
 return "";
  default:
    break;
  @}

 return NULL;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_ulong_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_ulong_attr} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
  @{
    sig = sig->next;
    idx--;
  @}
 if (!sig || idx)
  return 0;

 switch (what)
  @{
  case GPGME_ATTR_CREATED:
    return sig->timestamp;

  case GPGME_ATTR_EXPIRE:
    return sig->exp_timestamp;

  case GPGME_ATTR_VALIDITY:
    return (unsigned long) sig->validity;

  case GPGME_ATTR_SIG_STATUS:
```

```
    switch (sig->status)
@{
case GPG_ERR_NO_ERROR:
  return GPGME_SIG_STAT_GOOD;

case GPG_ERR_BAD_SIGNATURE:
  return GPGME_SIG_STAT_BAD;

case GPG_ERR_NO_PUBKEY:
  return GPGME_SIG_STAT_NOKEY;

case GPG_ERR_NO_DATA:
  return GPGME_SIG_STAT_NOSIG;

case GPG_ERR_SIG_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXP;

case GPG_ERR_KEY_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXPKEY;

default:
  return GPGME_SIG_STAT_ERROR;
@}

  case GPGME_ATTR_SIG_SUMMARY:
    return sig->summary;

  default:
    break;
  @}
 return 0;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_key (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_key_t *@var{r_key}})
The function @code{gpgme_get_sig_key} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
  @{
    sig = sig->next;
```

```
    idx--;
  @}
 if (!sig || idx)
  return gpg_error
 (GPG_ERR_EOF);

 return gpgme_get_key (ctx, sig->fpr, r_key, 0);
@end example
@end deftypefun




@include lesser.texi

@include gpl.texi

@node Concept Index
@unnumbered Concept Index

@printindex cp

@node Function and Data Index
@unnumbered Function and Data Index

@printindex fn


@bye
(21:protected-private-key(3:elg(1:p193:5*n^f"Q'R0_6<ymec \=c7S8u[5
ZF'xf5yi9F@T=KhZdU0(k5nZEI/ R]njVITPU$W<xs-Yx)(1:g1:)(1:y192:O9GNR{?]Y_W[FD*zuRmk%'R\'>>e9pe
eU)uS%VJ!5F)yH*O
]l'7{@wJmQP^jurx'V2H2j[G{q_"8()(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:o"%7:5242880)16:Hs*}u
)256:Gzk3%\Kb2=oOO@,}eBBI3F|OQP3eD%n,;~L-6UH^=64i);l
e+sG"(mlH_2sn_BBO7hRcZUt(p6,{5|37C3m8EY9=gQ )(12:protected-at15:20101008T070148)))
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFsMHecBCACqdJgqa+CeNYwPCK+MpOwAV6uFVjDyO2LmOs6+XfDWRBU/Zjtz
8zdYNKSbLjkWN4ujV5aiyA7MtEofszzYLEoKUt1wiDScHMpW8qmEFDvl9g26MeAV
rTno9D5KodHvEIs8wnrqBs8ix0WLbh6J1Dtt8HQgIbN+v3gaRQrgBFe6z2ZYpHHx
ZfOu3iFKlm2WE/NekRkvvFIo3ApGvRhGIYw6JMmugBlo7s5xosJK0I9dkPGlEEtt
aF1RkcMj8sWG9vHAXcjlGgFfXSN9YLppydXpkuZGm4+gjLB2a3rbQCZVFnxCyG4O
ybjkP8Jw6Udm89bK2ucYFfjdrmYn/nJqRxeNABEBAAG0I1Rlc3QgTm9Qcml2S2V5
IDxub2JvZHlAZXhhbXBsZS5vcmc+iQFOBBMBCAA4FiEE4Fmh4IZtMa4TEXCITZou
EzBBU9EFAlsMHecCGwMFCwkIBwIGFQoJCAsCBBYCAwECHgECF4AACgkQTZouEzBB
U9F+qwf/SHj4uRnTWgyJ71FBxQDYCBq3jbi6e7hMkRPbJyJdnPIMAb2p0PJjBgjW
0pp4+kDPZans3UDHbma1u/SFI4/y6isJiK94Bk5xp5YliLGnUceTjgDFe6lBhfQ1
```

```
zVWZC/NF3tPgbziIxXQTNt34nS+9dbV/QFDLW0POcN7C0jR/hgkBjMEH2PezWhSj
mL/yLfLfUYAoxVpXjfC5aPJKqw0tR7m5ibznjCphE+FUMRg8EOmJcg6soeJ5QspU
k2dPN3+Y0zCTNRgAHEI+yIQbM6pio6v2c+UCtT1QhW4xSI38/kcEG8QiM55r1TUy
FcWAY5n5t1nNZtMxxse3LqEon3rKiLkBDQRbDB3nAQgAqfAjSjcngERtM+ZYOwN0
QF2v2FuEuMe8mhju7Met7SN2zGv1LnjhTNshEa9IABEfjZirE2Tqx4xCWDwDedK4
u1ToFvcnuAMnq2O47Sh+eTypsf6WPFtPBWf6ctKY31hFXjgoyDBULBvl43XU/D9C
Mt7nsKDPYHVrrnge/qWPYVcb+cO0sSwNImMcwQSdTQ3VBq7MeNS9ZeBcXi+XCjhN
kjNum2AQqpkHHDQV7871yQ8RIILvZSSfkLb0/SNDU+bGaw2G3lcyKdIfZi2EWWZT
oCbH38I/+LV7nAEe4zFpHwW8X0Dkx2aLgxe6UszDH9L3eGhTLpJhOSiaanG+zZKm
+QARAQABiQE2BBgBCAAgFiEE4Fmh4IZtMa4TEXCITZouEzBBU9EFAlsMHecCGwwA
CgkQTZouEzBBU9H5TQgAolWvIsez/WW8N2tmZEnX0LOFNB+1S4L4X983njwNdoVI
w19pbj+8RIHF/H9kcPGi7jK96gvlykQn3uez/95D2AiRFW5KYdOouFisKgHpv8Ay
BrhclHv11yK+X/0iTD0scYaG7np5162xLkaxSO9hsz2fGv20RKaXCWkI69fWw0BR
XlI5pZh2YFei2ZhH/tIMIW65h3w0gtgaZBBdpZTOOW4zvghyN+0MSObqkI1BvUJu
caDFI4d6ZTmp5SY+pZyktZ4bg/vMH5VFxdIKgbLx9uVeTvOupvbAW0TNulYGUBQE
nm+S0zr3W18t64e4sS3oHse8zCqo1iiImpba6F1Oaw==
=y6DD
-----END
 PGP PUBLIC KEY BLOCK-----
;;;; gpgme.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; TODO

;;; Set up the library.

(in-package :gpgme)

(deftype byte-array ()
 '(simple-array (unsigned-byte 8) (*)))
```

```
(deftype character-array ()
 '(simple-array character (*)))

;;;
 Debugging.

(defvar *debug* nil "If debugging output should be given or not.")

;;; Load the foreign library.

(define-foreign-library libgpgme
 (:unix "libgpgme.so")
 (t (:default "libgpgme")))

(use-foreign-library libgpgme)

;;; System dependencies.

; Access to ERRNO.
(defcfun ("strerror" c-strerror) :string
 (err :int))

(defun get-errno ()
 *errno*)

(defun set-errno (errno)
 (setf *errno* errno))

(define-condition system-error (error)
 ((errno :initarg :errno :reader system-error-errno))
 (:report (lambda (c stream)
     (format stream "System error: ~A: ~A"
      (system-error-errno c)
      (c-strerror (system-error-errno c)))))
 (:documentation "Signalled when an errno is encountered."))

; Needed to write passphrases.
(defcfun ("write" c-write) ssize-t
 (fd :int)
 (buffer :string) ; Actually :pointer, but we only need string.
 (size size-t))

(defun system-write (fd buffer size)
 (let ((res (c-write fd buffer size)))
   (when (< res 0) (error 'system-error
 :errno (get-errno)))
   res))
```

```
;;;
;;; C Interface Definitions
;;;

;;; Data Type Interface

;;; Some new data types used for easier translation.

;;; The number of include certs.  Translates to NIL for default.
(defctype cert-int-t
  (:wrapper :int
   :from-c translate-cert-int-t-from-foreign
   :to-c translate-cert-int-t-to-foreign))

;;; A string that may be NIL to indicate a null pointer.
(defctype string-or-nil-t
  (:wrapper :string
   :to-c translate-string-or-nil-t-to-foreign))

;;; Some opaque data types used by GPGME.

(defctype gpgme-ctx-t
  (:wrapper :pointer
   :to-c translate-gpgme-ctx-t-to-foreign)
 "The GPGME context type.")

(defctype gpgme-data-t
  (:wrapper :pointer
   :to-c translate-gpgme-data-t-to-foreign)
 "The GPGME data object type.")

;;; Wrappers for the libgpg-error library.

(defctype gpgme-error-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-t-from-foreign
   :to-c translate-gpgme-error-t-to-foreign)
 "The
 GPGME error type.")

(defctype gpgme-error-no-signal-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-no-signal-t-from-foreign)
 "The GPGME error type (this version does not signal conditions in translation.")

(defctype gpgme-err-code-t gpg-error::gpg-err-code-t
 "The GPGME error code type.")
```

```
(defctype gpgme-err-source-t gpg-error::gpg-err-source-t
 "The GPGME error source type.")

(defun gpgme-err-make (source code)
 "Construct an error value from an error code and source."
 (gpg-err-make source code))

(defun gpgme-error (code)
 "Construct an error value from an error code."
 (gpgme-err-make :gpg-err-source-gpgme code))

(defun gpgme-err-code (err)
 "Retrieve an error code from the error value ERR."
 (gpg-err-code err))

(defun gpgme-err-source (err)
 "Retrieve an error source from the error value ERR."
 (gpg-err-source err))

(defun gpgme-strerror (err)
 "Return a string containing a description of the error code."
 (gpg-strerror err))

(defun
 gpgme-strsource (err)
 "Return a string containing a description of the error source."
 (gpg-strsource err))

(defun gpgme-err-code-from-errno (err)
 "Retrieve the error code for the system error.  If the system error
  is not mapped, :gpg-err-unknown-errno is returned."
 (gpg-err-code-from-errno err))

(defun gpgme-err-code-to-errno (code)
 "Retrieve the system error for the error code.  If this is not a
  system error, 0 is returned."
 (gpg-err-code-to-errno code))

(defun gpgme-err-make-from-errno (source err)
 (gpg-err-make-from-errno source err))

(defun gpgme-error-from-errno (err)
 (gpg-error-from-errno err))

;;;

(defcenum gpgme-data-encoding-t
 "The possible encoding mode of gpgme-data-t objects."
```

```
 (:none 0)
 (:binary 1)
 (:base64 2)
 (:armor 3)
 (:url 4)
 (:urlesc 5)
 (:url0 6)
 (:mime 7))

;;;

(defcenum gpgme-pubkey-algo-t
 "Public key algorithms from libgcrypt."
 (:rsa 1)
 (:rsa-e 2)
 (:rsa-s 3)
 (:elg-e 16)
 (:dsa 17)
 (:ecc 18)
 (:elg 20)
  (:ecdsa 301)
 (:ecdh 302)
 (:eddsa 303))

(defcenum gpgme-hash-algo-t
 "Hash algorithms from libgcrypt."
 (:none 0)
 (:md5 1)
 (:sha1 2)
 (:rmd160 3)
 (:md2 5)
 (:tiger 6)
 (:haval 7)
 (:sha256 8)
 (:sha384 9)
 (:sha512 10)
 (:sha224 11)
 (:md4 301)
 (:crc32 302)
 (:crc32-rfc1510 303)
 (:crc24-rfc2440 304))

;;;

(defcenum gpgme-sig-mode-t
 "The available signature modes."
 (:none 0)
 (:detach 1)
```

```
 (:clear 2))

;;;

(defcenum gpgme-validity-t
 "The available validities for a trust item or key."
 (:unknown 0)
 (:undefined 1)
 (:never 2)
 (:marginal 3)
 (:full 4)
 (:ultimate 5))

;;;

(defcenum gpgme-protocol-t
 "The available protocols."
 (:openpgp 0)
 (:cms 1)
 (:gpgconf 2)
 (:assuan 3)
 (:g13 4)
 (:uiserver 5)
 (:spawn 6)
 (:default 254)
 (:unknown 255))

;;;

(defbitfield (gpgme-keylist-mode-t :unsigned-int)
 "The available keylist mode flags."
 (:local 1)
 (:extern 2)
 (:sigs 4)
 (:sig-notations)
 (:with-secret 16)
 (:with-tofu 32)
 (:ephemeral
 128)
 (:validate 256))

;;;

(defbitfield (gpgme-sig-notation-flags-t :unsigned-int)
 "The available signature notation flags."
 (:human-readable 1)
 (:critical 2))
```

```
(defctype gpgme-sig-notation-t
  (:wrapper :pointer
   :from-c translate-gpgme-sig-notation-t-from-foreign)
 "Signature notation pointer type.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-sig-notation-bitfield :unsigned-int)
 (:human-readable 1)
 (:critical 2))

(defcstruct gpgme-sig-notation
 "Signature notations."
 (next gpgme-sig-notation-t)
 (name :pointer)
 (value :pointer)
 (name-len :int)
 (value-len :int)
 (flags gpgme-sig-notation-flags-t)
 (bitfield gpgme-sig-notation-bitfield))

;;;

(defcenum gpgme-status-code-t
 "The possible status codes for the edit operation."
 (:eof 0)
 (:enter 1)
 (:leave 2)
 (:abort 3)
 (:goodsig 4)
 (:badsig 5)
 (:errsig 6)
 (:badarmor 7)
 (:rsa-or-idea 8)
 (:keyexpired 9)
 (:keyrevoked 10)
 (:trust-undefined 11)
 (:trust-never
 12)
 (:trust-marginal 13)
 (:trust-fully 14)
 (:trust-ultimate 15)
 (:shm-info 16)
 (:shm-get 17)
 (:shm-get-bool 18)
 (:shm-get-hidden 19)
 (:need-passphrase 20)
 (:validsig 21)
 (:sig-id 22)
```

(:enc-to 23)
(:nodata 24)
(:bad-passphrase 25)
(:no-pubkey 26)
(:no-seckey 27)
(:need-passphrase-sym 28)
(:decryption-failed 29)
(:decryption-okay 30)
(:missing-passphrase 31)
(:good-passphrase 32)
(:goodmdc 33)
(:badmdc 34)
(:errmdc 35)
(:imported 36)
(:import-ok 37)
(:import-problem 38)
(:import-res 39)
(:file-start 40)
(:file-done 41)
(:file-error 42)
(:begin-decryption 43)
(:end-decryption 44)
(:begin-encryption 45)
(:end-encryption 46)
(:delete-problem 47)
(:get-bool 48)
(:get-line 49)
(:get-hidden 50)
(:got-it 51)
(:progress 52)
(:sig-created 53)
(:session-key 54)
(:notation-name 55)
(:notation-data 56)
(:policy-url 57)
(:begin-stream 58)
(:end-stream 59)
(:key-created 60)
(:userid-hint 61)
(:unexpected
62)
(:inv-recp 63)
(:no-recp 64)
(:already-signed 65)
(:sigexpired 66)
(:expsig 67)
(:expkeysig 68)
(:truncated 69)

```
 (:error 70)
 (:newsig 71)
 (:revkeysig 72)
 (:sig-subpacket 73)
 (:need-passphrase-pin 74)
 (:sc-op-failure 75)
 (:sc-op-success 76)
 (:cardctrl 77)
 (:backup-key-created 78)
 (:pka-trust-bad 79)
 (:pka-trust-good 80)
 (:plaintext 81)
 (:inv-sgnr 82)
 (:no-sgnr 83)
 (:success 84)
 (:decryption-info 85)
 (:plaintext-length 86)
 (:mountpoint 87)
 (:pinentry-launched 88)
 (:attribute 89)
 (:begin-signing 90)
 (:key-not-created 91)
 (:inquire-maxlen 92)
 (:failure 93)
 (:key-considered 94)
 (:tofu-user 95)
 (:tofu-stats 96)
 (:tofu-stats-long 97)
 (:notation-flags 98)
 (:decryption-compliance-mode 99)
 (:verification-compliance-mode 100))

;;;

(defctype gpgme-engine-info-t
   (:wrapper :pointer
    :from-c translate-gpgme-engine-info-t-to-foreign)
 "The engine information structure pointer type.")

(defcstruct gpgme-engine-info
  "Engine information."
 (next gpgme-engine-info-t)
 (protocol gpgme-protocol-t)
 (file-name :string)
 (version :string)
 (req-version :string)
 (home-dir :string))
```

```
;;;

(defctype gpgme-subkey-t
   (:wrapper :pointer
    :from-c translate-gpgme-subkey-t-from-foreign)
 "A subkey from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-subkey-bitfield :unsigned-int)
 "The subkey bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512)
 (:is-cardkey 1024)
 (:is-de-vs 2048))

(defcstruct gpgme-subkey
 "Subkey from a key."
 (next gpgme-subkey-t)
 (bitfield gpgme-subkey-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (length :unsigned-int)
 (keyid :string)
 (-keyid :char :count 17)
 (fpr :string)
 (timestamp :long)
 (expires :long))


(defctype gpgme-key-sig-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-sig-t-from-foreign)
  "A signature on a user ID.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-sig-bitfield :unsigned-int)
 "The key signature bitfield."
 (:revoked 1)
 (:expired 2)
 (:invalid 4)
 (:exportable 16))
```

```
(defcstruct gpgme-key-sig
 "A signature on a user ID."
 (next gpgme-key-sig-t)
 (bitfield gpgme-key-sig-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (keyid :string)
 (-keyid :char :count 17)
 (timestamp :long)
 (expires :long)
 (status gpgme-error-no-signal-t)
 (-class :unsigned-int)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (sig-class :unsigned-int))


(defctype gpgme-user-id-t
   (:wrapper :pointer
    :from-c translate-gpgme-user-id-t-from-foreign)
 "A user ID from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-user-id-bitfield :unsigned-int)
 "The user ID bitfield."
 (:revoked 1)
 (:invalid 2))

(defcstruct gpgme-user-id
 "A user ID from a key."
 (next
 gpgme-user-id-t)
 (bitfield gpgme-user-id-bitfield)
 (validity gpgme-validity-t)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (signatures gpgme-key-sig-t)
 (-last-keysig gpgme-key-sig-t))


(defctype gpgme-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-t-from-foreign
    :to-c translate-gpgme-key-t-to-foreign)
```

```
 "A key from the keyring.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-bitfield :unsigned-int)
 "The key bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512))

(defcstruct gpgme-key
 "A signature on a user ID."
 (-refs :unsigned-int)
 (bitfield gpgme-key-bitfield)
 (protocol gpgme-protocol-t)
 (issuer-serial :string)
 (issuer-name :string)
 (chain-id :string)
 (owner-trust gpgme-validity-t)
 (subkeys gpgme-subkey-t)
 (uids gpgme-user-id-t)
 (-last-subkey gpgme-subkey-t)
  (-last-uid gpgme-user-id-t)
 (keylist-mode gpgme-keylist-mode-t))

;;;

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-passphrase-cb-t :pointer)

(defctype gpgme-progress-cb-t :pointer)

(defctype gpgme-edit-cb-t :pointer)


;;;
;;; Function Interface
;;;

;;; Context management functions.
```

```
(defcfun ("gpgme_new" c-gpgme-new) gpgme-error-t
 (ctx :pointer))

(defcfun ("gpgme_release" c-gpgme-release) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_protocol" c-gpgme-set-protocol) gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t))

(defcfun ("gpgme_get_protocol" c-gpgme-get-protocol) gpgme-protocol-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_get_protocol_name" c-gpgme-get-protocol-name) :string
 (proto gpgme-protocol-t))

(defcfun ("gpgme_set_armor" c-gpgme-set-armor) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_armor" c-gpgme-get-armor) :boolean
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_textmode" c-gpgme-set-textmode) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_textmode" c-gpgme-get-textmode) :boolean
 (ctx gpgme-ctx-t))

(defconstant +include-certs-default+ -256)

(defcfun ("gpgme_set_include_certs" c-gpgme-set-include-certs) :void
 (ctx gpgme-ctx-t)
 (nr-of-certs cert-int-t))

(defcfun ("gpgme_get_include_certs" c-gpgme-get-include-certs) cert-int-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_keylist_mode" c-gpgme-set-keylist-mode) gpgme-error-t
 (ctx gpgme-ctx-t)
 (mode gpgme-keylist-mode-t))

(defcfun ("gpgme_get_keylist_mode" c-gpgme-get-keylist-mode)
   gpgme-keylist-mode-t
 (ctx gpgme-ctx-t))
```

```
(defcfun ("gpgme_set_passphrase_cb" c-gpgme-set-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-passphrase-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_passphrase_cb" c-gpgme-get-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_progress_cb"
 c-gpgme-set-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-progress-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_progress_cb" c-gpgme-get-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_locale" c-gpgme-set-locale) gpgme-error-t
 (ctx gpgme-ctx-t)
 (category :int)
 (value string-or-nil-t))

(defcfun ("gpgme_ctx_get_engine_info" c-gpgme-ctx-get-engine-info)
   gpgme-engine-info-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_ctx_set_engine_info" c-gpgme-ctx-set-engine-info)
   gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir string-or-nil-t))

;;;

(defcfun ("gpgme_pubkey_algo_name" c-gpgme-pubkey-algo-name) :string
 (algo gpgme-pubkey-algo-t))

(defcfun ("gpgme_hash_algo_name" c-gpgme-hash-algo-name) :string
 (algo gpgme-hash-algo-t))

;;;

(defcfun ("gpgme_signers_clear" c-gpgme-signers-clear) :void
```

```
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_signers_add" c-gpgme-signers-add)
 gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t))

(defcfun ("gpgme_signers_enum" c-gpgme-signers-enum) gpgme-key-t
 (ctx gpgme-ctx-t)
 (seq :int))

;;;

(defcfun ("gpgme_sig_notation_clear" c-gpgme-sig-notation-clear) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_sig_notation_add" c-gpgme-sig-notation-add) gpgme-error-t
 (ctx gpgme-ctx-t)
 (name :string)
 (value string-or-nil-t)
 (flags gpgme-sig-notation-flags-t))

(defcfun ("gpgme_sig_notation_get" c-gpgme-sig-notation-get)
   gpgme-sig-notation-t
 (ctx gpgme-ctx-t))

;;; Run Control.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-io-cb-t :pointer)

(defctype gpgme-register-io-cb-t :pointer)

(defctype gpgme-remove-io-cb-t :pointer)

(defcenum gpgme-event-io-t
 "The possible events on I/O event callbacks."
 (:start 0)
 (:done 1)
 (:next-key 2)
 (:next-trustitem 3))

(defctype gpgme-event-io-cb-t :pointer)

(defcstruct
```

```
 gpgme-io-cbs
 "I/O callbacks."
 (add gpgme-register-io-cb-t)
 (add-priv :pointer)
 (remove gpgme-remove-io-cb-t)
 (event gpgme-event-io-cb-t)
 (event-priv :pointer))

(defctype gpgme-io-cbs-t :pointer)

(defcfun ("gpgme_set_io_cbs" c-gpgme-set-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_get_io_cbs" c-gpgme-get-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_wait" c-gpgme-wait) gpgme-ctx-t
 (ctx gpgme-ctx-t)
 (status-p :pointer)
 (hang :int))

;;; Functions to handle data objects.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-data-read-cb-t :pointer)
(defctype gpgme-data-write-cb-t :pointer)
(defctype gpgme-data-seek-cb-t :pointer)
(defctype gpgme-data-release-cb-t :pointer)

(defcstruct gpgme-data-cbs
 "Data callbacks."
 (read gpgme-data-read-cb-t)
 (write gpgme-data-write-cb-t)
 (seek gpgme-data-seek-cb-t)
  (release gpgme-data-release-cb-t))

(defctype gpgme-data-cbs-t :pointer
 "Data callbacks pointer.")

(defcfun ("gpgme_data_read" c-gpgme-data-read) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))
```

```
(defcfun ("gpgme_data_write" c-gpgme-data-write) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))

(defcfun ("gpgme_data_seek" c-gpgme-data-seek) off-t
 (dh gpgme-data-t)
 (offset off-t)
 (whence :int))

(defcfun ("gpgme_data_new" c-gpgme-data-new) gpgme-error-t
 (dh-p :pointer))

(defcfun ("gpgme_data_release" c-gpgme-data-release) :void
 (dh gpgme-data-t))

(defcfun ("gpgme_data_new_from_mem" c-gpgme-data-new-from-mem) gpgme-error-t
 (dh-p :pointer)
 (buffer :pointer)
 (size size-t)
 (copy :int))

(defcfun ("gpgme_data_release_and_get_mem" c-gpgme-data-release-and-get-mem)
   :pointer
 (dh gpgme-data-t)
 (len-p :pointer))

(defcfun ("gpgme_data_new_from_cbs" c-gpgme-data-new-from-cbs) gpgme-error-t
 (dh-p :pointer)
 (cbs gpgme-data-cbs-t)
  (handle :pointer))

(defcfun ("gpgme_data_new_from_fd" c-gpgme-data-new-from-fd) gpgme-error-t
 (dh-p :pointer)
 (fd :int))

(defcfun ("gpgme_data_new_from_stream" c-gpgme-data-new-from-stream)
   gpgme-error-t
 (dh-p :pointer)
 (stream :pointer))

(defcfun ("gpgme_data_get_encoding" c-gpgme-data-get-encoding)
   gpgme-data-encoding-t
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_encoding" c-gpgme-data-set-encoding)
   gpgme-error-t
 (dh gpgme-data-t)
```

```
 (enc gpgme-data-encoding-t))

(defcfun ("gpgme_data_get_file_name" c-gpgme-data-get-file-name) :string
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_file_name" c-gpgme-data-set-file-name) gpgme-error-t
 (dh gpgme-data-t)
 (file-name string-or-nil-t))

(defcfun ("gpgme_data_new_from_file" c-gpgme-data-new-from-file) gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (copy :int))

(defcfun ("gpgme_data_new_from_filepart" c-gpgme-data-new-from-filepart)
   gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (fp
 :pointer)
 (offset off-t)
 (length size-t))

;;; Key and trust functions.

(defcfun ("gpgme_get_key" c-gpgme-get-key) gpgme-error-t
 (ctx gpgme-ctx-t)
 (fpr :string)
 (key-p :pointer)
 (secret :boolean))

(defcfun ("gpgme_key_ref" c-gpgme-key-ref) :void
 (key gpgme-key-t))

(defcfun ("gpgme_key_unref" c-gpgme-key-unref) :void
 (key gpgme-key-t))

;;; Crypto operations.

(defcfun ("gpgme_cancel" c-gpgme-cancel) gpgme-error-t
 (ctx gpgme-ctx-t))

;;;

(defctype gpgme-invalid-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-invalid-key-t-from-foreign)
 "An invalid key structure.")
```

```
(defcstruct gpgme-invalid-key
 "An invalid key structure."
 (next gpgme-invalid-key-t)
 (fpr :string)
 (reason gpgme-error-no-signal-t))

;;; Encryption.

(defcstruct gpgme-op-encrypt-result
 "Encryption result structure."
 (invalid-recipients gpgme-invalid-key-t))

(defctype gpgme-op-encrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-encrypt-result-t-from-foreign)
  "An encryption result structure.")

(defcfun ("gpgme_op_encrypt_result" c-gpgme-op-encrypt-result)
   gpgme-op-encrypt-result-t
 (ctx gpgme-ctx-t))

(defbitfield gpgme-encrypt-flags-t
 (:always-trust 1)
 (:no-encrypt-to 2)
 (:prepare 4)
 (:expect-sign 8)
 (:no-compress 16)
 (:symmetric 32)
 (:throw-keyids 64)
 (:wrap 128)
 (:want-address 256))

(defcfun ("gpgme_op_encrypt_start" c-gpgme-op-encrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt" c-gpgme-op-encrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign_start" c-gpgme-op-encrypt-sign-start)
```

```
  gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign"
 c-gpgme-op-encrypt-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

;;; Decryption.

(defctype gpgme-recipient-t
   (:wrapper :pointer
    :from-c translate-gpgme-recipient-t-from-foreign)
 "A recipient structure.")

(defcstruct gpgme-recipient
 "Recipient structure."
 (next gpgme-recipient-t)
 (keyid :string)
 (-keyid :char :count 17)
 (pubkey-algo gpgme-pubkey-algo-t)
 (status gpgme-error-no-signal-t))

(defbitfield gpgme-op-decrypt-result-bitfield
 "Decryption result structure bitfield."
 (:wrong-key-usage 1)
 (:is-de-vs 2)
 (:is-mine 4))

(defcstruct gpgme-op-decrypt-result
 "Decryption result structure."
 (unsupported-algorithm :string)
 (bitfield gpgme-op-decrypt-result-bitfield)
 (recipients gpgme-recipient-t)
 (file-name :string))

(defctype gpgme-op-decrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-decrypt-result-t-from-foreign)
  "A decryption result structure.")
```

```
(defcfun ("gpgme_op_decrypt_result" c-gpgme-op-decrypt-result)
  gpgme-op-decrypt-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_decrypt_start" c-gpgme-op-decrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt" c-gpgme-op-decrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify_start" c-gpgme-op-decrypt-verify-start)
  gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify" c-gpgme-op-decrypt-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

;;; Signing.

(defctype gpgme-new-signature-t
  (:wrapper :pointer
   :from-c translate-gpgme-new-signature-t-from-foreign)
 "A new signature structure.")

(defcstruct gpgme-new-signature
 "New signature structure."
 (next gpgme-new-signature-t)
  (type gpgme-sig-mode-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t)
 (-obsolete-class :unsigned-long)
 (timestamp :long)
 (fpr :string)
 (-obsolete-class-2 :unsigned-int)
 (sig-class :unsigned-int))

(defcstruct gpgme-op-sign-result
 "Signing result structure."
 (invalid-signers gpgme-invalid-key-t)
 (signatures gpgme-new-signature-t))
```

```
(defctype gpgme-op-sign-result-t
  (:wrapper :pointer
   :from-c translate-gpgme-op-sign-result-t-from-foreign)
 "A signing result structure.")

(defcfun ("gpgme_op_sign_result" c-gpgme-op-sign-result)
  gpgme-op-sign-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_sign_start" c-gpgme-op-sign-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

(defcfun ("gpgme_op_sign" c-gpgme-op-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

;;; Verify.

(defbitfield (gpgme-sigsum-t :unsigned-int)
 "Flags
 used for the summary field in a gpgme-signature-t."
 (:valid #x0001)
 (:green #x0002)
 (:red #x0004)
 (:key-revoked #x0010)
 (:key-expired #x0020)
 (:sig-expired #x0040)
 (:key-missing #x0080)
 (:crl-missing #x0100)
 (:crl-too-old #x0200)
 (:bad-policy #x0400)
 (:sys-error #x0800)
 (:tofu-conflict #x1000))

(defctype gpgme-signature-t
  (:wrapper :pointer
   :from-c translate-gpgme-signature-t-from-foreign)
 "A signature structure.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-signature-bitfield :unsigned-int)
 "The signature bitfield."
```

```
 (:wrong-key-usage 1)
 (:pka-trust 2)
 (:chain-model 4)
 (:is-de-vs 8))

(defcstruct gpgme-signature
 "Signature structure."
 (next gpgme-signature-t)
 (summary gpgme-sigsum-t)
 (fpr :string)
 (status gpgme-error-no-signal-t)
 (notations gpgme-sig-notation-t)
 (timestamp :unsigned-long)
 (exp-timestamp :unsigned-long)
 (bitfield gpgme-signature-bitfield)
 (validity gpgme-validity-t)
 (validity-reason
 gpgme-error-no-signal-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t))

(defcstruct gpgme-op-verify-result
 "Verify result structure."
 (signatures gpgme-signature-t)
 (file-name :string))

(defctype gpgme-op-verify-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-verify-result-t-from-foreign)
 "A verify result structure.")

(defcfun ("gpgme_op_verify_result" c-gpgme-op-verify-result)
   gpgme-op-verify-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_verify_start" c-gpgme-op-verify-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

(defcfun ("gpgme_op_verify" c-gpgme-op-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

;;; Import.
```

```
(defbitfield (gpgme-import-flags-t :unsigned-int)
 "Flags used for the import status field."
 (:new #x0001)
 (:uid #x0002)
 (:sig #x0004)
 (:subkey #x0008)
 (:secret
 #x0010))

(defctype gpgme-import-status-t
   (:wrapper :pointer
    :from-c translate-gpgme-import-status-t-from-foreign)
 "An import status structure.")

(defcstruct gpgme-import-status
 "New import status structure."
 (next gpgme-import-status-t)
 (fpr :string)
 (result gpgme-error-no-signal-t)
 (status :unsigned-int))

(defcstruct gpgme-op-import-result
 "Import result structure."
 (considered :int)
 (no-user-id :int)
 (imported :int)
 (imported-rsa :int)
 (unchanged :int)
 (new-user-ids :int)
 (new-sub-keys :int)
 (new-signatures :int)
 (new-revocations :int)
 (secret-read :int)
 (secret-imported :int)
 (secret-unchanged :int)
 (skipped-new-keys :int)
 (not-imported :int)
 (imports gpgme-import-status-t))

(defctype gpgme-op-import-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-import-result-t-from-foreign)
 "An import status result structure.")

(defcfun ("gpgme_op_import_result" c-gpgme-op-import-result)
   gpgme-op-import-result-t
```

```
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_import_start" c-gpgme-op-import-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_import" c-gpgme-op-import) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

;;; Export.

(defcfun ("gpgme_op_export_start" c-gpgme-op-export-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_export" c-gpgme-op-export) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

;;; FIXME: Extended export interfaces require array handling.

;;; Key generation.

(defbitfield (gpgme-genkey-flags-t :unsigned-int)
 "Flags used for the key generation result bitfield."
 (:primary #x0001)
 (:sub #x0002)
 (:uid #x0004))

(defcstruct gpgme-op-genkey-result
 "Key generation result structure."
 (bitfield gpgme-genkey-flags-t)
 (fpr :string))

(defctype gpgme-op-genkey-result-t :pointer
 "A
 key generation result structure.")

(defcfun ("gpgme_op_genkey_result" c-gpgme-op-genkey-result)
   gpgme-op-genkey-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_genkey_start" c-gpgme-op-genkey-start) gpgme-error-t
```

```
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

(defcfun ("gpgme_op_genkey" c-gpgme-op-genkey) gpgme-error-t
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

;;; Key deletion.

(defcfun ("gpgme_op_delete_start" c-gpgme-op-delete-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

(defcfun ("gpgme_op_delete" c-gpgme-op-delete) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

;;; FIXME: Add edit interfaces.

;;; Keylist interface.

(defbitfield (gpgme-keylist-flags-t :unsigned-int)
 "Flags used for the key listing result bitfield."
 (:truncated #x0001))

(defcstruct gpgme-op-keylist-result
 "Key listing result structure."
 (bitfield
 gpgme-keylist-flags-t))

(defctype gpgme-op-keylist-result-t :pointer
 "A key listing result structure.")

(defcfun ("gpgme_op_keylist_result" c-gpgme-op-keylist-result)
   gpgme-op-keylist-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_keylist_start" c-gpgme-op-keylist-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (secret_only :boolean))
```

```
;;; FIXME: Extended keylisting requires array handling.

(defcfun ("gpgme_op_keylist_next" c-gpgme-op-keylist-next) gpgme-error-t
 (ctx gpgme-ctx-t)
 (r-key :pointer))

(defcfun ("gpgme_op_keylist_end" c-gpgme-op-keylist-end) gpgme-error-t
 (ctx gpgme-ctx-t))

;;; Various functions.

(defcfun ("gpgme_check_version" c-gpgme-check-version) :string
 (req-version string-or-nil-t))

(defcfun ("gpgme_get_engine_info" c-gpgme-get-engine-info) gpgme-error-t
 (engine-info-p :pointer))

(defcfun ("gpgme_set_engine_info" c-gpgme-set-engine-info) gpgme-error-t
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir
 string-or-nil-t))

(defcfun ("gpgme_engine_check_version" c-gpgme-engine-check-verson)
   gpgme-error-t
 (proto gpgme-protocol-t))

;;;
;;; L I S P   I N T E R F A C E
;;;

;;;
;;; Lisp type translators.
;;;

;;; Both directions.

;;; cert-int-t is a helper type that takes care of representing the
;;; default number of certs as NIL.

(defun translate-cert-int-t-from-foreign (value)
 (cond
   ((eql value +include-certs-default+) nil)
   (t value)))

(defun translate-cert-int-t-to-foreign (value)
 (cond
   (value value)
```

```
   (t +include-certs-default+)))

;;; string-or-nil-t translates a null pointer to NIL and vice versa.
;;; Translation from foreign null pointer already works as expected.

(defun translate-string-or-nil-t-to-foreign (value)
 (cond
   (value value)
   (t (null-pointer))))

;;; Output only.

;;; These type translators only convert from foreign type, because we
;;; never use these types in the other direction.

;;; Convert gpgme-engine-info-t linked lists into a
 list of property
;;; lists.  Note that this converter will automatically be invoked
;;; recursively.
;;;
;;; FIXME: Should we use a hash table (or struct, or clos) instead of
;;; property list, as recommended by the Lisp FAQ?

(defun translate-gpgme-engine-info-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next protocol file-name version req-version home-dir)
     value (:struct gpgme-engine-info))
  (append (list protocol (list
        :file-name file-name
        :version version
        :req-version req-version
        :home-dir home-dir))
   next)))))

(defun translate-gpgme-invalid-key-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next fpr reason)
     value (:struct gpgme-invalid-key))
  (append (list (list :fpr fpr
        :reason reason))
   next)))))

(defun translate-gpgme-op-encrypt-result-t-from-foreign (value)
 (cond
```

```
  ((null-pointer-p value) nil)
  (t (with-foreign-slots

  ((invalid-recipients)
    value (:struct gpgme-op-encrypt-result))
 (list :encrypt
       (list :invalid-recipients invalid-recipients))))))

(defun translate-gpgme-recipient-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next keyid pubkey-algo status)
    value (:struct gpgme-recipient))
  (append (list (list :keyid keyid
       :pubkey-algo pubkey-algo
       :status status))
  next)))))

(defun translate-gpgme-op-decrypt-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((unsupported-algorithm bitfield recipients file-name)
    value (:struct gpgme-op-decrypt-result))
  (list :decrypt (list :unsupported-algorithm unsupported-algorithm
        :bitfield bitfield
        :recipients recipients
        :file-name file-name))))))

(defun translate-gpgme-new-signature-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next
 type pubkey-algo hash-algo timestamp fpr sig-class)
    value (:struct gpgme-new-signature))
  (append (list (list :type type
       :pubkey-algo pubkey-algo
       :hash-algo hash-algo
       :timestamp timestamp
       :fpr fpr
       :sig-class sig-class))
  next)))))

(defun translate-gpgme-op-sign-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
```

```
   (t (with-foreign-slots
    ((invalid-signers signatures)
     value (:struct gpgme-op-sign-result))
   (list :sign (list :invalid-signers invalid-signers
      :signatures signatures))))))

(defun translate-gpgme-signature-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next summary fpr status notations timestamp
    exp-timestamp bitfield validity validity-reason
    pubkey-algo hash-algo)
     value (:struct gpgme-signature))
   (append (list (list :summary summary
        :fpr fpr
        :status status
        :notations notations
        :timestamp timestamp

     :exp-timestamp exp-timestamp
        :bitfield bitfield
        :validity validity
        :validity-reason validity-reason
        :pubkey-algo pubkey-algo))
   next)))))

(defun translate-gpgme-op-verify-result-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((signatures file-name)
     value (:struct gpgme-op-verify-result))
   (list :verify (list :signatures signatures
        :file-name file-name))))))

(defun translate-gpgme-import-status-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next fpr result status)
     value (:struct gpgme-import-status))
   (append (list (list :fpr fpr
        :result result
        :status status))
   next)))))

(defun translate-gpgme-op-import-result-t-from-foreign (value)
```

```
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((considered no-user-id imported imported-rsa unchanged
   new-user-ids new-sub-keys new-signatures
   new-revocations
 secret-read secret-imported
   secret-unchanged skipped-new-keys not-imported
   imports)
     value (:struct gpgme-op-import-result))
  (list :verify (list :considered considered
        :no-user-id no-user-id
        :imported imported
        :imported-rsa imported-rsa
        :unchanged unchanged
        :new-user-ids new-user-ids
        :new-sub-keys new-sub-keys
        :new-signatures new-signatures
        :new-revocations new-revocations
        :secret-read secret-read
        :secret-imported secret-imported
        :secret-unchanged secret-unchanged
        :skipped-new-keys skipped-new-keys
        :not-imported not-imported
        :imports imports))))))

;;; Error handling.

;;; Use gpgme-error-no-signal-t to suppress automatic error handling
;;; at translation time.
;;;
;;; FIXME: Part of this probably should be in gpg-error!

(define-condition gpgme-error (error)
 ((value :initarg :gpgme-error :reader gpgme-error-value))
 (:report (lambda (c stream)

     (format stream "GPGME returned error: ~A (~A)"
       (gpgme-strerror (gpgme-error-value c))
       (gpgme-strsource (gpgme-error-value c)))))
 (:documentation "Signalled when a GPGME function returns an error."))

(defun translate-gpgme-error-t-from-foreign (value)
 "Raise a GPGME-ERROR if VALUE is non-zero."
 (when (not (eql (gpgme-err-code value) :gpg-err-no-error))
   (error 'gpgme-error :gpgme-error value))
 (gpg-err-canonicalize value))
```

```
(defun translate-gpgme-error-t-to-foreign (value)
 "Canonicalize the error value."
 (if (eql (gpgme-err-code value) :gpg-err-no-error)
     0
     (gpg-err-as-value value)))

(defun translate-gpgme-error-no-signal-t-from-foreign (value)
 "Canonicalize the error value."
 (gpg-err-canonicalize value))


;;; *INTERNAL* Lispy Function Interface that is still close to the C
;;; interface.

;;; Passphrase callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar
 *passphrase-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  passphrase callback object as value.")

(defcallback passphrase-cb gpgme-error-t ((handle :pointer)
       (uid-hint :string)
       (passphrase-info :string)
       (prev-was-bad :boolean)
       (fd :int))
 (handler-case
     (let* ((passphrase-cb
       (gethash (pointer-address handle) *passphrase-handles*))
      (passphrase
       (cond
  ((functionp passphrase-cb)
   (concatenate 'string
         (funcall passphrase-cb uid-hint passphrase-info
           prev-was-bad)
         '(#\Newline)))
  (t (concatenate 'string passphrase-cb '(#\Newline)))))
     (passphrase-len (length passphrase))
     ;; FIXME: Could be more robust.
     (res (system-write fd passphrase passphrase-len)))
 (cond
   ((< res passphrase-len) ; FIXME: Blech.  A weak attempt to be robust.
    (gpgme-error :gpg-err-inval))
   (t (gpgme-error :gpg-err-no-error))))
   (gpgme-error (err)
```

```
 (gpgme-error-value err))
   (system-error (err) (gpgme-error-from-errno (system-error-errno err)))
   ;; FIXME: The original error gets lost here.
   (condition (err) (progn
        (when *debug*
    (format t "DEBUG: passphrase-cb: Unexpressable: ~A~%"
     err))
        (gpgme-error :gpg-err-general)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-passphrase-cb (ctx cb)
 "Set the passphrase callback for CTX."
 (let ((handle (pointer-address ctx)))
   (cond
     (cb (setf (gethash handle *passphrase-handles*) cb)
   (c-gpgme-set-passphrase-cb ctx (callback passphrase-cb) ctx))
     (t (c-gpgme-set-passphrase-cb ctx (null-pointer) (null-pointer))
  (remhash handle *passphrase-handles*)))))

;;; Progress callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar *progress-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  progress callback
 object as value.")

(defcallback progress-cb :void ((handle :pointer)
    (what :string)
    (type :int)
    (current :int)
    (total :int))
 (handler-case
     (let* ((progress-cb
       (gethash (pointer-address handle) *progress-handles*)))
 (funcall progress-cb what type current total))
   ;; FIXME: The original error gets lost here.
   (condition (err) (when *debug*
        (format t "DEBUG: progress-cb: Unexpressable: ~A~%"
         err)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-progress-cb (ctx cb)
 "Set the progress callback for CTX."
 (let ((handle (pointer-address ctx)))
   (cond
```

```
    (cb (setf (gethash handle *progress-handles*) cb)
  (c-gpgme-set-progress-cb ctx (callback progress-cb) ctx))
    (t (c-gpgme-set-progress-cb ctx (null-pointer) (null-pointer))
 (remhash handle *progress-handles*)))))

;;; Context management.

(defun gpgme-new (&key (protocol :openpgp) armor textmode include-certs
   keylist-mode passphrase progress file-name
 home-dir)
 "Allocate a new GPGME context."
 (with-foreign-object (ctx-p 'gpgme-ctx-t)
  (c-gpgme-new ctx-p)
  (let ((ctx (mem-ref ctx-p 'gpgme-ctx-t)))
    ;;; Set locale?
    (gpgme-set-protocol ctx protocol)
    (gpgme-set-armor ctx armor)
    (gpgme-set-textmode ctx textmode)
    (when include-certs (gpgme-set-include-certs ctx include-certs))
    (when keylist-mode (gpgme-set-keylist-mode ctx keylist-mode))
    (gpgme-set-passphrase-cb ctx passphrase)
    (gpgme-set-progress-cb ctx progress)
    (gpgme-set-engine-info ctx protocol
      :file-name file-name :home-dir home-dir)
    (when *debug* (format t "DEBUG: gpgme-new: ~A~%" ctx))
    ctx)))

(defun gpgme-release (ctx)
 "Release a GPGME context."
 (when *debug* (format t "DEBUG: gpgme-release: ~A~%" ctx))
 (c-gpgme-release ctx))

(defun gpgme-set-protocol (ctx proto)
 "Set the protocol to be used by CTX to PROTO."
 (c-gpgme-set-protocol ctx proto))

(defun gpgme-get-protocol (ctx)
 "Get
 the protocol used with CTX."
 (c-gpgme-get-protocol ctx))

;;; FIXME: How to do pretty printing?
;;;
;;; gpgme-get-protocol-name

(defun gpgme-set-armor (ctx armor)
 "If ARMOR is true, enable armor mode in CTX, disable it otherwise."
(c-gpgme-set-armor ctx armor))
```

```
(defun gpgme-armor-p (ctx)
 "Return true if armor mode is set for CTX."
 (c-gpgme-get-armor ctx))

(defun gpgme-set-textmode (ctx textmode)
 "If TEXTMODE is true, enable text mode mode in CTX, disable it otherwise."
(c-gpgme-set-textmode ctx textmode))

(defun gpgme-textmode-p (ctx)
 "Return true if text mode mode is set for CTX."
 (c-gpgme-get-textmode ctx))

(defun gpgme-set-include-certs (ctx &optional certs)
 "Include up to CERTS certificates in an S/MIME message."
 (c-gpgme-set-include-certs ctx certs))

(defun gpgme-get-include-certs (ctx)
 "Return the number of certs to include in an S/MIME message,
  or NIL if the default is used."
 (c-gpgme-get-include-certs ctx))

(defun gpgme-get-keylist-mode (ctx)
  "Get the keylist mode in CTX."
 (c-gpgme-get-keylist-mode ctx))

(defun gpgme-set-keylist-mode (ctx mode)
 "Set the keylist mode in CTX."
 (c-gpgme-set-keylist-mode ctx mode))


;;; FIXME: How to handle locale?  cffi-grovel?

(defun gpgme-get-engine-info (&optional ctx)
 "Retrieve the engine info for CTX, or the default if CTX is omitted."
 (cond
   (ctx (c-gpgme-ctx-get-engine-info ctx))
   (t (with-foreign-object (info-p 'gpgme-engine-info-t)
  (c-gpgme-get-engine-info info-p)
  (mem-ref info-p 'gpgme-engine-info-t)))))

(defun gpgme-set-engine-info (ctx proto &key file-name home-dir)
 "Set the engine info for CTX, or the default if CTX is NIL."
 (cond
   (ctx (c-gpgme-ctx-set-engine-info ctx proto file-name home-dir))
   (t (c-gpgme-set-engine-info proto file-name home-dir))))

;;; FIXME: How to do pretty printing?
```

```
;;;
;;; gpgme_pubkey_algo_name, gpgme_hash_algo_name

(defun gpgme-set-signers (ctx keys)
 "Set the signers for the context CTX."
 (c-gpgme-signers-clear ctx)
  (dolist (key keys) (c-gpgme-signers-add ctx key)))

;;;

(defun gpgme-set-sig-notation (ctx notations)
 "Set the sig notation for the context CTX."
 (c-gpgme-sig-notation-clear ctx)
 (dolist (notation notations)
   (c-gpgme-sig-notation-add
    ctx (first notation) (second notation) (third notation))))

(defun gpgme-get-sig-notation (ctx)
 "Get the signature notation data for the context CTX."
 (c-gpgme-sig-notation-get ctx))

;;; FIXME: Add I/O callback interface, for integration with clg.

;;; FIXME: Add gpgme_wait?

;;; Streams
;;; -------
;;;
;;; GPGME uses standard streams.  You can define your own streams, or
;;; use the existing file or string streams.
;;;
;;; A stream-spec is either a stream, or a list with a stream as its
;;; first argument followed by keyword parameters: encoding,
;;; file-name.
;;;
;;; FIXME: Eventually, we should provide a class that can be mixed
;;; into stream classes and which provides accessors for encoding and
;;; file-names.  This interface
 should be provided in addition to the
;;; above sleazy interface, because the sleazy interface is easier to
;;; use (less typing), and is quite sufficient in a number of cases.
;;;
;;; For best results, streams with element type (unsigned-byte 8)
;;; should be used.  Character streams may work if armor mode is used.

;;; Do we need to provide access to GPGME data objects through streams
;;; as well?  It seems to me that specific optimizations, like
;;; directly writing to file descriptors, is better done by extending
```

```
;;; the sleazy syntax (stream-spec) instead of customized streams.
;;; Customized streams do buffering, and this may mess up things.  Mmh.

(defvar *data-handles* (make-hash-table)
 "Hash table with GPGME data user callback handle address as key
  and the corresponding stream as value.")

;;; The release callback removes the stream from the *data-handles*
;;; hash and releases the CBS structure that is used as the key in
;;; that hash.  It is implicitly invoked (through
 GPGME) by
;;; gpgme-data-release.
(defcallback data-release-cb :void ((handle :pointer))
 (unwind-protect (remhash (pointer-address handle) *data-handles*)
   (when (not (null-pointer-p handle)) (foreign-free handle))))

(defcallback data-read-cb ssize-t ((handle :pointer) (buffer :pointer)
                                   (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-read-cb: want ~A~%" size))
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type))
             (read (read-sequence seq stream)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char i)
                   (aref (the byte-array seq) i))))
          ((eql stream-type 'character)
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char
i)
                   (char-code (aref (the character-array seq) i)))))
          (t
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char i)
                   (coerce (aref seq i) '(unsigned-byte 8))))))
        (when *debug* (format t "DEBUG: gpgme-data-read-cb: read ~A~%" read))
        read))
     (t
      (set-errno +ebadf+)
      -1))))

(defcallback data-write-cb ssize-t ((handle :pointer) (buffer :pointer)
                                    (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-write-cb: want ~A~%" size))
```

```
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i size)
             (setf (aref (the byte-array seq) i)
                   (mem-aref buffer :unsigned-char i))))
          ((eql stream-type 'character)
           (dotimes (i size)
             (setf (aref (the character-array seq) i)
                   (code-char (mem-aref buffer :unsigned-char i)))))
          (t
           (dotimes (i size)
             (setf (aref seq i)
                   (coerce (mem-aref buffer :unsigned-char i) stream-type)))))
        (write-sequence seq stream)
        size))
     (t
      (set-errno +ebadf+)
      -1))))

;;; This little helper macro allows us to swallow the cbs structure by
;;; simply setting it to a null pointer, but still protect against
;;; conditions.
(defmacro with-cbs-swallowed ((cbs) &body body)
  `(let ((,cbs (foreign-alloc '(:struct gpgme-data-cbs))))
     (unwind-protect (progn ,@body)
       (when (not (null-pointer-p ,cbs)) (foreign-free ,cbs)))))

(defun gpgme-data-new (stream &key encoding file-name)
  "Allocate a new GPGME data object for STREAM."
  (with-foreign-object (dh-p 'gpgme-data-t)
    ;;; We allocate one CBS structure
  for each stream we wrap in a
    ;;; data object.  Although we could also share all these
    ;;; structures, as they contain the very same callbacks, we need a
    ;;; unique C pointer as handle anyway to look up the stream in the
    ;;; callback.  This is a convenient one to use.
    (with-cbs-swallowed (cbs)
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'read)
            (callback data-read-cb))
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'write)
            (callback data-write-cb))
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'seek)
            (null-pointer))
```

```
    (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'release)
          (callback data-release-cb))
    (c-gpgme-data-new-from-cbs dh-p cbs cbs)
    (let ((dh (mem-ref dh-p 'gpgme-data-t)))
 (when encoding (gpgme-data-set-encoding dh encoding))
 (when file-name (gpgme-data-set-file-name dh file-name))
 ;;; Install the stream into the hash table and
 swallow the cbs
       ;;; structure while protecting against any errors.
 (unwind-protect
     (progn
      (setf (gethash (pointer-address cbs) *data-handles*) stream)
      (setf cbs (null-pointer)))
  (when (not (null-pointer-p cbs)) (c-gpgme-data-release dh)))
 (when *debug* (format t "DEBUG: gpgme-data-new: ~A~%" dh))
 dh))))

;;; This function releases a GPGME data object.  It implicitly
;;; invokes the data-release-cb function to clean up associated junk.
(defun gpgme-data-release (dh)
 "Release a GPGME data object."
 (when *debug* (format t "DEBUG: gpgme-data-release: ~A~%" dh))
 (c-gpgme-data-release dh))

(defclass data ()
 (c-data)  ; The C data object pointer
 (:documentation "The GPGME data type."))

(defmethod initialize-instance :after ((data data) &key streamspec
                                       &allow-other-keys)
 (let ((c-data (if (listp streamspec)
                   (apply #'gpgme-data-new streamspec)
                   (gpgme-data-new streamspec)))
       (cleanup t))
  (unwind-protect
       (progn
        (setf (slot-value data 'c-data) c-data)
        (finalize data (lambda () (gpgme-data-release c-data)))
        (setf cleanup nil))
    (if cleanup (gpgme-data-release c-data)))))

(defun translate-gpgme-data-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (cond
  ((null value) (null-pointer))
  ((pointerp value) value)
  (t (slot-value value 'c-data))))
```

```
(defmacro with-gpgme-data ((dh streamspec) &body body)
 `(let ((,dh (make-instance 'data :streamspec ,streamspec)))
    ,@body))

(defun gpgme-data-get-encoding (dh)
 "Get the encoding associated with the data object DH."
 (c-gpgme-data-get-encoding dh))

(defun gpgme-data-set-encoding (dh encoding)
 "Set the encoding associated with the data object DH to ENCODING."
 (c-gpgme-data-set-encoding dh encoding))

(defun gpgme-data-get-file-name (dh)
 "Get the file name associated with the data object
 DH."
 (c-gpgme-data-get-file-name dh))

(defun gpgme-data-set-file-name (dh file-name)
 "Set the file name associated with the data object DH to FILE-NAME."
 (c-gpgme-data-set-file-name dh file-name))

;;; FIXME: Add key accessor interfaces.

(defun gpgme-get-key (ctx fpr &optional secret)
 "Get the key with the fingerprint FPR from the context CTX."
 (with-foreign-object (key-p 'gpgme-key-t)
   (c-gpgme-get-key ctx fpr key-p secret)
   (mem-ref key-p 'gpgme-key-t)))

(defun gpgme-key-ref (key)
 "Acquire an additional reference to the key KEY."
 (when *debug* (format t "DEBUG: gpgme-key-ref: ~A~%" key))
 (c-gpgme-key-ref key))

(defun gpgme-key-unref (key)
 "Release a reference to the key KEY."
 (when *debug* (format t "DEBUG: gpgme-key-unref: ~A~%" key))
 (c-gpgme-key-unref key))

;;; FIXME: We REALLY need pretty printing for keys and all the other
;;; big structs.

;;; Various interfaces.

(defun gpgme-check-version (&optional req-version)
 (c-gpgme-check-version req-version))

;;;
```

```
;;;
 The *EXPORTED* CLOS interface.
;;;

;;; The context type.

;;; We wrap the C context pointer into a class object to be able to
;;; stick a finalizer on it.

(defclass context ()
 (c-ctx  ; The C context object pointer.
  signers ; The list of signers.
  sig-notation) ; The list of signers.
 (:documentation "The GPGME context type."))

(defmethod initialize-instance :after ((ctx context) &rest rest
         &key &allow-other-keys)
 (let ((c-ctx (apply #'gpgme-new rest))
 (cleanup t))
   (unwind-protect
  (progn (setf (slot-value ctx 'c-ctx) c-ctx)
  (finalize ctx (lambda () (gpgme-release c-ctx)))
  (setf cleanup nil))
     (if cleanup (gpgme-release c-ctx)))))

(defun translate-gpgme-ctx-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-ctx)))

(defmacro context (&rest rest)
 "Create a new GPGME context."
 `(make-instance 'context ,@rest))

;;; The context type: Accessor
 functions.

;;; The context type: Accessor functions: Protocol.

(defgeneric protocol (ctx)
 (:documentation "Get the protocol of CONTEXT."))

(defmethod protocol ((ctx context))
 (gpgme-get-protocol ctx))

(defgeneric (setf protocol) (protocol ctx)
 (:documentation "Set the protocol of CONTEXT to PROTOCOL."))

;;; FIXME: Adjust translator to reject invalid protocols.  Currently,
```

```
;;; specifying an invalid protocol throws a "NIL is not 32 signed int"
;;; error.  This is suboptimal.
(defmethod (setf protocol) (protocol (ctx context))
 (gpgme-set-protocol ctx protocol))

;;; The context type: Accessor functions: Armor.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric armorp (ctx)
 (:documentation "Get the armor flag of CONTEXT."))

(defmethod armorp ((ctx context))
 (gpgme-armor-p ctx))

(defgeneric (setf armorp) (armor ctx)
 (:documentation "Set the armor flag of CONTEXT to ARMOR."))

(defmethod (setf armorp) (armor (ctx
 context))
 (gpgme-set-armor ctx armor))

;;; The context type: Accessor functions: Textmode.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric textmodep (ctx)
 (:documentation "Get the text mode flag of CONTEXT."))

(defmethod textmodep ((ctx context))
 (gpgme-textmode-p ctx))

(defgeneric (setf textmodep) (textmode ctx)
 (:documentation "Set the text mode flag of CONTEXT to TEXTMODE."))

(defmethod (setf textmodep) (textmode (ctx context))
 (gpgme-set-textmode ctx textmode))

;;; The context type: Accessor functions: Include Certs.

(defgeneric include-certs (ctx)
 (:documentation "Get the number of included certificates in an
                  S/MIME message, or NIL if the default is used."))

(defmethod include-certs ((ctx context))
 (gpgme-get-include-certs ctx))

(defgeneric (setf include-certs) (certs ctx)
```

```
 (:documentation "Return the number of certificates to include in an
                  S/MIME message, or
 NIL if the default is used."))

(defmethod (setf include-certs) (certs (ctx context))
 (gpgme-set-include-certs ctx certs))

;;; The context type: Accessor functions: Engine info.

(defgeneric engine-info (ctx)
 (:documentation "Retrieve the engine info for CTX."))

(defmethod engine-info ((ctx context))
 (gpgme-get-engine-info ctx))

(defgeneric (setf engine-info) (info ctx)
 (:documentation "Set the engine info for CTX."))

(defmethod (setf engine-info) (info (ctx context))
 (dolist (proto '(:openpgp :cms))
  (let ((pinfo (getf info proto)))
    (when pinfo
 (gpgme-set-engine-info ctx proto :file-name (getf pinfo :file-name)
        :home-dir (getf pinfo :home-dir))))))

;;; The context type: Accessor functions: Keylist mode.

(defgeneric keylist-mode (ctx)
 (:documentation "Get the keylist mode of CTX."))

(defmethod keylist-mode ((ctx context))
 (gpgme-get-keylist-mode ctx))

(defgeneric (setf keylist-mode) (mode ctx)
 (:documentation "Set the keylist mode of CTX to MODE."))

(defmethod
 (setf keylist-mode) (mode (ctx context))
 (gpgme-set-keylist-mode ctx mode))

;;; The context type: Accessor functions: Signers.

(defgeneric signers (ctx)
 (:documentation "Get the signers of CTX."))

(defmethod signers ((ctx context))
 (slot-value ctx 'signers))
```

```
(defgeneric (setf signers) (signers ctx)
 (:documentation "Set the signers of CTX to SIGNERS."))

(defmethod (setf keylist-mode) (signers (ctx context))
 (gpgme-set-signers ctx signers)
 (setf (slot-value ctx 'signers) signers))

;;; The context type: Accessor functions: Sig notations.

(defgeneric sig-notations (ctx)
 (:documentation "Get the signature notations of CTX."))

(defmethod sig-notations ((ctx context))
 (slot-value ctx 'signers))

(defgeneric (setf sig-notations) (notations ctx)
 (:documentation "Set the signatire notations of CTX to NOTATIONS."))

(defmethod (setf sig-notations) (notations (ctx context))
 (gpgme-set-signers ctx notations)
 (setf (slot-value ctx 'notations) notations))

;;;
 The context type: Support macros.

(defmacro with-context ((ctx &rest rest) &body body)
 `(let ((,ctx (make-instance 'context ,@rest)))
   ,@body))

;;; The key type.

(defclass key ()
 (c-key)  ; The C key object pointer.
 (:documentation "The GPGME key type."))

;;; In the initializer, we swallow the c-key argument.
(defmethod initialize-instance :after ((key key) &key c-key
         &allow-other-keys)
 (setf (slot-value key 'c-key) c-key)
 (finalize key (lambda () (gpgme-key-unref c-key))))

(defun translate-gpgme-key-t-from-foreign (value)
 (when *debug* (format t "DEBUG: import key: ~A~%" value))
 (make-instance 'key :c-key value))

(defun translate-gpgme-key-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-key)))
```

```
(defmethod print-object ((key key) stream)
 (print-unreadable-object (key stream :type t :identity t)
   (format stream "~s" (fpr key))))

;;; The key type:
 Accessor functions.

;;; FIXME: The bitfield and flags contain redundant information at
;;; this point.  FIXME: Deal nicer with zero-length name (policy url)
;;; and zero length value (omit?) and human-readable (convert to string).
;;; FIXME: Turn binary data into sequence or vector or what it should be.
;;; FIXME: Turn the whole thing into a hash?
(defun translate-gpgme-sig-notation-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next name value name-len value-len flags bitfield)
     value (:struct gpgme-sig-notation))
  (append (list (list
   :name name
   :value value
   :name-len name-len
   :value-len value-len
   :flags flags
   :bitfield bitfield))
   next)))))

;;; FIXME: Deal nicer with timestamps.  bitfield field name?
(defun translate-gpgme-subkey-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next bitfield pubkey-algo length keyid fpr timestamp expires)
     value (:struct gpgme-subkey))

 (append (list (list
   :bitfield bitfield
   :pubkey-algo pubkey-algo
   :length length
   :keyid keyid
   :fpr fpr
   :timestamp timestamp
   :expires expires))
   next)))))

(defun translate-gpgme-key-sig-t-from-foreign (value)
 (cond
```

```
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield pubkey-algo keyid timestamp expires status
   uid name email comment sig-class)
    value (:struct gpgme-key-sig))
  (append (list (list
  :bitfield bitfield
  :pubkey-algo pubkey-algo
  :keyid keyid
  :timestamp timestamp
  :expires expires
  :status status
  :uid uid
  :name name
  :email email
  :comment comment
  :sig-class sig-class))
  next)))))

(defun translate-gpgme-user-id-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield validity uid name email comment signatures)
    value (:struct gpgme-user-id))
  (append (list (list
  :bitfield bitfield
  :validity validity
  :uid uid
  :name
 name
  :email email
  :comment comment
  :signatures signatures))
  next)))))

(defun key-data (key)
 (with-slots (c-key) key
  (with-foreign-slots
 ((bitfield protocol issuer-serial issuer-name chain-id
    owner-trust subkeys uids keylist-mode)
  c-key (:struct gpgme-key))
    (list
     :bitfield bitfield
     :protocol protocol
     :issuer-serial issuer-serial
     :issuer-name issuer-name
     :chain-id chain-id
```

```
      :owner-trust owner-trust
      :subkeys subkeys
      :uids uids
      :keylist-mode keylist-mode))
   ))


(defgeneric fpr (key)
 (:documentation "Get the primary fingerprint of the key."))

(defmethod fpr ((key key))
 (getf (car (getf (key-data key) :subkeys)) :fpr))


;;; The context type: Crypto-Operations.

(defgeneric get-key (ctx fpr &optional secret)
 (:documentation "Get the (secret) key FPR from CTX."))

(defmethod get-key ((ctx context) fpr &optional secret)
 (gpgme-get-key ctx fpr secret))

;;; Encrypt.

(defgeneric
 op-encrypt (ctx recp plain cipher &key always-trust sign)
 (:documentation "Encrypt."))

(defmethod op-encrypt ((ctx context) recp plain cipher
        &key always-trust sign)
 (with-foreign-object (c-recp :pointer (+ 1 (length recp)))
   (dotimes (i (length recp))
     (setf (mem-aref c-recp 'gpgme-key-t i) (elt recp i)))
   (setf (mem-aref c-recp :pointer (length recp)) (null-pointer))
   (with-gpgme-data (in plain)
     (with-gpgme-data (out cipher)
 (let ((flags))
   (if always-trust (push :always-trust flags))
   (cond
     (sign
      (c-gpgme-op-encrypt-sign ctx c-recp flags in out)
      (append (c-gpgme-op-encrypt-result ctx)
       (c-gpgme-op-sign-result ctx)))
     (t
      (c-gpgme-op-encrypt ctx c-recp flags in out)
      (c-gpgme-op-encrypt-result ctx))))))))

;;; Decrypt.
```

```
(defgeneric op-decrypt (ctx cipher plain &key verify)
 (:documentation "Decrypt."))

(defmethod op-decrypt ((ctx context) cipher plain &key verify)
 (with-gpgme-data (in cipher)
   (with-gpgme-data
 (out plain)
     (cond
 (verify
  (c-gpgme-op-decrypt-verify ctx in out)
  (append (c-gpgme-op-decrypt-result ctx)
   (c-gpgme-op-verify-result ctx)))
 (t
  (c-gpgme-op-decrypt ctx in out)
  (c-gpgme-op-decrypt-result ctx))))))

;;; Signing.

(defgeneric op-sign (ctx plain sig &optional mode)
 (:documentation "Sign."))

(defmethod op-sign ((ctx context) plain sig &optional (mode :none))
 (with-gpgme-data (in plain)
   (with-gpgme-data (out sig)
     (c-gpgme-op-sign ctx in out mode)
     (c-gpgme-op-sign-result ctx))))

;;; Verify.

(defgeneric op-verify (ctx sig text &key detached)
 (:documentation "Verify."))

(defmethod op-verify ((ctx context) sig text &key detached)
 (with-gpgme-data (in sig)
   (with-gpgme-data (on text)
     (c-gpgme-op-verify ctx in (if detached on nil)
    (if detached nil on))
     (c-gpgme-op-verify-result ctx))))

;;; Import.

(defgeneric op-import (ctx keydata)
 (:documentation "Import."))

(defmethod op-import ((ctx context) keydata)
  (with-gpgme-data (in keydata)
   (c-gpgme-op-import ctx in)
```

```
  (c-gpgme-op-import-result ctx)))

;;; Export.

(defgeneric op-export (ctx pattern keydata)
 (:documentation "Export public key data matching PATTERN to the
                  stream KEYDATA."))

(defmethod op-export ((ctx context) pattern keydata)
 (with-gpgme-data (dh keydata)
  (c-gpgme-op-export ctx pattern 0 dh)))

;;; Key generation.



;;;
;;; Initialization
;;;

(defun check-version (&optional req-version)
 "Check that the GPGME version requirement is satisfied."
 (gpgme-check-version req-version))

(defparameter *version* (check-version)
 "The version number of GPGME used.")
# -*- mode: org -*-
#+TITLE: A Short History of the GPGME bindings for Python
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}

* Overview
 :PROPERTIES:
 :CUSTOM_ID: overview
 :END:

| Version:        | 0.0.1                                |
| GPGME Version:  | 1.13.0                               |
| Author:         | Ben McGinnes <ben@gnupg.org>         |
| Author GPG Key: | DB4724E6FA4286C92B4E55C4321E4E2373590E5D |
| Language:       | Australian English, British English  |
| xml:lang:       | en-AU, en-GB, en                     |

The GPGME Python bindings passed through many hands and numerous
phases before, after a fifteen year journey, coming full circle to
```

return to the source. This is a short explanation of that journey.

** In the beginning
 :PROPERTIES:
 :CUSTOM_ID: in-the-begining
 :END:

 In 2002 John Goerzen released PyME; Python bindings for the GPGME
 module which utilised the current release of Python of the time and
 SWIG.[fn:1] Shortly after creating it and ensuring it worked he stopped
 supporting it, though he left his work available on his Gopher
 site.

** Keeping the flame alive
 :PROPERTIES:
 :CUSTOM_ID: keeping-the-flame-alive
 :END:

 A couple of years later the project was picked up by Igor Belyi and
 actively developed and maintained by him from 2004 to 2008. Igor's
 whereabouts at the time of this document's creation are unknown,
 but the current authors do hope he is well. We're assuming (or
 hoping) that life did what life does and made continuing untenable.

** Passing the torch
 :PROPERTIES:
 :CUSTOM_ID: passing-the-torch
 :END:

 In 2014 Martin Albrecht wanted to patch a bug in the PyME code and
 discovered the absence of Igor. Following a discussion on the PyME
 mailing list he
became the new maintainer for PyME, releasing
 version 0.9.0 in May of that year. He remains the maintainer of
 the original PyME release in Python 2.6 and 2.7 (available via
 PyPI).

** Coming full circle
 :PROPERTIES:
 :CUSTOM_ID: ouroboros
 :END:

 In 2015 Ben McGinnes approached Martin about a Python 3 version,
 while investigating how complex a task this would be the task ended
 up being completed. A subsequent discussion with Werner Koch led

to the decision to fold the Python 3 port back into the original
GPGME release in the languages subdirectory for non-C bindings
under the module name of =pyme3=.

In 2016 this PyME module was integrated back into the GPGME project
by Justus Winter. During the course of this work Justus adjusted
the port to restore limited support for Python 2, but not as many
minor point releases as the original PyME package supports. During
the course of this integration the package was renamed to more
accurately
reflect its status as a component of GPGME. The =pyme3=
module was renamed to =gpg= and adopted by the upstream GnuPG team.

In 2017 Justus departed G10code and the GnuPG team. Following this
Ben returned to maintain of gpgme Python bindings and continue
building them from that point.

* Relics of the past
:PROPERTIES:
:CUSTOM_ID: relics-past
:END:

There are a few things, in addition to code specific factors, such as
SWIG itself, which are worth noting here.

** The Annoyances of Git
:PROPERTIES:
:CUSTOM_ID: the-annoyances-of-git
:END:

As anyone who has ever worked with git knows, submodules are
horrible way to deal with pretty much anything. In the interests
of avoiding migraines, that was skipped with addition of the PyME
code to GPGME.

Instead the files were added to a subdirectory of the =lang/=
directory, along with a copy of the entire git log up to that point
as a separate file within the =lang/python/docs/= directory.[fn:2]
As the log for PyME is nearly 100KB and the log for GPGME is
approximately 1MB, this would cause considerable bloat, as well as
some confusion, should the two be merged.

Hence the unfortunate, but necessary, step to simply move the
files. A regular repository version has been maintained should it
be possible to implement this better in the future.

** The Perils of PyPI
:PROPERTIES:
:CUSTOM_ID: the-perils-of-pypi
:END:

The early port of the Python 2 =pyme= module as =pyme3= was never added to PyPI while the focus remained on development and testing during 2015 and early 2016. Later in 2016, however, when Justus completed his major integration work and subsequently renamed the module from =pyme3= to =gpg=, some prior releases were also provided through PyPI.

Since these bindings require a matching release of the GPGME libraries in order to function, it was determined that there was little benefit in also providing a copy
through PyPI since anyone
obtaining the GPGME source code would obtain the Python bindings source code at the same time. Whereas there was the potential to sew confusion amongst Python users installing the module from PyPI, only to discover that without the relevant C files, header files or SWIG compiled binaries, the Python module did them little good.

There are only two files on PyPI which might turn up in a search for this module or a sample of its content:

1. gpg (1.8.0) - Python bindings for GPGME GnuPG cryptography library
2. pyme (0.9.0) - Python support for GPGME GnuPG cryptography library

*** GPG 180 - Python bindings for GPGME GnuPG cryptography library
:PROPERTIES:
:CUSTOM_ID: pypi-gpgme-180
:END:

This is the most recent version to reach PyPI and is the version of the official Pyhon bindings which shipped with GPGME 1.8.0. If you have GPGME 1.8.0 installed and /only/ 1.8.0 installed, then it is probably safe to use
this copy from PyPI.

As there have been a lot of changes since the release of GPGME 1.8.0, the GnuPG Project recommends not using this version of the module and instead installing the current version of GPGME along with the Python bindings included with that package.

*** PyME 090 - Python support for GPGME GnuPG cryptography library
:PROPERTIES:
:CUSTOM_ID: pypi-gpgme-90

:END:

This is the last release of the PyME bindings maintained by Martin Albrecht and is only compatible with Python 2, it will not work with Python 3. This is the version of the software from which the port from Python 2 to Python 3 code was made in 2015.

Users of the more recent Python bindings will recognise numerous points of similarity, but also significant differences. It is likely that the more recent official bindings will feel "more pythonic."

For those using Python 2, there is essentially no harm in using this module, but it may lack
a number of more recent features
added to GPGME.

* Footnotes

[fn:1] In all likelihood this would have been Python 2.2 or possibly Python 2.3.

[fn:2] The entire PyME git log and other preceding VCS logs are located in the =gpgme/lang/python/docs/old-commits.log= file.
HACKING -*- org -*-
#+TITLE: Hacking notes for GPGME
#+STARTUP: showall

* How to contribute
** No more ChangeLog files

Do not modify any of the ChangeLog files in GPGME. Starting on December 1st, 2011 we put change information only in the GIT commit log, and generate a top-level ChangeLog file from logs at "make dist" time. As such, there are strict requirements on the form of the commit log messages. The old ChangeLog files have all be renamed to ChangeLog-2011

** Commit log requirements

Your commit log should always start with a one-line summary, the second line should be blank, and the remaining lines are usually ChangeLog-style entries for all affected files. However, it's fine -- even recommended -- to write a few lines of prose describing the change, when the summary and ChangeLog entries don't give enough of the big picture. Omit the leading TABs that you're used to seeing

in a "real" ChangeLog
file, but keep the maximum line length at 72
or smaller, so that the generated ChangeLog lines, each with its
leading TAB, will not exceed 80 columns. If you want to add text
which shall not be copied to the ChangeLog, separate it by a line
consisting of two dashes at the begin of a line.

Note that ./autogen.sh installs a git hook to do some basic syntax
checking on the commit log message.

Typo fixes and documentation updates don't need a ChangeLog entry;
thus you would use a commit message like

#+begin_example
Fix typo in a comment

--
#+end_example

The marker line here is important; without it the first line would
appear in the ChangeLog.

If you exceptionally need to have longer lines in a commit log you may
do this after this scissor line:
#+begin_example
------------------------ >8 ------------------------
#+end_example
(hash, blank, 24 dashes, blank, scissor, blank, 24 dashes).
Note that such a comment will be removed if the
git commit option
=--cleanup-scissor= is used.

** License policy

GPGME is currently licensed under the LGPLv2.1+ with tools and the
manual being under the GPLv3+. We may eventually update to a newer
version of the licenses or a combination of them. It is thus
important, that all contributed code allows for an update of the
license; for example we can't accept code under the LGPLv2(only).

If you want to contribute code or documentation to GPGME you are
asked to assert that the contribution is in accordance to the "GPGME
Developer's Certificate of Origin" as found in the file "DCO".
Except for a slight wording change, this DCO is identical to the one
used by the Linux kernel. Please take these simple steps:

- Decide which mail address you want to use. Please have your real
  name in the address and not a pseudonym. Anonymous contributions

can only be done if you find a proxy who certifies for you.

- If your employer or school might claim ownership
of code written
by you; you need to talk to them to make sure that you have the
right to contribute under the DCO.

- Send an OpenPGP signed mail to the gnupg-devel@gnupg.org public
mailing list from your mail address. Include a copy of the DCO as
found in the official master branch. Insert your name and email
address into the DCO in the same way you want to use it later.
Example:

Signed-off-by: Joe R. Hacker <joe@example.org>

If you need it, you may perform simple transformations on the mail
address: Replacing "@" by " at " or "." by " dot ".)

- That's it. From now on you only need to add a "Signed-off-by:"
line with your name and mail address to the GIT commit message.
It is recommended to send the patches using a PGP/MIME signed
mail.

** Coding standards

Please follow the GNU coding standards. If you are in doubt consult
the existing code as an example. Do no re-indent code without a
need. If you really need to
do it, use a separate commit for such a
change.

- C99 syntax should not be used; stick to C90.
- Please do not use C++ =//= style comments.
- Try to fit lines into 80 columns.
- Ignore signed/unsigned pointer mismatches
- No arithmetic on void pointers; cast to char* first.

** Commit log keywords

- GnuPG-bug-id :: Values are comma or space delimited bug numbers
from bug.gnupg.org pertaining to this commit.
- Debian-bug-id :: Same as above but from the Debian bug tracker.
- CVE-id :: CVE id number pertaining to this commit.
- Regression-due-to :: Commit id of the regression fixed by this commit.
- Fixes-commit :: Commit id this commit fixes.
- Reported-by :: Value is a name or mail address of a bug reporte.
- Suggested-by :: Value is a name or mail address of someone how
suggested this change.

- Co-authored-by :: Name or mail address of a co-author
- Some-comments-by :: Name or mail address of the author of

additional comments (commit log or code).
- Proofread-by :: Sometimes used by translation commits.
- Signed-off-by :: Name or mail address of the developer

* Debug hints

- Use gpgme-tool for manual tests.
- The envvar GPGME_DEBUG enables debugging; see debug.[ch] for
  details.

Configuration files may go here. Note that config.h.in is
auto-generated so that this file is not in git.

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-04-06 Werner Koch <wk@g10code.com>

* gpg-error.m4: Update from current libgpg-error repo.

2010-05-07 Werner Koch <wk@g10code.com>

* libassuan.m4: Update from libassuan svn.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* libassuan.m4: Fix LIBASSUAN_VERSION.

2006-06-08 Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Add --all to pth-config invocation.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Fix code generation (required for Max OS X).
Submitted by Emanuele Giaquinta <exg@gentoo.org>.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* glib-2.0.m4: New file.

2004-12-28 Werner Koch <wk@g10code.com>

* pth.m4: Changed quoting for use with automake 1.9.

2004-09-14
Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Disable _ac_pth_line, and don't fail if Pth is not
found.

* glibc21.m4: New file.
* gpg-error.m4: New file.
* pth.m4: New file.

Copyright (C) 2004, 2005, 2009, 2010, 2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
1.15.1
GPGME Developer's Certificate of Origin. Version 1.0
==========

By making a contribution to the GPGME project, I certify that:

(a) The contribution was created in whole or in part by me and I
have the right to submit it under the free software license
indicated in the file; or

(b) The contribution is based upon previous work that, to the
best of my knowledge, is covered under an appropriate free
software license and I have the right under that license to
submit that work with modifications, whether created in whole
or in part by me, under the same free software license
(unless I am permitted to submit under a different license),
as indicated in the file; or

(c) The contribution was provided directly to me by some other
person who certified (a), (b) or (c) and I have not modified
it.

(d) I understand and agree that this project and the contribution
are public and that a record of the contribution
(including
all personal information I submit with it, including my

sign-off) is maintained indefinitely and may be redistributed
consistent with this project or the free software license(s)
involved.

Signed-off-by: [Your name and mail address]
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2008-11-08 Moritz <moritz@gnu.org>

* gpgme.lisp (size-t): Wrong call to defctype: function accepts
optional, not keyword argument.
(ssize-t): Likewise.
(off-t): Likewise.
(gpgme-data-t, gpgme-ctx-t): Likewise.
(gpgme-error-t): Likewise.
(gpgme-error-no-signal-t): Likewise.
(gpgme-err-code-t): Likewise.
(gpgme-err-source-t): Likewise.
(gpgme-sig-notation-t, gpgme-engine-info-t): Likewise.
(gpgme-subkey-t): Likewise.
(gpgme-key-sig-t): Likewise.
(gpgme-user-id-t): Likewise.
(gpgme-key-t): Likewise.
(gpgme-data-cbs-t): Likewise.
(gpgme-invalid-key-t): Likewise.
(gpgme-op-encrypt-result-t): Likewise.
(gpgme-recipient-t): Likewise.
(gpgme-op-decrypt-result-t): Likewise.
(gpgme-new-signature-t):
Likewise.
(gpgme-op-sign-result-t): Likewise.
(gpgme-signature-t): Likewise.
(gpgme-op-verify-result-t): Likewise.
(gpgme-import-status-t): Likewise.
(gpgme-op-import-result-t): Likewise.
(gpgme-op-genkey-result-t): Likewise.
(gpgme-op-keylist-result-t): Likewise.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

* Initial release.

Copyright (C) 2006, 2008 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
000
 *H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0
981029180310Z
011231180310Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0"0
 *H
0
nskvS2r#iA4H|*/
:Sd;v
tD}L+~IWWD|eP&qH)
!1\p%,1.tIsmnQ,g-W)@\(t<kvm5j(d)9M_KGQJ0:qTE 00 `HB0) `HBhttps://mystic.pca.dfn.de/0A
`HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html08 `HB
+)The DFN Top Level Certification Authority0! `HBcgi/check-rev.cgi?0 `HB
dfnpca.crl0U00U0
 *H
`^[:8\e7*%QC?:/JVgwPUB
OgGqjGVxl50%<`Pb18 z;t~r0U<A%3#l'8b"<iX"V!k"*Q8&hAPI"3 00KUb&Qq'46_{D[JZ!i<=T
/OF
-*- mode: org -*-
#+TITLE: What Was New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* What Was New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:

| Version: | 0.0.1 |

GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

The following are all the past /What's New/ sections for the Python
Bindings HOWTO and other documentation.

** What Was New in GPGME 1120
:PROPERTIES:

:CUSTOM_ID: gpgme-1-12-0
:END:

The most obviously new point for those reading this guide is this
section on other new things, but thats hardly important. Not given
all the other things which spurred the need for adding this section
and its subsections.

*** New in GPGME 1120
:PROPERTIES:
:CUSTOM_ID: new-stuff-1-12-0
:END:

There have been quite a number of additions to GPGME and the Python
bindings to it since the last release of GPGME with versions 1.11.0
and 1.11.1 in April, 2018.

The bullet points of new additiions are:

- an expanded section on [[file:gpgme-python-howto#installation][installing]] and [[file:gpgme-python-howto#snafu][troubleshooting]] the Python
bindings.
- The release of Python 3.7.0; which appears to be working just fine
with our bindings, in spite of intermittent reports of problems for
many other Python projects with that new release.
- Python 3.7 has been moved to the head of the specified python
versions list in the build process.
- In
order to fix some other issues, there are certain underlying
functions which are more exposed through the [[file:gpgme-python-howto#howto-get-context][gpg.Context()]], but
ongoing documentation ought to clarify that or otherwise provide the
best means of using the bindings. Some additions to =gpg.core= and
the =Context()=, however, were intended (see below).
- Continuing work in identifying and confirming the cause of

oft-reported [[file:gpgme-python-howto#snafu-runtime-not-funtime][problems installing the Python bindings on Windows]].
- GSOC: Google's Surreptitiously Ordered Conscription ... erm ... oh,
right; Google's Summer of Code. Though there were two hopeful
candidates this year; only one ended up involved with the GnuPG
Project directly, the other concentrated on an unrelated third party
project with closer ties to one of the GNU/Linux distributions than
to the GnuPG Project. Thus the Python bindings benefited from GSOC
participant Jacob Adams, who added
the key_import function; building
on prior work by Tobias Mueller.
- Several new methods functions were added to the gpg.Context(),
including: [[file:gpgme-python-howto#howto-import-key][key_import]], [[file:gpgme-python-howto#howto-export-key][key_export]], [[file:gpgme-python-howto#howto-export-public-key][key_export_minimal]] and
[[file:gpgme-python-howto#howto-export-secret-key][key_export_secret]].
- Importing and exporting examples include versions integrated with
Marcel Fest's recently released [[https://github.com/Selfnet/hkp4py][HKP for Python]] module. Some
[[file:gpgme-python-howto#hkp4py][additional notes on this module]] are included at the end of the HOWTO.
- Instructions for dealing with semi-walled garden implementations
like ProtonMail are also included. This is intended to make things
a little easier when communicating with users of ProtonMail's
services and should not be construed as an endorsement of said
service. The GnuPG Project neither favours,
nor disfavours
ProtonMail and the majority of this deals with interacting with the
ProtonMail keyserver.
- Semi-formalised the location where [[file:gpgme-python-howto#draft-editions][draft versions]] of this HOWTO may
periodically be accessible. This is both for the reference of
others and testing the publishing of the document itself. Renamed
this file at around the same time.
- The Texinfo documentation build configuration has been replicated
from the parent project in order to make to maintain consistency
with that project (and actually ship with each release).
- a reStructuredText (=.rst=) version is also generated for Python
developers more used to and comfortable with that format as it is
the standard Python documentation format and Python developers may
wish to use it with Sphinx. Please note that there has been no
testing of the reStructuredText version with Sphinx at all. The
reST file was generated by the simple expedient of using [[https://pandoc.org/][Pandoc]].
-
Added a new section for [[file:gpgme-python-howto#advanced-use][advanced or experimental use]].
- Began the advanced use cases with [[file:gpgme-python-howto#cython][a section]] on using the module with
[[https://cython.org/][Cython]].
- Added a number of new scripts to the =example/howto/= directory;
some of which may be in advance of their planned sections of the
HOWTO (and some are just there because it seemed like a good idea at
the time).

- Cleaned up a lot of things under the hood.
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme).   Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: UI Server Decrypt, Next: UI Server Verify, Prev: UI Server Sign, Up: UI Server Protocol

A.3 UI Server: Decrypt a Message

Decryption may include the verification of OpenPGP messages. This is
due to the often used combined signing/encryption modus of OpenPGP. The
client may pass an option

to the server to inhibit the signature
verification. The following two commands are required to set the input
and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be decrypted to N. The
message send to the server is either binary encoded or in the
case of OpenPGP ASCII armored. For details on the file
descriptor, see the description of INPUT in the ENCRYPT
section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is
binary encoded. For details on the file descriptor, see the
description of INPUT in the ENCRYPT section.

The decryption is started with the command:

-- Command: DECRYPT --protocol=NAME [--no-verify]
[--export-session-key]
NAME is the encryption protocol used for the message. For a
description of the allowed protocols see the ENCRYPT command.
This argument is mandatory. If the option --no-verify is given,
the server
should not try to verify a signature, in case the input
data is an OpenPGP combined message. If the option
--export-session-key is given and the underlying engine knows how
to export the session key, it will appear on a status line

File: gpgme.info, Node: UI Server Verify, Next: UI Server Set Input Files, Prev: UI Server Decrypt, Up: UI Server Protocol

A.4 UI Server: Verify a Message
==========

The server needs to support the verification of opaque signatures as
well as detached signatures. The kind of input sources controls what
kind message is to be verified.

-- Command: MESSAGE FD=N
This command is used with detached signatures to set the file
descriptor for the signed data to N. The data is binary encoded
(used verbatim). For details on the file descriptor, see the
description of INPUT in the ENCRYPT section.

-- Command: INPUT FD=N
Set the file descriptor for the opaque message or the signature

part
of a detached signature to N. The message send to the server
is either binary encoded or in the case of OpenPGP ASCII
armored. For details on the file descriptor, see the description
of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is
binary encoded and only used for opaque signatures. For details on
the file descriptor, see the description of INPUT in the
ENCRYPT section.

The verification is then started using:

-- Command: VERIFY --protocol=NAME [--silent]
NAME is the signing protocol used for the message. For a
description of the allowed protocols see the ENCRYPT command.
This argument is mandatory. Depending on the combination of
MESSAGE INPUT and OUTPUT commands, the server needs to select
the appropriate verification mode:

MESSAGE and INPUT
This indicates a detached signature. Output data is not
applicable.

INPUT
This indicates an opaque signature. As no output command has
been given, the server is only required to check the
signature.
INPUT and OUTPUT
This indicates an opaque signature. The server shall write
the signed data to the file descriptor set by the output
command. This data shall even be written if the signatures
cant be verified.

With --silent the server shall not display any dialog; this is for
example used by the client to get the content of opaque signed messages.
The client expects the server to send at least this status information
before the final OK response:

-- Status line: SIGSTATUS FLAG DISPLAYSTRING
Returns the status for the signature and a short string explaining
the status. Valid values for FLAG are:

none
The message has a signature but it could not not be verified
due to a missing key.
green

The signature is fully valid.

yellow
The signature is valid but additional information was shown
regarding the validity of the key.

red
The signature is not valid.

DISPLAYSTRING is a percent-and-plus-encoded string with a short
human readable description of the status. For example

S SIGSTATUS green Good+signature+from+Keith+Moon+<keith@example.net>

Note that this string needs to fit into an Assuan line and should
be short enough to be displayed as short one-liner on the clients
window. As usual the encoding of this string is UTF-8 and it
should be send in its translated form.

The server shall send one status line for every signature found on
the message.

File: gpgme.info, Node: UI Server Set Input Files, Next: UI Server Sign/Encrypt Files, Prev: UI Server Verify, Up: UI Server Protocol

A.5 UI Server: Specifying the input files to operate on.
==========

All file related UI
server commands operate on a number of input files
or directories, specified by one or more FILE commands:

-- Command: FILE [--clear] NAME
Add the file or directory NAME to the list of pathnames to be
processed by the server. The parameter NAME must be an absolute
path name (including the drive letter) and is percent espaced (in
particular, the characters %, = and white space characters are
always escaped). If the option --clear is given, the list of
files is cleared before adding NAME.

Historical note: The original spec did not define --clear but the
keyword --continued after the file name to indicate that more
files are to be expected. However, this has never been used and
thus removed from the specs.

File: gpgme.info, Node: UI Server Sign/Encrypt Files, Next: UI Server Verify/Decrypt Files, Prev: UI Server Set Input Files, Up: UI Server Protocol

A.6 UI Server: Encrypting and signing files.
==========

First,
 the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: ENCRYPT_FILES --nohup
-- Command: SIGN_FILES --nohup
-- Command: ENCRYPT_SIGN_FILES --nohup
   Request that the files specified by FILE are encrypted and/or
   signed. The command selects the default action. The UI server may
   allow the user to change this default afterwards interactively, and
   even abort the operation or complete it only on some of the
   selected files and directories.

   What it means to encrypt or sign a file or directory is specific to
   the preferences of the user, the functionality the UI server
   provides, and the selected protocol. Typically, for each input
   file a new file is created under the original filename plus a
   protocol specific extension (like .gpg or .sig), which contain
   the encrypted/signed file or a detached signature. For
   directories, the server may offer
 multiple options to the user (for
   example ignore or process recursively).

   The ENCRYPT_SIGN_FILES command requests a combined sign and
   encrypt operation. It may not be available for all protocols (for
   example, it is available for OpenPGP but not for CMS).

   The option --nohup is mandatory. It is currently unspecified
   what should happen if --nohup is not present. Because --nohup
   is present, the server always returns OK promptly, and completes
   the operation asynchronously.

File: gpgme.info, Node: UI Server Verify/Decrypt Files, Next: UI Server Import/Export Keys, Prev: UI Server Sign/Encrypt Files, Up: UI Server Protocol

A.7 UI Server: Decrypting and verifying files.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: DECRYPT_FILES --nohup
-- Command: VERIFY_FILES --nohup

-- Command: DECRYPT_VERIFY_FILES
--nohup
Request that the files specified by FILE are decrypted and/or verified. The command selects the default action. The UI server may allow the user to change this default afterwards interactively, and even abort the operation or complete it only on some of the selected files and directories.

What it means to decrypt or verify a file or directory is specific to the preferences of the user, the functionality the UI server provides, and the selected protocol. Typically, for decryption, a new file is created for each input file under the original filename minus a protocol specific extension (like .gpg) which contains the original plaintext. For verification a status is displayed for each signed input file, indicating if it is signed, and if yes, if the signature is valid. For files that are signed and encrypted, the VERIFY command transiently decrypts the file to verify the enclosed signature. For directories,
the server may offer multiple
options to the user (for example ignore or process recursively).

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: UI Server Import/Export Keys, Next: UI Server Checksum Files, Prev: UI Server Verify/Decrypt Files, Up: UI Server Protocol

A.8 UI Server: Managing certificates.
==========

First, the input files need to be specified by one or more FILE commands. Afterwards, the actual operation is requested:

-- Command: IMPORT_FILES --nohup
Request that the certificates contained in the files specified by FILE are imported into the local certificate databases.

For directories, the server may offer multiple options to the user (for example ignore or process recursively).

The
option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

FIXME: It may be nice to support an EXPORT command as well, which
is enabled by the context menu of the background of a directory.

File: gpgme.info, Node: UI Server Checksum Files, Next: Miscellaneous UI Server Commands, Prev: UI Server Import/Export Keys, Up: UI Server Protocol

A.9 UI Server: Create and verify checksums for files.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: CHECKSUM_CREATE_FILES --nohup
Request that checksums are created for the files specified by
FILE. The choice of checksum algorithm and the destination
storage and format for the created checksums depend on the

preferences of the user and the functionality provided by the UI
server. For directories, the server may offer multiple options to
the user (for example ignore or process recursively).

The option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup
is present, the server always returns OK promptly, and completes
the operation asynchronously.

-- Command: CHECKSUM_VERIFY_FILES --nohup
Request that checksums are created for the files specified by
FILE and verified against previously created and stored
checksums. The choice of checksum algorithm and the source storage
and format for previously created checksums depend on the
preferences of the user and the functionality provided by the UI
server. For directories, the server may offer multiple options to
the user (for example ignore or process recursively).

If the source storage of previously created checksums
is available
to the user through the Windows shell, this command may also accept
such checksum files as FILE arguments. In this case, the UI
server should instead verify the checksum of the referenced files
as if they were given as INPUT files.

The option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup
is present, the server always returns OK promptly, and completes
the operation asynchronously.

File: gpgme.info, Node: Miscellaneous UI Server Commands, Prev: UI Server Checksum Files, Up: UI Server Protocol

A.10 Miscellaneous UI Server Commands

The server needs to implement the following commands which are not related to a specific command:

-- Command: GETINFO WHAT
   This is a multi purpose command, commonly used to return a variety of information. The required subcommands as described by the WHAT parameter are:

   pid
      Return the process id of the server in decimal notation using an Assuan data line.

To allow the server to pop up the windows in the correct relation to the client, the client is advised to tell the server by sending the option:

-- Command option: window-id NUMBER
   The NUMBER represents the native window ID of the clients current window. On Windows systems this is a windows handle (HWND) and on X11 systems it is the X Window ID. The number needs to be given as a hexadecimal value so that it is easier to convey pointer values (e.g. HWND).

A client may want to fire up the certificate manager of the server. To do this it uses the Assuan command:

-- Command: START_KEYMANAGER
   The server shall pop up the main window of the key manager (aka certificate manager). The client expects that the key manager is brought into the foregound and that this command immediately returns (does not wait until the key manager has
been fully brought
   up).

A client may want to fire up the configuration dialog of the server. To do this it uses the Assuan command:

-- Command: START_CONFDIALOG
   The server shall pop up its configuration dialog. The client expects that this dialog is brought into the foregound and that this command immediately returns (i.e. it does not wait until the

dialog has been fully brought up).

When doing an operation on a mail, it is useful to let the server know the address of the sender:

-- Command: SENDER [--info] [--protocol=NAME] EMAIL
EMAIL is the plain ASCII encoded address ("addr-spec" as per RFC-2822) enclosed in angle brackets. The address set with this command is valid until a successful completion of the operation or until a RESET command. A second command overrides the effect of the first one; if EMAIL is not given and --info is not used, the server shall use the default signing key.

If option --info is not given, the server shall also suggest a protocol to use for signing. The client may use this suggested protocol on its own discretion. The same status line as with PREP_ENCRYPT is used for this.

The option --protocol may be used to give the server a hint on which signing protocol should be preferred.

To allow the UI-server to visually identify a running operation or to associate operations the server MAY support the command:

-- Command: SESSION NUMBER [STRING]
The NUMBER is an arbitrary value, a server may use to associate simultaneous running sessions. It is a 32 bit unsigned integer with 0 as a special value indicating that no session association shall be done.

If STRING is given, the server may use this as the title of a window or, in the case of an email operation, to extract the senders address. The string may contain spaces; thus no plus-escaping is used.

This command may be used at any time and overrides the effect of the last command. A RESET undoes the effect of this command.

File: gpgme.info, Node: Debugging, Next: Deprecated Functions, Prev: UI Server Protocol, Up: Top

Appendix B How to solve problems

Everyone knows that software often does not do what it should do and thus there is a need to track down problems. This is in particular true

for applications using a complex library like GPGME and of course also for the library itself. Here we give a few hints on how to solve such problems.

First of all you should make sure that the keys you want to use are installed in the GnuPG engine and are usable. Thus the first test is to run the desired operation using gpg or gpgsm on the command line. If you cant figure out why things dont work, you may use GPGMEs built in trace feature. This feature is either enabled using the environment variable GPGME_DEBUG or, if this is not possible, by calling the function gpgme_set_global_flag. The value is the trace level and an optional file name. If no file name is given the trace output is printed to stderr.

For example

```
GPGME_DEBUG=9:/home/user/mygpgme.log
```

(Note that under Windows you use a semicolon in place of the colon to separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start off with a lower level. The exact definition of the trace levels and the output format may change with any release; you need to check the source code for details. In any case the trace log should be helpful to understand what is going going on. Warning: The trace log may reveal sensitive details like passphrases or other data you use in your application. If you are asked to send a log file, make sure that you run your tests only with play data.

Appendix C Deprecated Functions

For backward compatibility GPGME has a number of functions, data types and constants which are deprecated and should not be used anymore. We document here those which are really old to help understanding old code and to allow migration to their modern counterparts.

Warning: These interfaces will be removed in a future version of GPGME.

-- Function: void gpgme_key_release (gpgme_key_t KEY)
The function gpgme_key_release is equivalent to gpgme_key_unref.

-- Function: gpgme_error_t gpgme_op_import_ext (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA, int *NR)
SINCE: 0.3.9

The function gpgme_op_import_ext is equivalent to:

```
gpgme_error_t err = gpgme_op_import (ctx, keydata);
if (!err)
  {
    gpgme_import_result_t result = gpgme_op_import_result (ctx);
    *nr = result->considered;
  }
```

-- Data type: gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE,
gpgme_status_code_t STATUS, const char *ARGS, int FD)
The gpgme_edit_cb_t
type is the type of functions which GPGME
calls if it a key edit operation is on-going. The status code
STATUS and the argument line ARGS are passed through by GPGME from
the crypto engine. The file descriptor FD is -1 for normal status
messages. If STATUS indicates a command rather than a status
message, the response to the command should be written to FD. The
HANDLE is provided by the user at start of operation.

The function should return GPG_ERR_FALSE if it did not handle the
status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_edit (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
SINCE: 0.3.9

Note: This function is deprecated, please use gpgme_op_interact
instead.

The function gpgme_op_edit processes the key KEY interactively,
using the edit callback function FNC with the handle HANDLE. The
callback is
invoked for every status and command request from the
crypto engine. The output of the crypto engine is written to the
data object OUT.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by GPGME.

The function returns the error code GPG_ERR_NO_ERROR if the edit
operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY

is not a valid pointer, and any error returned by the crypto engine
or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_edit_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)

SINCE: 0.3.9

Note: This function is deprecated, please use
gpgme_op_interact_start instead.

The function gpgme_op_edit_start initiates a gpgme_op_edit
operation. It can be completed by calling gpgme_wait on
the
context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation was started successfully, and GPG_ERR_INV_VALUE if CTX
or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_card_edit (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
Note: This function is deprecated, please use gpgme_op_interact
with the flag GPGME_INTERACT_CARD instead.

The function gpgme_op_card_edit is analogous to gpgme_op_edit,
but should be used to process the smart card corresponding to the
key KEY.

-- Function: gpgme_error_t gpgme_op_card_edit_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
Note: This function is deprecated, please use
gpgme_op_interact_start with the flag GPGME_INTERACT_CARD
instead.

The function gpgme_op_card_edit_start initiates a

gpgme_op_card_edit operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation was started successfully, and GPG_ERR_INV_VALUE if CTX
or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_data_new_with_read_cb

(gpgme_data_t *DH, int (*READFUNC) (void *HOOK, char *BUFFER,
size_t COUNT, size_t *NREAD), void *HOOK_VALUE)

The function gpgme_data_new_with_read_cb creates a new gpgme_data_t object and uses the callback function READFUNC to retrieve the data on demand. As the callback function can supply the data in any way it wants, this is the most flexible data type GPGME provides. However, it can not be used to write data.

The callback function receives HOOK_VALUE as its first argument whenever it is invoked. It should return up to COUNT bytes in BUFFER, and return the number of bytes actually read in NREAD. It may return 0 in NREAD if no data is currently available. To indicate EOF the function should return with an error code of -1 and set NREAD to 0. The callback function may support to reset its internal read pointer if it is invoked with BUFFER and NREAD being NULL and COUNT being 0.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, GPG_ERR_INV_VALUE if DH or READFUNC is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_rewind (gpgme_data_t DH)

The function gpgme_data_rewind is equivalent to:

```
return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
  ? gpgme_error_from_errno (errno) : 0;
```

-- Data type: gpgme_attr_t

The gpgme_attr_t type is used to specify a key or trust item attribute. The following attributes are defined:

GPGME_ATTR_KEYID
: This is the key ID of a sub key. It is representable as a string.

GPGME_ATTR_FPR
: This is the fingerprint of a sub key. It is representable as a string.

GPGME_ATTR_ALGO
: This is the crypto algorithm for which the sub key can be used. It is representable as a string and as a number. The numbers correspond to the enum gcry_pk_algos values in the gcrypt library.

GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a number.

GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time of a sub key. It is representable as a number.

GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a GPGME_KEY_T object. The first one (with index 0) is the primary user ID. The user ID
is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a string and as a number. See below for a list of available validities.

GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a number, and is 1 if the user ID is revoked, and 0 otherwise.

GPGME_ATTR_UID_INVALID
This specifies if a user ID is invalid. It is representable as a number, and is 1 if the user ID is invalid, and 0 otherwise.

GPGME_ATTR_TYPE
This

returns information about the type of key. For the
string function this will eother be "PGP" or "X.509". The
integer function returns 0 for PGP and 1 for X.509.

GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is
representable as a number, and is 1 if the key is revoked,
and 0 otherwise.

GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable
as a number, and is 1 if the key is revoked, and 0
otherwise.

GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable
as a number, and is 1 if the key is invalid, and 0
otherwise.

GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable
as a number, and is 1 if the key is expired, and 0
otherwise.

GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled. It is
representable
as a number, and is 1 if the key is disabled, and 0
otherwise.

GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is
representable as a string. The string contains the letter e
if the key can be used for encryption, s if the key can be
used for signatures, and c if the key can be used for
certifications.

GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is
representable as a number, and is 1 if the sub key can be
used for encryption, and 0 otherwise.

GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data
signatures. It is representable as a number, and is 1 if
the sub key can be used for signatures, and 0 otherwise.

GPGME_ATTR_CAN_CERTIFY

This specifies if a sub key can be used to create key
certificates. It is representable
as a number, and is 1 if
the sub key can be used for certifications, and 0 otherwise.

GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is
representable as a string.

GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is
representable as a string.

GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification
chain. It is representable as a string.

-- Function: const char * gpgme_key_get_string_attr (gpgme_key_t KEY,
gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_string_attr returns the value of the
string-representable attribute WHAT of key KEY. If the attribute
is an attribute of a sub key or an user ID, IDX specifies the sub
key or user ID of which the attribute value is returned. The
argument RESERVED is reserved for later use and should be NULL.

The string returned is
only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a
string, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

-- Function: unsigned long gpgme_key_get_ulong_attr (gpgme_key_t KEY,
gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_ulong_attr returns the value of the
number-representable attribute WHAT of key KEY. If the attribute
is an attribute of a sub key or an user ID, IDX specifies the sub
key or user ID of which the attribute value is returned. The
argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if the attribute cant be returned as a
number, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

The signatures on a key are only available if the key was retrieved
via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled,
because it is expensive to retrieve

all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a key, you have to make sure that the key was listed with signatures enabled. One convenient, but blocking, way to do this is to use the function gpgme_get_key.

-- Data type: gpgme_attr_t
The gpgme_attr_t type is used to specify a key signature attribute. The following attributes are defined:

GPGME_ATTR_KEYID
This is the key ID of the key which was used for the signature. It is representable as a string.

GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It is representable as a string and as a number. The numbers correspond to the enum gcry_pk_algos values in the gcrypt library.

GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time
of the signature. It is
representable as a number.

GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature.

It is representable as a number, and is 1 if the key is revoked, and 0 otherwise.

GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_STATUS
This is the same value as returned by gpgme_get_sig_status.

-- Function: const char * gpgme_key_sig_get_string_attr (gpgme_key_t KEY, int UID_IDX, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_sig_get_string_attr returns the value of the string-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The string returned is only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Function: unsigned long gpgme_key_sig_get_ulong_attr (gpgme_key_t KEY, int UID_IDX, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_sig_get_ulong_attr returns the value of the number-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Data type: enum gpgme_sig_stat_t
The gpgme_sig_stat_t type holds the result of a signature check, or the combined result of all signatures. The following results are possible:

GPGME_SIG_STAT_NONE
This status should not occur in normal operation.

GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined result this status means that all signatures are valid.

GPGME_SIG_STAT_GOOD_EXP
This status indicates that
the signature is valid but expired.
For the combined result this status means that all signatures are valid and expired.

GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be checked due to missing keys.

GPGME_SIG_STAT_NOSIG
This status indicates that the signature data provided was not a real signature.

GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented the signature verification.

GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures have a different status. You can get each keys status with gpgme_get_sig_status.

-- Function: const char * gpgme_get_sig_status (gpgme_ctx_t CTX, int IDX, gpgme_sig_stat_t *R_STAT, time_t *R_CREATED)
The function gpgme_get_sig_status is equivalent to:

```
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   {
     sig = sig->next;
     idx--;
   }
 if (!sig || idx)
   return NULL;

 if (r_stat)
   {
     switch (gpg_err_code (sig->status))
{
case GPG_ERR_NO_ERROR:
   *r_stat = GPGME_SIG_STAT_GOOD;
  break;

case GPG_ERR_BAD_SIGNATURE:
  *r_stat = GPGME_SIG_STAT_BAD;
  break;

case GPG_ERR_NO_PUBKEY:
  *r_stat = GPGME_SIG_STAT_NOKEY;
  break;

case GPG_ERR_NO_DATA:
  *r_stat = GPGME_SIG_STAT_NOSIG;
  break;

case GPG_ERR_SIG_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXP;
  break;

case GPG_ERR_KEY_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
  break;

default:
  *r_stat = GPGME_SIG_STAT_ERROR;
  break;
}
   }
```

```
        if (r_created)
          *r_created = sig->timestamp;
        return sig->fpr;
```

-- Function: const char * gpgme_get_sig_string_attr (gpgme_ctx_t CTX, int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_string_attr is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;

        result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return NULL;

        switch (what)
          {
          case GPGME_ATTR_FPR:
            return sig->fpr;

          case GPGME_ATTR_ERRTOK:
            if (whatidx == 1)
              return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
            else
          return "";
            default:
              break;
          }

        return NULL;
```

-- Function: const char * gpgme_get_sig_ulong_attr (gpgme_ctx_t CTX, int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_ulong_attr is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;
```

```
result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return 0;

        switch (what)
          {
          case GPGME_ATTR_CREATED:
            return sig->timestamp;

          case GPGME_ATTR_EXPIRE:
            return sig->exp_timestamp;

          case GPGME_ATTR_VALIDITY:
            return (unsigned long) sig->validity;

          case GPGME_ATTR_SIG_STATUS:
            switch (sig->status)
        {
        case GPG_ERR_NO_ERROR:
          return GPGME_SIG_STAT_GOOD;

        case GPG_ERR_BAD_SIGNATURE:
          return GPGME_SIG_STAT_BAD;

        case GPG_ERR_NO_PUBKEY:
          return GPGME_SIG_STAT_NOKEY;

        case GPG_ERR_NO_DATA:
          return GPGME_SIG_STAT_NOSIG;

        case GPG_ERR_SIG_EXPIRED:

      return GPGME_SIG_STAT_GOOD_EXP;

        case GPG_ERR_KEY_EXPIRED:
          return GPGME_SIG_STAT_GOOD_EXPKEY;

        default:
          return GPGME_SIG_STAT_ERROR;
        }
```

```
          case GPGME_ATTR_SIG_SUMMARY:
            return sig->summary;

          default:
            break;
          }
        return 0;
```

-- Function: const char * gpgme_get_sig_key (gpgme_ctx_t CTX, int IDX,
gpgme_key_t *R_KEY)

The function gpgme_get_sig_key is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;

        result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return gpg_error (GPG_ERR_EOF);

        return gpgme_get_key (ctx, sig->fpr, r_key, 0);
```

File: gpgme.info, Node: Library Copying, Next: Copying,
Prev: Deprecated Functions, Up: Top

GNU Lesser General Public License
****

Version 2.1, February 1999

Copyright 1991, 1999 Free Software Foundation, Inc.
59 Temple Place Suite 330, Boston, MA 02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]

Preamble

========

The licenses for most software are designed to take away your freedom to
share and change it. By contrast, the GNU General Public Licenses are
intended to guarantee your freedom to share and change free softwareto
make sure the software is free for all its users.

  This license, the Lesser General Public License, applies to some
specially designated softwaretypically librariesof the
 Free Software
Foundation and other authors who decide to use it. You can use it too,
but we suggest you first think carefully about whether this license or
the ordinary General Public License is the better strategy to use in any
particular case, based on the explanations below.

  When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of it
in new free programs; and that you are informed that you can do these
things.

  To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

  For example,
 if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

  We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

  To protect each distributor, we want to make it very clear that there
is no warranty for the free library. Also, if the library is modified
by someone else and passed on, the recipients should know that what they
have is not the original version, so that the original authors
reputation will not be affected by problems that
 might be introduced by
others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the Lesser General Public License because it does _Less_ to protect the users freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the

users freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a work based on the library and a work that uses the library. The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called this License). Each licensee is addressed as you.

A library means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The Library, below, refers to any such software library or work which has been distributed under these terms. A work based on the Library means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term modification.)

Source code for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Librarys
complete source code as you receive it, in any medium, provided
that you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep
intact all the notices that refer to this License and to the
absence of any warranty; and distribute a copy of this License
along with the Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange
for a fee.

2. You may modify your copy or copies of the Library or any portion of
it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a. The modified work must itself be a software library.

b. You
must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c. You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d. If a facility in the modified Library refers to a function or
a table of data to be supplied by an application program that
uses the facility, other than as an argument passed when the
facility is invoked, then you must make a good faith effort to
ensure that, in the event an application does not supply such
function or table, the facility still operates, and performs
whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots
has a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied
function or table used by this function
must be optional: if the application does not supply it, the
square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the
Library, and can be reasonably considered independent and separate
works in themselves, then this License, and its terms, do not apply
to those sections when you distribute them as separate works. But

when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is
to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so
the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a work that uses the Library. Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a work that uses the Library with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a work that uses the library. The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a work that uses the Library uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the
Library, or if the work is itself a
library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a work that uses the Library with the Library to produce a work containing portions of the Library,
and distribute that work under
terms of your choice, provided that the terms permit modification of the work for the customers own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable work that uses the Library, as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the users computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the work that uses the Library must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally

accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed
under the terms of the
Sections above.

b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or
other property right claims or to contest validity of
any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only
in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and any later version, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries
==========

If
you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of
the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file to most
effectively convey the exclusion of warranty; and each file should have
at least the copyright line and a pointer to where the full notice is
found.

ONE LINE TO GIVE THE LIBRARY'S NAME AND AN IDEA OF WHAT IT DOES.
Copyright (C) YEAR NAME OF AUTHOR

This library is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library
is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307,
USA.

Also add information on how to contact you by electronic and paper
mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a copyright disclaimer for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

SIGNATURE OF TY COON, 1 April 1990
Ty Coon, President of Vice

Thats all there is to it!

File:
gpgme.info, Node: Copying, Next: Concept Index, Prev: Library Copying, Up: Top

GNU General Public License
****

Version 3, 29 June 2007

Copyright 2007 Free Software Foundation, Inc. <https://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

Preamble
========

The GNU General Public License is a free, copyleft license for software
and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a programto make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can
apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know

their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers and authors protection, the GPL clearly explains that there is no warranty for this free software. For both users and authors sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

This License refers to version 3 of the GNU General Public License.

Copyright also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

The Program refers to any copyrightable work licensed under this License. Each licensee is addressed as you. Licensees and recipients may be individuals or organizations.

To modify a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a modified version of the earlier work or a work based on the earlier work.

A covered work means either the unmodified Program or a work based on the Program.

To propagate a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To convey a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays Appropriate Legal Notices to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The source code for a work means the preferred form of the work for making modifications to it. Object code means any non-source form of a work.

A Standard Interface means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The System Libraries of an executable work include anything, other than the work as a whole, that (a) is included in the normal

form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A Major Component, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The Corresponding Source for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the works System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you,

or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the works users, your or third parties legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Programs source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the

terms of section 4, provided that you also meet all of these conditions:

a. The work must carry prominent notices stating that you modified it, and giving a relevant date.

b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to keep intact all notices.

c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an aggregate if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilations users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A User Product is either (1) a consumer product, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for

incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, normally used refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

Installation Information for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

Additional
permissions are terms that supplement the terms of
this License by making exceptions from one or more of its
conditions. Additional permissions that are applicable to the
entire Program shall be treated as though they were included in
this License, to the extent that they are valid under applicable
law. If additional permissions apply only to part of the Program,
that part may be used separately under those permissions, but the
entire Program remains governed by this License without regard to
the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part
of it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material
you add to a covered work, you may (if authorized by the copyright
holders of that material) supplement the terms of this License with
terms:

a. Disclaiming warranty or limiting liability differently from
the terms of sections 15 and 16 of this License; or

b. Requiring preservation of specified reasonable legal notices
or author attributions in that material or in the Appropriate
Legal Notices displayed by works containing it; or

c. Prohibiting misrepresentation of the origin of that material,
or requiring that modified versions of such material be marked
in reasonable ways as different from the original version; or

d. Limiting the use for publicity purposes of names of licensors
or authors of the material; or

e. Declining to grant rights under trademark law for use of some
trade names,
trademarks, or service marks; or

f. Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified
versions of it) with contractual assumptions of liability to
the recipient, for any liability that these contractual
assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered further restrictions within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to
accept this License in order to receive or
run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An entity transaction is a transaction transferring control of an organization, or substantially
all assets of one, or subdividing an
organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the partys predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering
for sale, or importing the Program or any portion
of it.

11. Patents.

A contributor is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based.

The work thus licensed is called the contributors contributor version.

A contributors essential patent claims are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, control includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributors essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a patent license is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To grant such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. Knowingly relying means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipients use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the

patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is discriminatory if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March
2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU

General Public License or any later version applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxys public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA

BEING RENDERED INACCURATE OR LOSSES
SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF
THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely
approximates an absolute waiver of all civil liability in
connection with the Program, unless a warranty or assumption of
liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs
==========

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under
these
terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least the
copyright line and a pointer to where the full notice is found.

ONE LINE TO GIVE THE PROGRAM'S NAME AND A BRIEF IDEA OF WHAT IT DOES.
Copyright (C) YEAR NAME OF AUTHOR

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or (at
your option) any later version.

This program is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License

along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
PROGRAM Copyright (C) YEAR NAME OF AUTHOR
This program comes with ABSOLUTELY NO WARRANTY; for details
type show w.  This is free software, and you are
welcome to redistribute it under certain conditions;
type show c for details.
```

The hypothetical commands show w and show c should show the appropriate parts of the General Public License. Of course, your programs commands might be different; for a GUI interface, you would use an about box.

You should also get your employer (if you work as a programmer) or school, if any, to sign a copyright disclaimer for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read <https://www.gnu.org/philosophy/why-not-lgpl.html>.

Concept Index

[index]

* Menu:

* aborting operations: Cancellation. (line 6)
* algorithms: Algorithms. (line 6)
* algorithms, hash: Hash Algorithms. (line 6)
* algorithms, message digest: Hash Algorithms. (line 6)
* algorithms, public key: Public Key Algorithms. (line 6)
* armor mode: ASCII Armor. (line 6)
*
ASCII armor: ASCII Armor. (line 6)
* ASSUAN: Assuan. (line 6)
* attributes, of a key: Information About Keys.
(line 6)

* auditlog: Additional Logs. (line 6)
* auditlog, of the engine: Additional Logs. (line 6)
* autoconf: Using Automake. (line 6)
* automake: Using Automake. (line 6)
* backend: Protocols and Engines. (line 6)
* callback, passphrase: Passphrase Callback. (line 6)
* callback, progress meter: Progress Meter Callback.
(line 6)
* callback, status message: Status Message Callback.
(line 6)
*
cancelling operations: Cancellation. (line 6)
* canonical text mode: Text Mode. (line 6)
* certificates, included: Included Certificates. (line 6)
* CMS: Cryptographic Message Syntax.
(line 6)
* compiler flags: Building the Source. (line 6)
* compiler options: Building the Source. (line 6)
* configuration of crypto backend: Engine Configuration. (line 6)
* context: Contexts. (line 6)
* context, armor mode: ASCII Armor. (line 6)
* context, attributes: Context Attributes. (line 6)
* context, configuring engine: Crypto Engine. (line 6)
* context, creation: Creating Contexts. (line 6)
* context, destruction: Destroying Contexts.
(line 6)
* context, offline mode: Offline Mode. (line 6)
* context, pinentry mode: Pinentry Mode. (line 6)
* context, result of operation: Result Management. (line 6)
* context, selecting protocol: Protocol Selection. (line 6)
* context, sender: Setting the Sender. (line 6)
* context, text mode: Text Mode. (line 6)
* crypto backend: Protocols and Engines. (line 6)
* crypto engine: Protocols and Engines. (line 6)
* cryptographic message syntax: Cryptographic Message Syntax.
(line 6)
* cryptographic operation: Crypto Operations. (line 6)
* cryptographic operation, aborting: Cancellation. (line 6)
* cryptographic operation, cancelling: Cancellation. (line 6)
* cryptographic operation, decryption:
Decrypt. (line 6)
* cryptographic operation, decryption and verification: Decrypt and Verify.
(line 6)
* cryptographic operation, encryption: Encrypt. (line 6)
* cryptographic operation, running: Run Control. (line 6)
* cryptographic operation, signature check: Verify. (line 6)
* cryptographic operation, signing: Sign. (line 6)
* cryptographic operation, verification: Verify. (line 6)

* cryptographic operation, wait for: Waiting For Completion.
(line 6)
* data buffer, convenience: Data Buffer Convenience.
(line 6)
* data buffer, creation: Creating Data Buffers. (line 6)
* data buffer, destruction: Destroying Data Buffers.

(line 6)
* data buffer, encoding: Data Buffer Meta-Data. (line 6)
* data buffer, file name: Data Buffer Meta-Data. (line 6)
* data buffer, I/O operations: Data Buffer I/O Operations.
(line 6)
* data buffer, manipulation: Manipulating Data Buffers.
(line 6)
* data buffer, meta-data: Data Buffer Meta-Data. (line 6)
* data buffer, read: Data Buffer I/O Operations.
(line 6)
* data buffer, seek: Data Buffer I/O Operations.
(line 6)
* data buffer, write: Data Buffer I/O Operations.
(line 6)
* data, exchanging:
Exchanging Data. (line 6)
* debug: Debugging. (line 6)
* decryption: Decrypt. (line 6)
* decryption and verification: Decrypt and Verify. (line 6)
* deprecated: Deprecated Functions. (line 6)
* encryption: Encrypt. (line 6)
* engine: Protocols and Engines. (line 6)
* engine, ASSUAN: Assuan. (line 6)
* engine, configuration of: Engine Configuration. (line 6)
* engine, configuration per context: Crypto Engine. (line 6)
* engine, GnuPG: OpenPGP. (line 6)
* engine, GpgSM: Cryptographic Message Syntax.
(line 6)
* engine, information about: Engine Information. (line 6)
* error codes:
Error Values. (line 6)
* error codes, list of: Error Sources. (line 6)
* error codes, list of <1>: Error Codes. (line 6)
* error codes, printing of: Error Strings. (line 6)
* error handling: Error Handling. (line 6)
* error sources: Error Values. (line 6)
* error sources, printing of: Error Strings. (line 6)
* error strings: Error Strings. (line 6)
* error values: Error Values. (line 6)
* error values, printing of: Error Strings. (line 6)
* event loop, external: Using External Event Loops.

(line 6)
* flags, of a context: Context Flags. (line 6)
* From:: Setting the Sender.
(line 6)
* GDK, using GPGME with: I/O Callback Example GDK.
(line 6)
* GnuPG: OpenPGP. (line 6)
* GPGME_DEBUG: Debugging. (line 6)
* GpgSM: Cryptographic Message Syntax.
(line 6)
* GTK+, using GPGME with: I/O Callback Example GTK+.
(line 6)
* hash algorithms: Hash Algorithms. (line 6)
* header file: Header. (line 6)
* identify: Data Buffer Convenience.
(line 6)
* include file: Header. (line 6)
* key listing: Listing Keys.
(line 6)
* key listing mode: Key Listing Mode. (line 6)
* key listing, mode of: Key Listing Mode. (line 6)
* key listing, start: Listing Keys. (line 6)
* key management: Key Management. (line 6)
* key ring, add: Generating Keys. (line 6)
* key ring, delete from: Deleting Keys. (line 6)
* key ring, export from: Exporting Keys. (line 6)
* key ring, import to: Importing Keys. (line 6)
* key ring, list: Listing Keys. (line 6)
* key ring, search: Listing Keys. (line 6)
* key, attributes: Information About Keys.
(line 6)
* key, creation: Generating Keys. (line 6)
* key, delete: Deleting
Keys. (line 6)
* key, edit: Advanced Key Editing. (line 6)
* key, export: Exporting Keys. (line 6)
* key, import: Importing Keys. (line 6)
* key, information about: Information About Keys.
(line 6)
* key, manipulation: Manipulating Keys. (line 6)
* key, signing: Signing Keys. (line 6)
* largefile support: Largefile Support (LFS).
(line 6)
* LFS: Largefile Support (LFS).
(line 6)
* LGPL, GNU Lesser General Public License: Library Copying. (line 6)
* libtool: Using Libtool. (line 6)
* listing keys: Listing

Keys. (line 6)
* locale, default: Locale. (line 6)
* locale, of a context: Locale. (line 6)
* message digest algorithms: Hash Algorithms. (line 6)
* multi-threading: Multi-Threading. (line 6)
* notation data: Verify. (line 6)
* notation data <1>: Signature Notation Data.
(line 6)
* offline mode: Offline Mode. (line 6)
* OpenPGP: OpenPGP. (line 6)
* passphrase callback: Passphrase Callback. (line 6)
* passphrase, change: Changing Passphrases. (line 6)
* pinentry mode: Pinentry Mode. (line 6)
* policy URL: Signature Notation Data.
(line 6)
* progress meter callback: Progress Meter Callback.
(line 6)
* protocol: Protocols and Engines. (line 6)
* protocol, ASSUAN: Assuan. (line 6)
* protocol, CMS: Cryptographic Message Syntax.
(line 6)
* protocol, GnuPG: OpenPGP. (line 6)
* protocol, S/MIME: Cryptographic Message Syntax.
(line 6)
* protocol, selecting: Protocol Selection. (line 6)
* public key algorithms: Public Key Algorithms. (line 6)
* Qt, using GPGME with: I/O Callback Example Qt.
(line 6)
* run control:
Run Control. (line 6)
* S/MIME: Cryptographic Message Syntax.
(line 6)
* sender: Setting the Sender. (line 6)
* sign: Sign. (line 6)
* signal handling: Signal Handling. (line 6)
* signals: Signal Handling. (line 6)
* signature check: Decrypt and Verify. (line 6)
* signature notation data: Verify. (line 6)
* signature notation data <1>: Signature Notation Data.
(line 6)
* signature, creation: Sign. (line 6)
* signature, selecting signers: Selecting Signers. (line 6)
* signature, verification: Verify. (line 6)
* signers, selecting:
Selecting Signers. (line 6)
* status message callback: Status Message Callback.
(line 6)

* text mode: Text Mode. (line 6)
* thread-safeness: Multi-Threading. (line 6)
* type of data: Data Buffer Convenience.
(line 6)
* UI server: UI Server Protocol. (line 6)
* user interface server: UI Server Protocol. (line 6)
* validity, TOFU: Changing TOFU Data. (line 6)
* verification: Verify. (line 6)
* verification and decryption: Decrypt and Verify. (line 6)
* version check, of the engines: Engine Version Check. (line 6)
* version check, of the library: Library Version Check. (line 6)
* wait for completion:
Waiting For Completion.
(line 6)

File: gpgme.info, Node: Function and Data Index, Prev: Concept Index, Up: Top

Function and Data Index
****

[index]
* Menu:

* AM_PATH_GPGME: Using Automake. (line 11)
* AM_PATH_GPGME_PTH: Using Automake. (line 13)
* AM_PATH_GPGME_PTHREAD: Using Automake. (line 15)
* CHECKSUM_CREATE_FILES: UI Server Checksum Files.
(line 9)
* CHECKSUM_VERIFY_FILES: UI Server Checksum Files.
(line 22)
* DECRYPT: UI Server Decrypt. (line 26)
* DECRYPT_FILES: UI Server Verify/Decrypt Files.
(line 9)
* DECRYPT_VERIFY_FILES:
UI Server Verify/Decrypt Files.
(line 11)
* ENCRYPT: UI Server Encrypt. (line 47)
* ENCRYPT_FILES: UI Server Sign/Encrypt Files.
(line 9)
* ENCRYPT_SIGN_FILES: UI Server Sign/Encrypt Files.
(line 11)
* enum gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 31)
* enum gpgme_data_type_t: Data Buffer Convenience.
(line 6)
* enum gpgme_event_io_t: I/O Callback Interface.
(line 58)

* enum gpgme_hash_algo_t: Hash Algorithms. (line 9)
* enum gpgme_pinentry_mode_t:
Pinentry Mode. (line 25)
* enum gpgme_protocol_t: Protocols and Engines.
(line 16)
* enum gpgme_pubkey_algo_t: Public Key Algorithms.
(line 9)
* enum gpgme_sig_mode_t: Creating a Signature.
(line 6)
* enum gpgme_sig_stat_t: Deprecated Functions.
(line 387)
* enum gpgme_tofu_policy_t: Changing TOFU Data. (line 10)
* FILE: UI Server Set Input Files.
(line 9)
* GETINFO: Miscellaneous UI Server Commands.
(line 9)
* gpgme_addrspec_from_uid:
Decrypt and Verify. (line 48)
* gpgme_attr_t: Deprecated Functions.
(line 140)
* gpgme_attr_t <1>: Deprecated Functions.
(line 301)
* gpgme_cancel: Cancellation. (line 16)
* gpgme_cancel_async: Cancellation. (line 38)
* gpgme_check_version: Library Version Check.
(line 6)
* gpgme_ctx_get_engine_info: Crypto Engine. (line 12)
* gpgme_ctx_set_engine_info: Crypto Engine. (line 26)
* gpgme_ctx_t: Contexts. (line 11)
* gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 32)
* gpgme_data_get_encoding: Data Buffer
Meta-Data.
(line 81)
* gpgme_data_get_file_name: Data Buffer Meta-Data.
(line 6)
* gpgme_data_identify: Data Buffer Convenience.
(line 46)
* gpgme_data_new: Memory Based Data Buffers.
(line 12)
* gpgme_data_new_from_cbs: Callback Based Data Buffers.
(line 80)
* gpgme_data_new_from_estream: File Based Data Buffers.
(line 49)
* gpgme_data_new_from_fd: File Based Data Buffers.
(line 10)
* gpgme_data_new_from_file: Memory Based Data Buffers.

(line 37)
* gpgme_data_new_from_filepart: Memory Based Data Buffers.
(line 54)
* gpgme_data_new_from_mem: Memory Based Data Buffers.
(line 22)
* gpgme_data_new_from_stream: File Based Data Buffers.
(line 29)
* gpgme_data_new_with_read_cb: Deprecated Functions.
(line 110)
* gpgme_data_read: Data Buffer I/O Operations.
(line 6)
* gpgme_data_read_cb_t: Callback Based Data Buffers.
(line 13)
* gpgme_data_release: Destroying Data Buffers.

(line 6)
* gpgme_data_release_and_get_mem: Destroying Data Buffers.
(line 11)
* gpgme_data_release_cb_t: Callback Based Data Buffers.
(line 55)
* gpgme_data_rewind: Deprecated Functions.
(line 134)
* gpgme_data_seek: Data Buffer I/O Operations.
(line 26)
* gpgme_data_seek_cb_t: Callback Based Data Buffers.
(line 46)
* gpgme_data_set_encoding: Data Buffer Meta-Data.
(line 87)
* gpgme_data_set_file_name: Data Buffer Meta-Data.

(line 18)
* gpgme_data_set_flag: Data Buffer Meta-Data.
(line 92)
* gpgme_data_t: Exchanging Data. (line 13)
* gpgme_data_type_t: Data Buffer Convenience.
(line 7)
* gpgme_data_write: Data Buffer I/O Operations.
(line 16)
* gpgme_data_write_cb_t: Callback Based Data Buffers.
(line 29)
* gpgme_decrypt_result_t: Decrypt. (line 101)
* gpgme_edit_cb_t: Deprecated Functions.
(line 33)
* gpgme_encrypt_result_t: Encrypting a Plaintext.
(line
241)
* gpgme_engine_check_version: Engine Version Check.
(line 67)

* gpgme_engine_info_t: Engine Information. (line 6)
* gpgme_error: Error Values. (line 65)
* gpgme_error_from_errno: Error Values. (line 89)
* gpgme_error_t: Error Values. (line 24)
* gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN): Using the Assuan protocol.
(line 15)
* gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA): Using the Assuan protocol.
(line 24)
* gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE, const char *STATUS, const char *ARGS): Using the Assuan protocol.

(line 38)
* gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE, gpgme_status_code_t STATUS, const char *ARGS, int FD): Deprecated Functions.
(line 31)
* gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE, const char *STATUS, const char *ARGS, int FD): Advanced Key Editing.
(line 6)
* gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD): I/O Callback Interface.
(line 6)
* gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD, int FD): Passphrase Callback.
(line 6)
* gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG): I/O Callback Interface.

(line 19)
* gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS): Status Message Callback.
(line 6)
* gpgme_err_code: Error Values. (line 42)
* gpgme_err_code_from_errno: Error Values. (line 98)
* gpgme_err_code_t: Error Values. (line 6)
* gpgme_err_code_to_errno: Error Values. (line 103)
* gpgme_err_make: Error Values. (line 57)
* gpgme_err_make_from_errno: Error Values. (line 83)
* gpgme_err_source: Error Values. (line 49)
* gpgme_err_source_t: Error Values. (line 13)
* gpgme_event_io_t: I/O Callback Interface.
(line 59)
* gpgme_event_io_t <1>: Registering I/O Callbacks.
(line 7)
* gpgme_free: Destroying Data Buffers.
(line 25)
* gpgme_genkey_result_t: Generating Keys. (line 381)
* gpgme_get_armor: ASCII Armor. (line 13)

* gpgme_get_ctx_flag: Context Flags. (line 135)
* gpgme_get_dirinfo: Engine Version Check.
(line 6)
* gpgme_get_engine_info: Engine Information. (line 46)
* gpgme_get_include_certs: Included Certificates.
(line 37)
* gpgme_get_io_cbs: Registering I/O Callbacks.
(line 44)
* gpgme_get_key: Listing Keys. (line 178)
*
gpgme_get_keylist_mode: Key Listing Mode. (line 103)
* gpgme_get_offline: Offline Mode. (line 31)
* gpgme_get_passphrase_cb: Passphrase Callback. (line 63)
* gpgme_get_pinentry_mode: Pinentry Mode. (line 18)
* gpgme_get_progress_cb: Progress Meter Callback.
(line 31)
* gpgme_get_protocol: Protocol Selection. (line 21)
* gpgme_get_protocol_name: Protocols and Engines.
(line 58)
* gpgme_get_sender: Setting the Sender. (line 29)
* gpgme_get_sig_key: Deprecated Functions.
(line 587)
* gpgme_get_sig_status: Deprecated Functions.
(line 435)
* gpgme_get_sig_string_attr:
Deprecated Functions.
(line 491)
* gpgme_get_sig_ulong_attr: Deprecated Functions.
(line 525)
* gpgme_get_status_cb: Status Message Callback.
(line 31)
* gpgme_get_textmode: Text Mode. (line 20)
* gpgme_hash_algo_name: Hash Algorithms. (line 30)
* gpgme_hash_algo_t: Hash Algorithms. (line 10)
* gpgme_import_result_t: Importing Keys. (line 118)
* gpgme_import_status_t: Importing Keys. (line 80)
* gpgme_interact_cb_t: Advanced Key Editing.
(line 11)
* gpgme_invalid_key_t: Crypto Operations. (line 10)
* gpgme_io_cb_t:
I/O Callback Interface.
(line 7)
* gpgme_keylist_result_t: Listing Keys. (line 155)
* gpgme_key_get_string_attr: Deprecated Functions.
(line 266)
* gpgme_key_get_ulong_attr: Deprecated Functions.
(line 280)
* gpgme_key_ref: Manipulating Keys. (line 6)

* gpgme_key_release: Deprecated Functions.
(line 14)
* gpgme_key_sig_get_string_attr: Deprecated Functions.
(line 357)
* gpgme_key_sig_get_ulong_attr: Deprecated Functions.
(line 373)
* gpgme_key_sig_t: Key objects. (line
346)
* gpgme_key_t: Key objects. (line 10)
* gpgme_key_unref: Manipulating Keys. (line 10)
* gpgme_new: Creating Contexts. (line 6)
* gpgme_new_signature_t: Creating a Signature.
(line 57)
* gpgme_off_t: Exchanging Data. (line 24)
* gpgme_op_adduid: Generating Keys. (line 189)
* gpgme_op_adduid_start: Generating Keys. (line 215)
* gpgme_op_assuan_transact_ext: Using the Assuan protocol.
(line 64)
* gpgme_op_assuan_transact_start: Using the Assuan protocol.
(line 47)
* gpgme_op_card_edit: Deprecated Functions.
(line 85)
*
gpgme_op_card_edit_start: Deprecated Functions.
(line 95)
* gpgme_op_createkey: Generating Keys. (line 14)
* gpgme_op_createkey_start: Generating Keys. (line 119)
* gpgme_op_createsubkey: Generating Keys. (line 132)
* gpgme_op_createsubkey_start: Generating Keys. (line 176)
* gpgme_op_decrypt: Decrypt. (line 6)
* gpgme_op_decrypt_ext: Decrypt. (line 30)
* gpgme_op_decrypt_ext_start: Decrypt. (line 60)
* gpgme_op_decrypt_result: Decrypt. (line 164)
* gpgme_op_decrypt_start: Decrypt. (line 20)
* gpgme_op_decrypt_verify: Decrypt and Verify. (line 6)
* gpgme_op_decrypt_verify_start: Decrypt and Verify. (line 30)
* gpgme_op_delete: Deleting Keys.
(line 47)
* gpgme_op_delete_ext: Deleting Keys. (line 6)
* gpgme_op_delete_ext_start: Deleting Keys. (line 33)
* gpgme_op_delete_start: Deleting Keys. (line 52)
* gpgme_op_edit: Deprecated Functions.
(line 44)
* gpgme_op_edit_start: Deprecated Functions.
(line 68)
* gpgme_op_encrypt: Encrypting a Plaintext.
(line 6)
* gpgme_op_encrypt_ext: Encrypting a Plaintext.

(line 131)
* gpgme_op_encrypt_ext_start: Encrypting a Plaintext.
(line 224)
* gpgme_op_encrypt_result: Encrypting a Plaintext.

(line 252)
* gpgme_op_encrypt_sign: Encrypting a Plaintext.
(line 263)
* gpgme_op_encrypt_sign_ext: Encrypting a Plaintext.
(line 288)
* gpgme_op_encrypt_sign_ext_start: Encrypting a Plaintext.
(line 304)
* gpgme_op_encrypt_sign_start: Encrypting a Plaintext.
(line 274)
* gpgme_op_encrypt_start: Encrypting a Plaintext.
(line 113)
* gpgme_op_export: Exporting Keys. (line 59)
* gpgme_op_export_ext: Exporting Keys. (line 92)
* gpgme_op_export_ext_start: Exporting Keys. (line 114)
* gpgme_op_export_keys:
Exporting Keys. (line 126)
* gpgme_op_export_keys_start: Exporting Keys. (line 153)
* gpgme_op_export_start: Exporting Keys. (line 80)
* gpgme_op_genkey: Generating Keys. (line 304)
* gpgme_op_genkey_result: Generating Keys. (line 418)
* gpgme_op_genkey_start: Generating Keys. (line 369)
* gpgme_op_getauditlog: Additional Logs. (line 9)
* gpgme_op_getauditlog_start: Additional Logs. (line 54)
* gpgme_op_import: Importing Keys. (line 9)
* gpgme_op_import_ext: Deprecated Functions.
(line 18)
* gpgme_op_import_keys: Importing Keys. (line 35)
* gpgme_op_import_keys_start: Importing Keys. (line 65)
* gpgme_op_import_result: Importing Keys. (line 174)
* gpgme_op_import_start:
Importing Keys. (line 24)
* gpgme_op_interact: Advanced Key Editing.
(line 23)
* gpgme_op_interact_start: Advanced Key Editing.
(line 53)
* gpgme_op_keylist_end: Listing Keys. (line 111)
* gpgme_op_keylist_ext_start: Listing Keys. (line 34)
* gpgme_op_keylist_from_data_start: Listing Keys. (line 67)
* gpgme_op_keylist_next: Listing Keys. (line 94)
* gpgme_op_keylist_result: Listing Keys. (line 166)
* gpgme_op_keylist_start: Listing Keys. (line 6)
* gpgme_op_keysign: Signing Keys. (line 12)
* gpgme_op_keysign_start: Signing Keys. (line 73)

* gpgme_op_passwd: Changing Passphrases.
(line 6)
* gpgme_op_passwd_start: Changing Passphrases.
(line 21)
* gpgme_op_query_swdb: Checking for updates.
(line 68)
* gpgme_op_query_swdb_result: Checking for updates.
(line 80)
* gpgme_op_revsig: Signing Keys. (line 84)
* gpgme_op_revsig_start: Signing Keys. (line 119)
* gpgme_op_revuid: Generating Keys. (line 224)
* gpgme_op_revuid_start: Manipulating Keys. (line 58)
* gpgme_op_revuid_start <1>: Generating Keys. (line 252)
* gpgme_op_setexpire: Manipulating Keys. (line 15)
* gpgme_op_setexpire_start: Manipulating Keys. (line 47)
* gpgme_op_set_uid_flag_start:
Generating Keys. (line 293)
* gpgme_op_set_ui_flag: Generating Keys. (line 261)
* gpgme_op_sign: Creating a Signature.
(line 21)
* gpgme_op_sign_result: Creating a Signature.
(line 99)
* gpgme_op_sign_start: Creating a Signature.
(line 47)
* gpgme_op_spawn: Running other Programs.
(line 13)
* gpgme_op_spawn_start: Running other Programs.
(line 45)
* gpgme_op_tofu_policy: Changing TOFU Data. (line 29)
* gpgme_op_tofu_policy_start: Changing TOFU Data. (line 43)
* gpgme_op_verify: Verify. (line
6)
* gpgme_op_verify_result: Verify. (line 298)
* gpgme_op_verify_start: Verify. (line 26)
* gpgme_passphrase_cb_t: Passphrase Callback. (line 10)
* gpgme_pinentry_mode_t: Pinentry Mode. (line 26)
* gpgme_progress_cb_t: Progress Meter Callback.
(line 8)
* gpgme_protocol_t: Protocols and Engines.
(line 17)
* gpgme_protocol_t <1>: Engine Information. (line 7)
* gpgme_pubkey_algo_name: Public Key Algorithms.
(line 58)
* gpgme_pubkey_algo_string: Public Key Algorithms.
(line 68)
* gpgme_pubkey_algo_t: Public Key Algorithms.

(line 10)
* gpgme_query_swdb_result_t: Checking for updates.
(line 11)
* gpgme_recipient_t: Decrypt. (line 75)
* gpgme_register_io_cb_t: I/O Callback Interface.
(line 23)
* gpgme_release: Destroying Contexts. (line 6)
* gpgme_result_ref: Result Management. (line 15)
* gpgme_result_unref: Result Management. (line 23)
* gpgme_set_armor: ASCII Armor. (line 6)
* gpgme_set_ctx_flag: Context Flags. (line 6)
* gpgme_set_engine_info: Engine Configuration.
(line 11)
* gpgme_set_global_flag: Library Version Check.
(line 44)
* gpgme_set_include_certs: Included Certificates.
(line 6)
* gpgme_set_io_cbs: Registering I/O Callbacks.
(line 35)
* gpgme_set_keylist_mode: Key Listing Mode. (line 6)
* gpgme_set_locale: Locale. (line 14)
* gpgme_set_offline: Offline Mode. (line 6)
* gpgme_set_passphrase_cb: Passphrase Callback. (line 40)
* gpgme_set_pinentry_mode: Pinentry Mode. (line 6)
* gpgme_set_progress_cb: Progress Meter Callback.
(line 16)
* gpgme_set_protocol: Protocol Selection. (line 6)
* gpgme_set_sender: Setting the Sender. (line 13)
* gpgme_set_status_cb:
Status Message Callback.
(line 17)
* gpgme_set_textmode: Text Mode. (line 6)
* gpgme_signature_t: Verify. (line 92)
* gpgme_signers_add: Selecting Signers. (line 18)
* gpgme_signers_clear: Selecting Signers. (line 11)
* gpgme_signers_count: Selecting Signers. (line 25)
* gpgme_signers_enum: Selecting Signers. (line 31)
* gpgme_sign_result_t: Creating a Signature.
(line 85)
* gpgme_sig_mode_t: Creating a Signature.
(line 7)
* gpgme_sig_notation_add: Signature Notation Data.
(line 19)
* gpgme_sig_notation_clear:
Signature Notation Data.
(line 10)
* gpgme_sig_notation_get: Signature Notation Data.

(line 45)
* gpgme_sig_notation_t: Verify. (line 38)
* gpgme_sig_stat_t: Deprecated Functions.
(line 388)
* gpgme_ssize_t: Exchanging Data. (line 32)
* gpgme_status_cb_t: Status Message Callback.
(line 8)
* gpgme_strerror: Error Strings. (line 6)
* gpgme_strerror_r: Error Strings. (line 15)
* gpgme_strsource: Error Strings. (line 26)
* gpgme_subkey_t: Key objects. (line 112)
* gpgme_tofu_info_t: Key objects.
(line 282)
* gpgme_tofu_policy_t: Changing TOFU Data. (line 13)
* gpgme_user_id_t: Key objects. (line 217)
* gpgme_validity_t: Information About Keys.
(line 9)
* gpgme_verify_result_t: Verify. (line 276)
* gpgme_wait: Waiting For Completion.
(line 6)
* IMPORT_FILES: UI Server Import/Export Keys.
(line 9)
* INPUT: UI Server Encrypt. (line 23)
* INPUT <1>: UI Server Sign. (line 12)
* INPUT <2>: UI Server Decrypt. (line 12)
* INPUT <3>: UI Server Verify. (line 16)
* MESSAGE: UI
Server Verify. (line 10)
* MICALG: UI Server Sign. (line 43)
* off_t (*gpgme_data_seek_cb_t) (void *HANDLE, off_t OFFSET, int WHENCE): Callback Based Data Buffers.
(line 43)
* OUTPUT: UI Server Encrypt. (line 36)
* OUTPUT <1>: UI Server Sign. (line 18)
* OUTPUT <2>: UI Server Decrypt. (line 19)
* OUTPUT <3>: UI Server Verify. (line 23)
* PREP_ENCRYPT: UI Server Encrypt. (line 72)
* PROTOCOL: UI Server Encrypt. (line 98)
* RECIPIENT: UI Server Encrypt. (line 9)
* SENDER: Miscellaneous UI Server Commands.
(line 50)
* SESSION: Miscellaneous UI Server
Commands.
(line 69)
* SIGN: UI Server Sign. (line 33)
* SIGN_FILES: UI Server Sign/Encrypt Files.
(line 10)
* SIGSTATUS: UI Server Verify. (line 56)
* ssize_t (*gpgme_data_read_cb_t) (void *HANDLE, void *BUFFER, size_t SIZE): Callback Based Data Buffers.

(line 10)
* ssize_t (*gpgme_data_write_cb_t) (void *HANDLE, const void *BUFFER, size_t SIZE): Callback Based Data Buffers.
(line 27)
* START_CONFDIALOG: Miscellaneous UI Server Commands.
(line 41)
* START_KEYMANAGER: Miscellaneous UI Server Commands.

(line 31)
* struct gpgme_data_cbs: Callback Based Data Buffers.
(line 59)
* struct gpgme_io_cbs: Registering I/O Callbacks.
(line 6)
* VERIFY: UI Server Verify. (line 31)
* VERIFY_FILES: UI Server Verify/Decrypt Files.
(line 10)
* void (*gpgme_data_release_cb_t) (void *HANDLE): Callback Based Data Buffers.
(line 54)
* void (*gpgme_event_io_cb_t) (void *DATA, gpgme_event_io_t TYPE, void *TYPE_DATA): I/O Callback Interface.
(line 83)
* void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT, int TYPE, int CURRENT, int TOTAL): Progress Meter Callback.

(line 6)
* void (*gpgme_remove_io_cb_t) (void *TAG): I/O Callback Interface.
(line 48)
* window-id: Miscellaneous UI Server Commands.
(line 21)
Wenn Sie dies lesen knnen, ist es wohl nicht
geheim genug.
hkp4py
requests
Additional license notices for GPGME. -*- org -*-

This file contains the copying permission notices for various files in
the GPGME distribution which are not covered by the GNU Lesser
General Public License (LGPL) or the GNU General Public License (GPL).

These notices all require that a copy of the notice be included
in the accompanying documentation and be distributed with binary
distributions of the code, so be sure to include this file along
with any binary distributions derived from the GNU C Library.

* MIT License

For files:
- cJSON.c, cJSON.h

#+begin_quote
Copyright (c) 2009 Dave Gamble

Permission is hereby granted, free of charge, to any person obtaining
a opy of this software and associated documentation files (the
"Software"), to eal in the Software without restriction, including
without limitation the ights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the
Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING ROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
#+end_quote
-*- mode: org -*-
#+TITLE: Maintenance Mode
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Maintenance Mode from 2019
:PROPERTIES:
:CUSTOM_ID: maintenance-mode
:END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

From the beginning of 2019 the Python bindings to GPGME will enter
maintenance mode, meaning that new features will not be added and only
bug fixes and security fixes will be made.
  This also means that
documentation beyond that existing at the end of 2018 will not be
developed further except to correct errors.

Though use of these bindings appears to have been quite well received,
there has been no indication of what demand there is, if any for
either financial backing of the current Python bindings development or
support contracts with g10code GmbH citing the necessity of including
the bindings.

** Maintainer from 2019 onward
  :PROPERTIES:
  :CUSTOM_ID: maintenance-mode-bm
  :END:

How does this affect the position of GnuPG Python Bindings Maintainer?

Well, I will remain as maintainer of the bindings; but without funding
for that position, the amount of time I will be able to dedicate
solely to this task will be limited and reduced to volunteered time.
As with all volunteered time and effort in free software projects,
this will be subject to numerous external imperatives.

** Using the Python Bindings from 2019 and beyond
  :PROPERTIES:
  :CUSTOM_ID:
 maintenance-mode-blade-runner
  :END:

For most, if not all, Python developers using these bindings; they
will continue to just work the same as they always have. Expansions
of GPGME itself are usually handled by SWIG with the existing code and
thus bindings are generated properly when the bindings are installed
alongside GPGME and when the latter is built from source.

In the rare circumstances where that is not enough to address some new
addition to GPGME, then that is a bug and thus subject to the
maintenance mode provisions (i.e. it will be fixed following a bug
report being raised and your humble author will need to remember where
the timesheet template was filed, depending on how many years off such
an event is).

All the GPGME functionality will continue to be accessible via the

lower level, dynamically generated methods which match the GPGME C
documentation. While the more intuitively Pythonic higher level layer
already covers the vast majority of functionality people require
 with
key generation, signatures, certifications (key signing), encryption,
decryption, verification, validation, trust levels and so on.

Any wanted features lacking in the Python bindings are usually lacking
because they are missing from GPGME itself (e.g. revoking keys via the
API) and in such cases they are usually deliberately excluded. More
discussion of these issues can be found in the archives of the
[[https://lists.gnupg.org/mailman/listinfo/gnupg-devel][gnupg-devel mailing list]].

Any features existing in the dynamically generated layer for which
people want a specific, higher level function included to make it more
Pythonic (e.g. to avoid needing to learn or memorise cryptographic
mode values or GnuPG status code numbers), would be a feature request
and /not/ a bug.

It is still worthwhile requesting it, but the addition of such a
feature would not be guaranteed and provided on a purely volunteer
basis. Expediting such a request would require funding that request.

Those
 with a commercial interest in expediting such a feature request
already know how to [[https://gnupg.org/cgi-bin/procdonate.cgi?mode=preset][expedite it]] (use the message field to state what
feature is being requested).

** Documentation formats
  :PROPERTIES:
  :CUSTOM_ID: docs
  :END:

The documentation has been written in Org mode for GNU Emacs, with
both Texinfo and reStructuredText formats generated from that. The
Texinfo files are intended for use with the rest of the GnuPG
documentation; while the reStructuredText files are intended for use
with Docutils and Sphinx, as with other Python projects.

*** Cautionary Notes regarding Sphinx and EPUB
    :PROPERTIES:
    :CUSTOM_ID: sphinx-made-epubs-suck
    :END:

Though Python's Docutils in conjunction with Sphinx is capable of

generating some very useful HTML sites, as proven by [[https://readthedocs.org/][Read the Docs]] and the [[https://docs.python.org/][Python documentation]], there are a number of output formats it does not
handle well. At the top of the list of things it manages to break
so atrociously as to be embarassing is the [[http://idpf.org/epub][EPUB 3]] format.

The automatically generated EPUB of the CPython documentation always
contains hundreds of validation errors and even the modest amount of
documentation here [[https://files.au.adversary.org.s3.amazonaws.com/crypto/gpgme-python/rst/epub/GPGMEPythonBindings.epub][produced a file]] with approximately thirty validation errors. As the volume of documentation content increases,
so does the induced errors. Whereas Texinfo doesn't produce EPUB
output at all, nor does Org-mode.

Should there ever be genuine demand for this format, lodge a
[[https://dev.gnupg.org/maniphest/task/edit/form/4/][feature request]] case marked for [[https://dev.gnupg.org/p/BenM/][my]] attention. The means of generating such files flawlessly is already available, but is not yet part of the
GnuPG build system. Nor is it integrated with a means of converting Org
mode input files to the relevant base format automatically, as can
already be done when converting Org to reStructuredText or Org to
Texinfo. As a certain amount of work would be required to get it
done, there would need to be clear demand for that work to be done.
Just GNU it!
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* m4/pth.m4: Removed.
* configure.ac: Remove check for pth and automake conditional
HAVE_PTH.

2011-06-16 Marcus Brinkmann <marcus@g10code.com>

Release 1.3.1

* configure.ac: Set LT version to C19/A8/R0.

2011-05-06 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am (SUBDIRS): Remove complus.

* configure.ac (AC_CONFIG_FILES): Remove complus/Makefile.
(BUILD_COMPLUS): Remove AM_CONDITIONAL.
* complus/: Remove very old and stale component.

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Remove.

2011-04-14 Werner Koch <wk@g10code.com>

* configure.ac: Require automake 1.11.

2011-04-06 Werner Koch <wk@g10code.com>

* autogen.sh (--build-w32):
Support option --build-w64.
* configure.ac (HAVE_W64_SYSTEM): Define.
(INSERT__TYPEDEFS_FOR_GPGME_H): New.
(GPGME_CONFIG_HOST): New.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* configure.ac (NEED_LIBASSUAN_VERSION): Bump to 2.0.2 for system hooks.

2010-12-30 Werner Koch <wk@g10code.com>

* configure.ac: Support a git revision.

2010-11-03 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys/types.h and
sys.stat.h.

2010-11-02 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys.time.h.

2010-08-19 Werner Koch <wk@g10code.com>

* configure.ac (AH_BOTTOM): Define GPG_ERR_ENABLE_ERRNO_MACROS.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for setlocale.

2010-05-07 Werner Koch <wk@g10code.com>

* configure.ac: Change checks to always require libassuan.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Update the thing.

* configure.ac: Check for locale.h.

2010-05-06
Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Detect Windows CE.
(HAVE_W32CE_SYSTEM): New symbol and automake conditional.
* ltmain.sh, m4/libtool.m4: Patch so that it works for Windows CE.

* configure.ac: Require libgpg-error 1.8.

2010-03-15 Werner Koch <wk@g10code.com>

* configure.ac (emacs_local_vars_begin)
(emacs_local_vars_read_only, emacs_local_vars_end): New.

2010-01-22 Werner Koch <wk@g10code.com>

* autogen.sh (--build-w32): Add --with-libassuan-prefix.

2010-01-11 Marcus Brinkmann <marcus@g10code.de>

Release 1.3.0.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Do not use echo -n. Test for __thread.

2009-12-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Make largefile check more robust.

2009-12-10 Werner Koch <wk@g10code.com>

* configure.ac: Check for getgid and getegid.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

Update to libtool 2.2.6a.
* configure.ac: Invoke AC_CONFIG_MACRO_DIR.
(AC_LIBTOOL_WIN32_DLL,
AC_LIBTOOL_RC): Replace by ...
(LT_PREREQ, LT_INIT, LT_LANG): ... these.
* config.guess, config.sub, install-sh, ltmain.sh, m4/libtool.m4:
Updated to libtool 2.2.6a.

* m4/ltoptions.m4, m4/ltsugar.m4, m4/ltversion.m4,
m4/lt~obsolete.m4: New files from libtool 2.2.6a.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Activate UIServer if FD passing is enabled and
Assuan is available.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for argp.h and error_t.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION_DEFAULT): Bump to 1.4.0 as 1.3.0
was development versions only.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add support for G13.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_CONFIG_FILES): Remove assuan/Makefile.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Replace internal libassuan by external libassuan.
* m4/libassuan.m4:
New file.
* Makefile.am (assuan): Remove variable.
(SUBDIRS): Remove ${assuan}.
* assuan/: Removed.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add AC_TYPE_UINTPTR_T.

* assuan/assuan.h [_ASSUAN_IN_GPGME_BUILD_ASSUAN]: Declare
_gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

Released GPGME 1.2.0.

* configure.ac (my_version): Set to 1.2.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump.
(LIBGPGME_LT_REVISION): Reset.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Add infrastructure for compile time check of
_FILE_OFFSET_BITS.

2009-04-19 Moritz <moritz@gnu.org>

 * Makefile.am (DISTCHECK_CONFIGURE_FLAGS): Specify --with-gpg.

2009-03-06 Marcus Brinkmann <marcus@g10code.de>

 * assuan/: Update to libassuan SVN 2009-03-06.

2009-01-26 Werner Koch <wk@g10code.com>

 * configure.ac (AC_CONFIG_FILES): Add tests/opassuan/Makefile.

2008-12-08 Marcus Brinkmann <marcus@g10code.de>

 Release GPGME
1.1.8.

 * configure.ac: Bump API revision.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

 * configure.ac: Replace gpgme paths with src.
* gpgme: Move to ...
* src: ... this new directory.

2008-10-20 Werner Koch <wk@g10code.com>

 * configure.ac (AC_CONFIG_FILES): Add gpgme.h.
(GNUPG_FIX_HDR_VERSION): Remove.

2008-10-17 Marcus Brinkmann <marcus@g10code.com>

 Release GPGME 1.1.7.

 * configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2008-09-19 Moritz <moritz@gnu.org>

 * configure.ac: Remove bogus "esac".

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

* configure.ac (_XOPEN_SOURCE) [apple-darwin]: Define it.

2008-07-04 Werner Koch <wk@g10code.com>

* config.guess, config.sub: Update to 2007-11-19. Also update
missing et al scripts.

2008-04-01 Werner Koch <wk@g10code.com>

* configure.ac (AC_INIT): Fix quoting.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump required version of automake up to 1.10.
* autogen.sh: Fix
aclocal check.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

Release GPGME 1.1.6.

* configure.ac: Support gpgconf.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* assuan-pipe-connect.c (pipe_connect_gpgme): Do not close process
handle here. Use this function also on Unix systems.

* assuan-pipe-connect.c (pipe_connect_gpgme): Fix last change.

* assuan-pipe-connect.c (pipe_connect_gpgme): New function, use it
if _ASSUAN_IN_GPGME_BUILD_ASSUAN.

2007-09-17 Werner Koch <wk@g10code.com>

* configure.ac: Use the svn version magic.

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for C++, Qt and support --enable-w32-qt.
* m4/pkg.m4: New file.

2007-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (--enable-w32-glib): Use --enableval, not
--withval.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-socket.c (_assuan_close): Always use close().
* assuan/assuan.h (_gpgme_io_close): New prototype.
(close): New
macro, define as _gpgme_io_close.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-io.c (_assuan_simple_read, _assuan_simple_write):
Always use read/write (which means _gpgme_io_read and
_gpgme_io_write).

2007-07-09 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.5.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGSM_DEFAULT) [*-mingw32*]: Initialize it.
(HAVE_ASSUAN_H): Set to 1 if we have it.
(funopen): Use AC_REPLACE_FUNCS.
(USE_DESCRIPTOR_PASSING): Define to 1 if we have it. Do not
define it at all if we don't.
(NETLIBS) [have_w32_system]: Add -lws2_32.
(DIRSEP_C, DIRSEP_S, EXPSEP_C, EXPSEP_S, PATHSEP_S)
[HAVE_DOSISH_SYSTEM]: Remove definitions.

* assuan/assuan.h (_assuan_funopen): Define to _gpgme_funopen.
* assuan/funopen.c: Move to ../gpgme/funopen.c.
* assuan/Makefile.am (libassuan_la_SOURCES): Remove funopen.c.

2007-07-04 Marcus Brinkmann <marcus@g10code.de>

*
assuan/Makefile.am (INCLUDES): Include $(top_srcdir)/gpgme.
* assuan/assuan.h: Include <ath.h> instead of trying to duplicate
the definitions.

* assuan/: Update files to 2007-07-04 version of assuan.

* autogen.sh: Use = not == in test.

2007-03-05 Werner Koch <wk@g10code.com>

Released 1.1.4.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

* autogen.sh: New option --force.

2007-01-29 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.3.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-01-26 Werner Koch <wk@g10code.com>

* configure.ac: Changed gpg and gpgsm version checks to work with
arbitrary names of the gpg binary. New option --disable-gpg-test
and --disable-gpgsm-test.

2007-01-09 Werner Koch <wk@g10code.com>

* configure.ac (NEED_GPG_VERSION, NEED_GPGSM_VERSION): Must define
after it may have been changed by an option.

2007-01-08 Werner Koch <wk@g10code.com>

* configure.ac: Require gpg-error 1.4 due to the use of
gpg_error_from_syserror.
(HAVE_ASSUAN_H):
New.

2007-01-05 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add options --with-gpg-version and
--with-gpgsm-version to allow overriding the minimum version
requirements.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Fix two typos in last change.

2006-12-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Use descriptor passing only if --enable-fd-passing
is provided.

* configure.ac: Add check for use of descriptor passing.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump to 1.3.0.

2006-09-19 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Turn stpcpy into a replacement function.
Check for unistd.h and add setenv as replacement function.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for network libraries and set NETLIBS.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

* lang, lang/cl: New subdirectories.
*
lang/Makefile.am, lang/README: New files.
* configure.ac (AC_CONFIG_FILES): Add lang/Makefile,
lang/cl/Makefile and lang/cl/gpgme.asd.
* Makefile.am (SUBDIRS): Add lang.

2006-03-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.1.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for
release.
(LIBGPGME_LT_REVISION): Reset to 0 for release.

2006-01-05 Werner Koch <wk@g10code.com>

* configure.ac: Test for inline feature.
(AH_BOTTOM): New to define the pure attribute.

2006-01-03 Werner Koch <wk@g10code.com>

* configure.ac: Append SVN revision to the version.

2005-11-18 Werner Koch <wk@g10code.com>

* configure.ac (BUILD_REVISION): New.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add support for --enable-w32-glib (disabled by
default). Invoke AM_PATH_GLIB_2_0.

2005-11-16 Werner Koch <wk@g10code.com>

 * configure.ac
(CFLAGS) [W32]: Make sure that -mms-bitfields are used.

2005-11-15 Werner Koch <wk@g10code.com>

 * configure.ac: Create BUILD_FILEVERSION from SVN Revision.

 * autogen.sh [W32]: Build shared and static versions of the library.

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

 * w32-dll/ChangeLog, w32-dll/build-dll, w32-dll/gpgme.def: Remove
files.

 * configure.ac: Instead checking for windres and dlltool, invoke
AC_LIBTOOL_WIN32_DLL and AC_LIBTOOL_RC.
* src/Makefile.am [HAVE_W32_SYSTEM]: Use libtool, which simplifies
the rules.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

 Released 1.1.0.

 * configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for
release.
(LIBGPGME_LT_REVISION): Reset to 0 for release.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (HAVE_PTH): Don't add $PTH_CFLAGS to $CFLAGS here.

2005-08-26 Werner Koch <wk@g10code.com>

 * configure.ac (SEPCONSTANTS): New to define DIRSEP_C et al.

2005-08-19 Werner Koch <wk@g10code.com>

 *
configure.ac [W32]: Create values for versioninfo.rc and list
substuture versioninfo.rc.
* configure.ac: Define ENABLE_GPGSM.

2005-08-08 Werner Koch <wk@g10code.com>

 * configure.ac (stpcpy): Changed from replace to test.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AH_BOTTOM): Removed.

2005-03-09 Werner Koch <wk@g10code.com>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): Assume no when cross-compiling.

* Makefile.am (EXTRA_DIST): Include autogen.sh

* autogen.sh: Added the usual code to build for W32 (--build-w32).

* configure.ac: Fixed the mingw32 host string, removed OS/2 stuff.
(HAVE_DRIVE_LETTERS): Removed.
(HAVE_W32_SYSTEM): Added.
(AC_GNU_SOURCE): New to replace the identical AH_VERBATIM.
(AH_BOTTOM): Added.

2004-12-28 Werner Koch <wk@g10code.com>

Released 1.0.2.

* Makefile.am (AUTOMAKE_OPTIONS): Build bzip 2 version.
(ACLOCAL_AMFLAGS): Add -I m4.
* configure.ac: Require automake 1.9.3 and autoconf 2.59.
* acinclude.m4:
Changed quoting for automake 1.9.
* README: Use SHA1 instead of MD5.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Replace ttyname_r if it doesn't exist (and warn in
that case).

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* README: Refer to COPYING.LESSER and "each file" instead of
COPYING.
* COPYING.LESSER: New file.
* gpgme.spec.in (%doc): Add COPYING.LESSER.
* acinclude.m4, configure.ac, Makefile.am: Change license to LGPL
2.1 or later.
* TODO: Add copyright notice.
* README.CVS: Likewise.

* configure.ac (GPGSM_VERSION): Fix filter to get it.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.1.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 2.
(AC_INIT): Set version to 1.0.1.

* configure.ac: Set HAVE_GPGSM to true only if $GPGSM is not "no".

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.0.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.
(AC_INIT): Set version to 1.0.0.

* Makefile.am
(EXTRA_DIST): Remove README-alpha.
* README-alpha: Remove file.

2004-09-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable AC_CONFIG_MACRO_DIR for now.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Improve diagnostics with version check.

* configure.ac: Print diagnostics about found thread libraries at
the end. Check for the versions of GPG and GPGSM and print the
found versions at the end.
(HAVE_GPGSM): Do not require GPGSM to exist and be readable.
(AC_CONFIG_MACRO_DIR): Invoke with argument m4.

* acinclude.m4: Add copyright notice.
(jm_GLIBC21, AM_PATH_GPG_ERROR, _AC_PTH_ERROR, _AC_PTH_VERBOSE,
AC_CHECK_PTH): Removed.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for <sys/uio.h>.

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

Released 0.9.0.

* configure.ac (AC_INIT): Set version number to 0.9.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by one.

(LIBGPGME_LT_REVISION): Reset to zero.

2004-05-21
Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGME_CONFIG_API_VERSION): New variable,
substitute it.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.7.

* configure.ac (LIBGPGME_LT_REVISION): Bump it up.

2004-04-02 Thomas Schwinge <schwinge@nic-nac-project.de>

* autogen.sh: Added ACLOCAL_FLAGS.

2004-04-06 Werner Koch <wk@gnupg.org>

Released 0.4.6.

* config.guess, config.sub, ltmain.sh: Updated to those from
libtools 1.5.4.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.5.

* configure.ac (NEED_GPGSM_VERSION): Bump up to 1.9.6.

* Makefile.am (EXTRA_DIST): Remove autogen.sh and README.CVS.

2004-02-18 Werner Koch <wk@gnupg.org>

* configure.ac: Make the check for funopen fail with just a
warning.

2004-02-11 Werner Koch <wk@gnupg.org>

* autogen.sh (check_version): Removed bashism and simplified.

2004-02-10 Werner Koch <wk@gnupg.org>

* configure.ac: Fixed funopen test change.

2004-02-06 Moritz Schulte

<mo@g10code.com>

* configure.ac: Fix funopen replacement mechanism.

2004-01-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add invocation of AC_SYS_LARGEFILE, AC_TYPE_OFF_T
and AC_FUNC_FSEEKO.

2004-01-12 Werner Koch <wk@gnupg.org>

Released 0.4.4.

* configure.ac: Bumbed LT_Revision; now at C12/A1/R1.
(NEED_GPGSM_VERSION): Set to 1.9.3.
(min_automake_version): Added.
* README.CVS: New.
* Makefile.am (EXTRA_DIST): Added README.CVS.
* autogen.sh: Updated.

2003-11-19 Werner Koch <wk@gnupg.org>

* acinclude.m4: Add AM_PATH_GPG_ERROR.
* configure.ac: Check for timegm. Made warning messages more
prominent.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.3.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by 1.
(LIBGPGME_LT_REVISION): Set to 0.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Require libgpg-error 0.5.

* acinclude.m4: Remove libtool cruft, add jm_GLIBC21.
* configure.ac: Add check for
getenv_r, and call jm_GLIBC21.
Define HAVE_THREAD_SAFE_GETENV if appropriate.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Remove GPGME_CONFIG_LIBS and GPGME_CONFIG_CFLAGS.

2003-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Move invocation of AC_CANONICAL_HOST up to
suppress warning by autoconf.

2003-08-30 Robert Schiele <rschiele@uni-mannheim.de>

* gpgme.spec.in: %{_infodir}/dir is not packaged,
remove to prevent checking failure.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: If building Assuan, check for funopen and
fopencookie, and make isascii, putc_unlocked and memrchr
replacement functions.
(AM_PATH_GPG_ERROR): Require 0.3.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.3.

2003-07-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.

Released 0.4.2.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac:
Complain if libgpg-error is not found.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.2.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Bump up to 11.

* configure.ac: Use AM_PATH_GPG_ERROR.

* configure.ac: Check for libgpg-error. Define
GPG_ERR_SOURCE_DEFAULT.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump up to 1.2.2.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

In all files, replace the Gpgme* type names with the new gpgme_*
type names.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* assuan/: Update files to 2002-11-10 version of assuan.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* bonobo/gpgme.c, bonobo/main.c, bonobo/main.h, bonobo/Makefile,
bonobo/Makefile.am, bonobo/Makefile.in: Dead files removed.
* configure.ac: Remove automake conditional BUILD_BONOBO
(AC_CONFIG_FILES): Remove bonobo/Makefile.
*
Makefile.am (bonobo): Remove variable.
(SUBDIRS): Remove ${bonobo}.

* configure.ac: Remove all uses of GNUPG_CHECK_TYPEDEF, for byte,
ushort, ulong, u16 and u32.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Remove macro.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: New conditional HAVE_LD_VERSION_SCRIPT.
Call AC_CANONICAL_HOST, use host instead target.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump up to 0.4.1.

Released 0.4.0.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (automake_vers): Require 1.7 (really 1.7.1) for the
conditional source distribution bug fix.

2002-12-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Increase by one.
(LIBGPGME_LT_AGE, LIBGPGME_LT_REVISION): Set to 0.

2002-11-28 Marcus Brinkmann <marcus@g10code.de>

* NEWS: Add note about moving "gpgmeplug" to the "cryptplug"
package.
* README: Remove instructions related to "gpgmeplug".

* configure.ac:
Remove enable option "gpgmeplug" and automake
conditional BUILD_GPGMEPLUG, as well as the status info about it.
(GPGMEPLUG): Remove variable.
* Makefile.am (gpgmeplug): Remove variable.
(SUBDIRS): Remove ${gpgmeplug}.
* cryptplug.h, gpgme-openpgp.c, gpgmeplug.dox, gpgme-smime.c,
Makefile.am, gpgmeplug.c, ChangeLog: Files removed.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable GPGSM for all dosish systems.

2002-10-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_GPGSM.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version up to 0.4.0.
(NEED_GPG_VERSION): Bump up to 1.2.0.
(NEED_GPGSM_VERSION): Bump up to 0.9.0.
* README: Update version numbers.
* NEWS: Start entry for 0.4.0.

2002-09-20 Werner Koch <wk@gnupg.org>

Released 0.3.11.

* configure.ac: Bump up LIBGPGME_LT_REVISION.

* configure.ac (AC_CHECK_HEADERS): Check for sys/select.h.

2002-09-04 Marcus Brinkmann
<marcus@g10code.de>

* autogen.sh (autoconf_vers): Bump up to 2.53 to get the @&t@
quadrigraph. Always cutting the edge!

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Create and substitute LTLIBOBJS.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.10.

* NEWS: Update for 0.3.9 release.

* configure.ac: Bump up LIBGPGME_LT_REVISION.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.spec.in: Changed user name in Wojciech Polak's email
address from ghostface to polak per request by himself.

2002-08-28 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): New.
* configure.ac: Use it.

2002-08-23 Werner Koch <wk@gnupg.org>

* configure.ac (GPGME_CONFIG_CFLAGS): Renamed from GPGME_CFLAGS
and removed the libpath because it is set by the config script.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump version number to 0.3.10.

* NEWS: Add template for development version.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

Released 0.3.9.

* NEWS: Update for 0.3.9 release.
* Makefile.am (EXTRA_DIST): Add gpgme.spec.in.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* jnlib/argparse.c, jnlib/argparse.h, jnlib/ChangeLog,
jnlib/dotlock.c, jnlib/dotlock.h, jnlib/libjnlib-config.h,
jnlib/logging.c, jnlib/logging.h,jnlib/Makefile.am,
jnlib/mischelp.h, jnlib/README, jnlib/stringhelp.c,
jnlib/stringhelp.h, jnlib/strlist.c, jnlib/strlist.h,
jnlib/types.h, jnlib/xmalloc.c, jnlib/xmalloc.h: Remove files.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Remove jnlib.
* configure.ac: Don't check for unsigned short or unsigned long.
Don't check for memicmp, strlwr, strtoul, memmove, stricmp.
Make stpcpy a replaced function.
Don't define HAVE_JNLIB_LOGGING.
Don't generate jnlib/Makefile.

2002-07-02 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version number to 0.3.9; add a comment on
when to change it.

* gpgme.spec.in:
New. Contributed by Wojciech Polak.
* Makefile.am (dist-hook): New.

* AUTHORS: Added Wojciech and bug reporting addresses.

2002-06-25 Werner Koch <wk@gnupg.org>

Released 0.3.8.

* configure.ac: Bumbed LT version to 9/3/0.
(NEED_GPGSM_VERSION): Need 0.3.8 due to fixed export command.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.7.

* configure.ac (AC_INIT): Set version to 0.3.7.
(LIBGPGME_LT_REVISION): Add one.

* README: Document version requirement correctly.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* acinclude.m4: Fix Pth check so that it doesn't error out if pth
is not found.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add checks for Pth and pthreads.
* acinclude.m4: Add slightly hacked check for pth (seems to be an
autoconf version problem).

2002-05-21 Werner Koch <wk@gnupg.org>

* configure.ac (NEED_GPGSM_VERSION): We need gpgsm 0.3.7.

2002-05-03 Werner Koch <wk@gnupg.org>

Released 0.3.6.

2002-04-05

Marcus Brinkmann <marcus@g10code.de>

* acconfig.h: File removed.
* configure.ac (NEED_GPG_VERSION): Add description.
(NEED_GPGSM_VERSION): Likewise.
(HAVE_DOSISH_SYSTEM): Likewise.
(HAVE_DRIVE_LETTERS): Likewise.
(GPG_PATH): Likewise.
(GPGSM_PATH): Likewise.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Likewise.

2002-04-01 Werner Koch <wk@gnupg.org>

Released 0.3.5.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_DOSISH_SYSTEM.

2002-03-04 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version to 0.3.4-cvs to continue development.

Released 0.3.4.

* configure.ac: Bumbed LT version numbers to (7,1,0), requires
gpgsm 0.3.1.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Change version number to snapshot CVS
version.

2002-02-13 Werner Koch <wk@gnupg.org>

* configure.ac (vasprintf,fopencookie): Add checks.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT):
Bump version to 0.3.3.
* jnlib/Makefile.am: Rever to older version that includes xmalloc
but not dotlock and some other files. Reported by Stphane
Corthsy.

2002-02-10 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.2.

* configure.ac (AC_INIT): Bump version to 0.3.2.
* jnlib/libjnlibconfig.h: Revert to older version that doesn't
expect libgcrypt. Reported by Jose Carlos Garcia Sogo
<jsogo@debian.org>.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.1.

* configure.ac (LIBGPGME_LT_CURRENT): Bump it up to 6!
(NEED_GPGSM_VERSION): Bump it up to 0.3.0!
(AC_INIT): Bump version to 0.3.1

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (HAVE_JNLIB_LOGGING): Define always for assuan.

2001-12-19 Werner Koch <wk@gnupg.org>

* configure.ac (VERSION,PACKAGE): Defined and subst. Used for
AM_INIT_AUTOMAKE and moved all version number more to the top.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (libtool_vers):
Bump to 1.4.

* configure.ac (LIBGPGME_LT_CURRENT): Increment.
(LIBGPGME_LT_AGE): Reset.
Improve comment.
Fix wrong comment character.

2001-12-18 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Fixed for new automake.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPG): Substitute this variable.
(GPGSM): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_CONFIG_FILES): Add tests/gpg/Makefile and
tests/gpgsm/Makefile.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgmeplug): New variable, set to gpgmeplug if
[BUILD_GPGMEPLUG].
* configure.ac (AC_CONFIG_FILES): Add gpgmeplug/Makefile.
Support --enable-gpgmeplug.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Tighten version dependencies.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Support building the assuan library
(currently if GPGSM_PATH is set)..
* configure.ac: Support building
the assuan library.
* assuan: New directory, populated with the Assuan library
(copied from the newpg repository).

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPGSM_VERSION): New variable. Treat it
similarly to NEED_GPG_VERSION.
* acconfig.h: Likewise.

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* configure.in: Renamed to ...
* configure.ac: ... this. Update to autoconf 2.52. Lots of small
changes in the transition. Support --with-gpg=PATH and
--with-gpgsm=PATH options. Check if test suites can be run.
* acconfig.h: Add GPGSM_PATH.
* Makefile.am: New variable `tests', set to `tests' if
RUN_GPG_TESTS.
(SUBDIRS): Replace string `tests' with variable `tests'.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Invoke automake with `-a' (add missing files).
Do not invoke configure.

2001-09-17 Werner Koch <wk@gnupg.org>

Released 0.2.3.

* configure.in (NEED_GPG_VERSION): Set to 1.0.6. Incremented LT
current

and age.

* Makefile.am (SUBDIRS): Add doc

2001-06-12 Werner Koch <wk@gnupg.org>

Released 0.2.2.

2001-04-05 Werner Koch <wk@gnupg.org>

* configure.in (NEED_GPG_VERSION): Set to 1.0.4g

2001-04-02 Werner Koch <wk@gnupg.org>

Released 0.2.1.

Changed the copyright notices all over the place.

2001-02-28 Werner Koch <wk@gnupg.org>

Released 0.2.0.

2001-01-18 Werner Koch <wk@gnupg.org>

* autogen.sh: Added option --build-w32.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-05-11 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.

(clean-local): New rule.
* gpg/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.

2011-05-05 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am: Unset GPG_AGENT_INFO when setting up local
configuration.
(clean-local): Shut down local gpg-agent.

2011-05-04 Marcus Brinkmann <marcus@g10code.com>

* gpg/t-import.c (check_result): Complete secret key pair counting
and disable status check, as GPG 2.1 currently emits two IMPORT_OK
lines and we only look at the first.

2011-04-27 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am (DISTCLEANFILES):
Add S.gpg-agent.
(mkdemodirs, ./Alpha/Secret.gpg): Remove targets.
(GNUPGHOME): Export as absolute build directory (for gpg-agent).
(./pubring.gpg): Remove --homedir option, import secdemo.asc.
(clean-local): Rewrite.
* gpg/secdemo.asc: New file.
* gpg/pubkey-1.asc, gpg/seckey-1.asc: Change passphrase to
"abc" (now needed as GnuPG 2.1 asks for secret key passphrase on
import).
* gpg/t-keylist.c (keys): Update key info for Joe Random Hacker.
(main): Disable check for can_encrypt, as this is now in a
different subkey.
* gpg/t-encrypt-sign.c (check_result): Allow RMD160 hash
algorithm.
* gpg/t-import.c (check_result): One secret key pair now counts as
two secret keys, allow that.

2009-11-03 Werner Koch <wk@g10code.com>

* run-support.h (fail_if_err): Include program name.

* run-sign.c (main): Add option --uiserver.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan/t-command.c: Update to new interface.

2009-10-15 Werner Koch <wk@g10code.com>

* run-verify.c:
New.

2009-08-06 Werner Koch <wk@g10code.com>

* run-sign.c: New.

2009-07-07 Werner Koch <wk@g10code.com>

* run-keylist.c (main): Add options --cms and --openpgp.

* gpg/pgp-keylist.c: Rename to ...
* run-keylist.c: ... this.
* gpg/pgp-import.c: Rename to ...
* run-import.c: ... this.
* gpg/pgp-export.c: Rename to ...
* run-export.c: ... this.
* run-support.h: New. Copied from gpg/t-support.h.
* gpg/Makefile.am (noinst_PROGRAMS): Remove them.
* Makefile.am (noinst_PROGRAMS): Add them.
(noinst_HEADERS): New.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-support.h (passphrase_cb): Implement write() according to
the book to silence compiler warning.
* gpgsm/t-support.h (passphrase_cb): Likewise.

2009-06-16 Werner Koch <wk@g10code.com>

* gpg/pgp-import.c: New.
* gpg/t-support.h (print_import_result, nonnull): Factored out
from other tools.

* gpg/pgp-export.c, gpg/pgp-keylist.c: New.

2009-06-09 Werner Koch <wk@g10code.com>

* gpg/Makefile.am
(./pubring.gpg): Ignore errors in case of
already imported keys. Add --no-permission-warning and remove
obsolete --allow-secret-key-import.
* gpg/mkdemodirs.in (GPG): Add --no-permission-warning.

* gpg/t-edit.c (edit_fnc): Use gpgme_io_write.

2009-04-19 Moritz <moritz@gnu.org>

* gpg/Makefile.am (EXTRA_DIST): Replaced mkdemodirs with mkdemodirs.in.
(mkdemodirs): New target.
(clean-local): Added command for removing mkdemodirs script.
(./Alpha/Secret.gpg): Added dependency on mkdemodirs.

* gpg/mkdemodirs: Renamed to ...
* gpg/mkdemodirs.in: ... here.
* gpg/mkdemodirs.in (GPG): Derive value from @GPG@ instead of
hard-coding "gpg".

2009-02-24 Werner Koch <wk@g10code.com>

* opassuan/t-command.c: Adjust for changed new op_assuan interface.

2009-02-03 Werner Koch <wk@g10code.com>

* gpg/t-keylist.c (main): Check that new fields is_cardkey and
card_number are not set.

2009-01-26 Werner Koch <wk@g10code.com>

* opassuan/: New.
* opassuan/Makefile.am:
New.
* opassuan/t-command.c: New.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Fix path to include file.
* gpg/Makefile.am (INCLUDES), gpgsm/Makefile.am (INCLUDES): Likewise.

2008-11-18 Werner Koch <wk@g10code.com>

* gpgsm/cms-decrypt.c: New.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (INCLUDES, LDADD): Replace gpgme path with src.
* gpg/Makefile.am (INCLUDES, LDADD, t_thread1_LDADD): Likewise.
* Makefile.am (LDADD): Likewise.

2008-10-30 Werner Koch <wk@g10code.com>

* gpgsm/cms-keylist.c: New.

2008-06-19 Werner Koch <wk@g10code.com>

* gpg/t-gpgconf.c (dump_arg): Add new types. Print strings in

quotes.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (DISTCLEANFILES): Add pubring.kbx~.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-gpgconf.c (main): Allow for dirmngr not to be available.

* gpg/Makefile.am (./gpg-agent.conf): Correct pinentry path.

* gpg/pinentry:
New file.
* gpg/Makefile.am (DISTCLEANFILES, all-local): Add gpg-agent.conf
(./gpg-agent.conf): New target.
(EXTRA_DIST): Add pinentry.

* gpg/t-gpgconf.c (main): Exit early if compiled without gpgconf.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Add pubring.kbx and dirmngr.conf.

* Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS): Add t-gpgconf.
t-gpgconf.c: New file.

2007-11-23 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (show_auditlog): Check for GPG_ERR_ASS_UNKNOWN_CMD.

2007-11-23 Werner Koch <wk@g10code.com>

* gpgsm/t-verify.c (check_result): Don't exit on error but set a flag.
(main): Cosnult flag for return value.
(show_auditlog): New.
(main): Use it.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* t-engine-info.c

(check_engine_info): Fix debug output.
* gpg/Makefile.am (tests_unix): New variable.
(TESTS): Use it.
* gpg/t-support.h (passphrase_cb) [HAVE_W32_SYSTEM]: Use WriteFile instead of write.
* gpg/t-wait.c [HAVE_W32_SYSTEM]: Define sleep as _sleep.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (main): Release TEXT and SIG.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Change := into =.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgsm/t-support.h (init_gpgme) [W32]: Do not init the locales as
the constants are not available.

2007-02-26 Werner Koch <wk@g10code.com>

* gpg/t-verify.c (double_plaintext_sig): New.
(main): Check it.

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Skip unknown keys. Newer versions of
GPGSM import more keys than older ones.

2005-12-06 Werner Koch <wk@g10code.com>

* gpg/t-keylist.c (main): Changed for that secondary keys now have
a fingerprint.
*
gpg/t-keylist-sig.c (main): Ditto.
* gpgsm/t-keylist.c (main): Ditto. The test used to be wrong.

2005-10-18 Werner Koch <wk@g10code.com>

* gpg/pubdemo.asc, gpg/secdemo.asc: Add 2 expired subkeys to
Whisky.
* gpg/t-keylist.c: Reordered list to match new demo keyring. Add
arg for number of subkeys and for extra checking function.
(main): Enhanced a few error outputs. Changed subkey
counting. Call extra checking function.
(check_whisky): New.

2005-10-07 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Allow for an email address as a second uid.

* gpg/t-sig-notation.c: Change critical notation to something GnuPG understands.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Remove gpg.conf.
(DISTCLEANFILES): Add gpg.conf.
(all-local): Add gpg.conf.
(./gpg.conf): New target.
* gpg/gpg.conf: Remove file.

* gpg/Makefile.am (EXTRA_DIST): Add gpg.conf.

* gpg/Makefile.am (TESTS): Add t-sig-notation.
* gpg/t-sig-notation.c
(check_result): New file.
* gpg/t-verify.c (check_result): Also check the length of the notation data.
* gpg/gpg.conf: New file.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Add t-filename.
* gpg/t-filename.c: New file.

2005-09-23 Werner Koch <wk@g10code.com>

* gpg/t-support.h (init_gpgme) [W32]: Don't use LC_MESSAGES.

* gpg/t-encrypt-large.c: New test.
* gpg/Makefile.am (TESTS): Add t-encrypt-large.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Add t-wait.
* gpg/t-wait.c (main): New test.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* gpg/mkdemodirs: Add copyright notice.

* gpgsm/Makefile.am, gpgsm/t-support.h, gpgsm/t-decrypt.c, gpgsm/t-encrypt.c, gpgsm/t-export.c, gpgsm/t-genkey.c, gpgsm/t-import.c, gpgsm/t-keylist.c, gpgsm/t-sign.c,

gpgsm/t-verify.c, gpg/Makefile.am, gpg/t-decrypt.c,
gpg/t-decrypt-verify.c, gpg/t-edit.c, gpg/t-encrypt.c,
gpg/t-encrypt-sign.c, gpg/t-encrypt-sym.c,
gpg/t-eventloop.c,
gpg/t-export.c, gpg/t-genkey.c, gpg/t-import.c, gpg/t-keylist.c,
gpg/t-keylist-sig.c, gpg/t-sign.c, gpg/t-signers.c,
gpg/t-support.h, gpg/t-thread1.c, gpg/t-trustlist.c,
gpg/t-verify.c, Makefile.am, t-data.c, t-engine-info.c,
t-version.c: Change license to LGPL.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (struct): Add new fields VALIDITY and
KEY_LENGTH.
(main): Use them.
* gpgsm/t-import.c (check_result): New argument total_stat.
(main): Pass this argument. Reduce number of total considered
keys to 1 for the second test.

2004-04-05 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am: Changed the faked system time to 20011213T12000.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c: Add chain IDs.

2004-03-03 Werner Koch <wk@gnupg.org>

* gpgsm/t-export.c (main): Also check exporting 2 certificates.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgsm/t-import.c (check_result): gpgsm does now
return info in
the result->imports; adjust for that.

* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Reset the GPG_AGENT_INFO.

Include config.h at the top of each C source. This is required
due to LFS support.

* gpg/t-keylist-sig.c (main): s/class/sig_class/.
* gpg/t-signers.c (check_result): Ditto.
* gpg/t-sign.c (check_result): Ditto.
* gpg/t-encrypt-sign.c (check_result): Ditto.
* gpgsm/t-sign.c (check_result): Ditto.

2004-01-12 Werner Koch <wk@gnupg.org>

* gpg/t-keylist-sig.c (main): Temporary disabled one test due top
gpg 1.3.4 problems.
* gpg/t-import.c (check_result): Likewise.

2003-11-19 Werner Koch <wk@gnupg.org>

* gpg/t-support.h (DIM): Added.

* gpg/t-verify.c (check_result): Rewrote test for notations
because the order of notaions is not guaranteed.

* gpgsm/t-support.h (fail_if_err): Also print the numeric values.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: Include <sys/types.h> for old systems.

* gpgsm/Makefile.am
(DISTCLEANFILES): Add random_seed.

* gpg/t-thread1.c (thread_one): Do not call initialize_gpgme.
Likewise.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-thread1.c (main): Call init_gpgme here.
(initialize_gpgme): Function removed.

* gpg/t-thread1.c: New file.
* gpg/Makefile.am (TESTS): Add t-thread1.c.
(t_thread1_LDADD): New variable.
(LDADD): Remove GPG Error lib.
* gpgsm/Makefile.am (LDADD): Likewise.

* gpg/t-import.c (main): Likewise.
* gpg/t-keylist-sig.c (main): Likewise.
* gpg/t-keylist.c (main): Likewise.
* gpg/t-sign.c (main): Likewise.
* gpg/t-signers.c (main): Likewise.
* gpg/t-trustlist.c (main): Likewise.
* gpgsm/t-support.h: Include <stdlib.h> and <locale.h>.
(init_gpgme): New function.
* gpg/t-support.h: Likewise.
* gpgsm/t-verify.c (main): Call init_gpgme.
* gpgsm/t-decrypt.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-genkey.c (main): Likewise.
* gpgsm/t-import.c (main):
Likewise.
* gpgsm/t-keylist.c (main): Likewise.
* gpgsm/t-sign.c (main): Likewise.
* gpg/t-verify.c (main): Call init_gpgme.
* gpg/t-decrypt-verify.c (main): Likewise.
* gpg/t-decrypt.c (main): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt-sym.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpg/t-genkey.c (main): Likewise.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-sign.c (check_result): Change output format for signature
class to unsigned int.
* gpg/t-signers.c (check_result): Likewise.
* gpg/t-encrypt-sign.c (check_result): Likewise.
* gpgsm/t-sign.c (check_result): Likewise.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (check_result): Change type of SUMMARY to
unsigned int.
* gpg/t-decrypt-verify.c (check_verify_result): Likewise.
* gpg/t-keylist-sig.c (keys): Change type of member CLASS
to
unsigned int.
* t-data.c (read_cb): Change type of AMOUNT to unsigned int.
* t-version.c (version): Remove unused variable.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpg/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpgsm/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* gpg/Makefile.am (noinst_HEADERS): New variable.
* gpg/t-support.h: New file.
* gpgsm/Makefile.am (noinst_HEADERS): New variable.
* gpgsm/t-support.h: New file.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Adapt to new syntax.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

2003-05-28 Marcus
Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Rewrite recipient management.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Order t-keylist and t-keylist-sig after
t-import.
* gpg/t-edit.c (edit_fnc): Fix primary UID for keylisting tests.
* gpg/t-keylist.c: Change order of user IDs.
* gpg/t-keylist-sig.c: Likewise.
* gpg/t-import.c: Add support for gpg in CVS.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* t-data.c: Remove TEST_OUT_CB.
(main): Likewise.
* gpg/t-trustlist.c (main): Access ITEM directly.

* (t-decrypt-verify.c, t-decrypt.c, t-edit.c, t-encrypt-sign.c,
t-encrypt-sym.c, t-sign.c, t-signers.c): Include <unistd.h>.
(passphrase_cb): Rewritten.
* t-edit.c (edit_fnc): Rewritten.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

*

gpg/t-keylist-sig.c (main): Remove timestamp check.

* gpgsm/t-keylist.c: Add check for timestamp.

* gpg/Makefile.am (TESTS): Add t-keylist-sig.
* gpg/t-keylist-sig.c: New file.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Do not call print_op_info.
(print_op_info): Function removed.

* gpg/t-keylist.c: Rewritten.
* gpgsm/t-keylist.c (main): Rewritten.
* gpg/t-edit.c (main): Do not use gpgme_key_get_as_xml. Use
gpgme_key_unref instead gpgme_key_release.
* gpg/t-signers.c (main): Use gpgme_key_unref instead
gpgme_key_release.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-trustlist.c: Rewritten.

* gpg/t-verify.c (main): Rewritten.
* gpg/t-decrypt-verify.c: Rewritten.
* gpgsm/t-verify.c (main): Rewritten.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-decrypt.c (main): Rewritten.

* gpg/t-decrypt.c: Rewritten.

* gpg/t-signers.c: Rewritten.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

*
gpg/t-encrypt-sign.c (check_result): Rewritten.

* gpg/t-sign.c: Rewritten.
* gpgsm/t-sign.c: Rewritten.
* gpg/t-encrypt.c: Check for invalid recipients.
* gpgsm/t-encrypt.c: Likewise.

* gpg/t-import.c (check_result): Really use FPR.
* gpgsm/t-import.c (check_result): Rewritten.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

 * gpg/t-import.c: Rewritten.

 * gpgsm/t-genkey.c: Rewritten.
 * gpgsm/Makefile.am (noinst_PROGRAMS): Add t-genkey.
 * gpg/t-genkey.c: Include <stdlib.h>.
(main): Check result->fpr before checking its length.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

 * gpg/t-genkey.c: Rewritten to match new semantics.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

 * gpg/t-decrypt.c (passphrase_cb): Fix to new prototype.
 * gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
 * gpg/t-edit.c (passphrase_cb): Likewise.
 * gpg/t-encrypt-sign.c (passphrase_cb): Likewise.
 * gpg/t-encrypt-sym.c (passphrase_cb): Likewise.
 * gpg/t-sign.c (passphrase_cb): Likewise.
 *
gpg/t-signers.c (passphrase_cb): Likewise.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

 * t-engine-info.c: Use file_name instead path throughout.

 * Makefile.am (TESTS): Add t-engine-info.
 * t-engine-info.c: New file.
 * gpg/t-encrypt.c (main): Don't print engine info.
 * gpg/t-eventloop.c (main): Likewise.
 * gpg/t-encrypt-sign.c (main): Likewise.
 * gpgsm/t-encrypt.c (main): Likewise.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-verify.c (main): Adjust caller of gpgme_op_verify.
 * gpg/t-verify.c (main): Likewise.
 * gpg/t-decrypt-verify.c (main): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/Makefile.am (./gpgsm.conf): Add a faked system time to
avoid certification's expiry.
 * gpgsm/t-encrypt.c (main): Use the short certification name.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-genkey.c (main): Add missing argument to gpgme_op_genkey
invocation.

2002-10-09 Marcus Brinkmann
<marcus@g10code.de>

* gpg/t-decrypt.c (print_data): Update to new gpgme_data_read
interface, and use gpgme_engine_check_version instead
gpgme_check_version.
* gpg/t-decrypt-verify.c (print_data): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt.c (print_data): Likewise.
* gpg/t-encrypt-sign.c (print_data): Likewise.
* gpg/t-encrypt-sym.c (print_data): Likewise.
* gpg/t-eventloop.c (print_data): Likewise.
* gpg/t-export.c (print_data): Likewise.
* gpg/t-sign.c (print_data): Likewise.
* gpg/t-signers.c (print_data): Likewise.
* gpgsm/t-decrypt.c (print_data): Likewise.
* gpgsm/t-encrypt.c (print_data): Likewise.
* gpgsm/t-export.c (print_data): Likewise.
* gpgsm/t-sign.c (print_data): Likewise.
* gpg/t-verify.c (main): Likewise for gpgme_op_verify.
* gpgsm/t-verify.c (main): Likewise for gpgme_op_verify.
* t-data.c (read_once_test): Likewise.
(write_test): Update for new behaviour of data objects.
(main): Remove type test.

2002-09-30 Werner Koch <wk@gnupg.org>

*
gpgsm/t-keylist.c (doit): Add arg SECRET.
(main): Add option --secret.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* t-version.c: Include <string.h>. Reported by Stphane Corthsy.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-keylist.c (main): Test PATTERN for NULL before printing.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-08-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: Also add a test for the expire command (testing

the passphrase callback).

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: New file.
* gpg/Makefile (TESTS): Add t-edit.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Change type of I to size_t and
rename to LEN.
* gpg/t-verify.c (main): Likewise. Submitted by Stphane
Corthsy.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: New file.
* gpg/Makefile (TESTS): Add t-eventloop.

2002-06-26 Werner Koch <wk@gnupg.org>

*
gpgsm/t-import.c (print_op_info): New.
(main): Print operation info.

2002-06-25 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (DISTCLEANFILES): new.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (TESTS): Add t-export.
gpgsm/t-export.c: New file.

2002-06-20 Werner Koch <wk@gnupg.org>

* gpgsm/t-sign.c (main): Also test a normal signature.

* gpg/Makefile (TESTS_ENVIRONMENT): Set GPG_AGENT_INFO empty.
* gpg/t-signers.c, gpg/t-sign.c, gpg/t-encrypt-sym.c
* gpg/t-encrypt-sign.c, gpg/t-decrypt.c
* gpg/t-decrypt-verify.c (main): Changed the GPG_AGENT_INFO check to
match the one in ../../gpgme/rungpg.c.

2002-06-12 Werner Koch <wk@gnupg.org>

* gpgsm/t-keylist.c (doit): Print operation info if available.

2002-06-10 Werner Koch <wk@gnupg.org>

* gpgsm/t-verify.c (print_sig_stat): Print the error token.

2002-06-04 Werner Koch <wk@gnupg.org>

* gpgsm/t-encrypt.c (main): Add a simple option parser and allow
to specify an encryption
key.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (all-local): Remove dependency on ./secring.gpg.
(./secring.gpg): Remove target, and move all rules for this target
to ...
(./pubring.gpg): ... here. This was necessary because GnuPG 1.0.7
does create an empty secring.gpg file when importing public keys.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.
(status_string): Add new exipred stati.

2002-05-03 Werner Koch <wk@gnupg.org>

* gpg/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.
(status_string): Add new exipred stati.

2002-04-05 Marcus Brinkmann <marcus@g10code,de>

* gpgsm/Makefile.am (./trustlist.txt): Put more into this file to
prevent use of gpg-agent.
(./gpg-agent.conf): Remove target.
(all-local): Remove ./gpg-agent.conf.

2002-04-05 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c
(main): Use gpgme_engine_check_version instead
gpgme_check_engine.
* gpgsm/t-encrypt.c (main): Likewise.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sym.

2002-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Remove random_seed, which is now
in DISTCLEANFILES.

2002-03-04 Werner Koch <wk@gnupg.org>

* gpg/Makefile.am (DISTCLEANFILES): Added.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (main): Add a few more sanity checks, and a check
for normal signatures.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sign.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sign.

2002-02-13 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (private-keys-v1.d): Don't
fail when the directory already exists.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): New target.
(distclean-local): Rename to
...
(clean-local): ... this.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (./private-keys-v1.d/$(key_id).key): Fix rule.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-genkey.c: New file (not added to Makefile.am because of
gpg-agent bug).

2002-02-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Update value.
(all-local): Add .key to keyid filename.
(./private-keys-v1.d/$(key_id)): Renamed to ...
(./private-keys-v1.d/$(key_id).key): ... this.
(all-local): Add ./gpgsm.conf, ./trustlist.txt.

(./gpgsm.conf, ./trustlist.txt): New target.
* gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Renamed to ...
* gpgsm/32100C27173EF6E9C4E9A25D3D69F86D37A4F939: ... this.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-import.c (print_op_info): New function.
(main): Use it.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-signers.c (passphrase_cb): Change type of r_hd to void**.
* gpg/t-sign.c (passphrase_cb):
Likewise.
* gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
* gpg/t-decrypt.c (passphrase_cb): Likewise.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-decrypt-verify.c: Don't include `mcheck.h'. Reported by
Stphane Corthsy.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Add missing line continuation.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (EXTRA_DIST): Add $(key_id).

2001-12-16 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile: Rename `pubcerts.kbx' to `pubring.kbx'.

2001-12-15 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (check_two_contexts): Set protocols.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-sign.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-sign.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-decrypt.c: New file.
* gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Likewise.
* gpgsm/Makefile.am (TESTS): Add

t-decrypt.
(key_id): New variable.
(all-local): New target ./private-keys-v1.d/$(key_id) added.
(./private-keys-v1.d/$(key_id)): New target.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-verify.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (GPG): Set to @GPG_PATH@.
(./pubring.gpg): Use $(GPG) instead gpg.
(./secring.gpg): Likewise.

* gpgsm/t-import.c (main): Remove third test case.
* gpgsm/Makefile.am (GPGSM): Set to @GPGSM@.
(all-local): New target.
(./pubcerts.kbx): Likewise.
* gpgsm/t-encrypt.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-encrypt.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-keylist.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/cert_dfn_pca01.der: New file.
* gpgsm/cert_dfn_pca15.der: Likewise.
* gpgsm/cert_g10code_test1.der: Likewise.
* gpgsm/t-import.c: Likewise.
*
gpgsm/Makefile.am (EXTRADIST): Add new files.
(TESTS): Add t-import.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/: New directory.
* Makefile.am, t-verify.c, t-encrypt.c, t-signers.c, t-trustlist.c,
t-sign.c, t-keylist.c, t-import.c, t-genkey.c, t-export.c,
t-decrypt-verify.c, t-decrypt.c, t-version.c, t-data.c, mkdemodirs.
cipher-1.asc, cipher-2.asc, geheim.txt, pubdemo.asc, pubkey-1.asc,
secdemo.asc, seckey-1.asc): Move to sub directory gpg/.

* gpg/Makefile.am (INCLUDES): Include gpgme/, not include/ and

intl/.
(LDD): Correct relative path to gpgme library.
(TESTS): Remove t-version and t-data.
* gpg/t-verify.c, gpg/t-encrypt.c, gpg/t-signers.c, gpg/t-trustlist.c,
gpg/t-sign.c, gpg/t-keylist.c, gpg/t-import.c, gpg/t-genkey.c,
gpg/t-export.c, gpg/t-decrypt-verify.c, gpg/t-decrypt.c,
t-version.c, t-data.c): Include gpgme.h, not "../gpgme/gpgme.h".

* Makefile.am: New file.
* gpgsm/: New directory.
* gpgsm/Makefile.am: New file.

2001-11-16 Marcus
Brinkmann <marcus@g10code.de>

* Makefile.am (TESTS): Add t-decrypt-verify.
* t-decrypt-verify.c: New file.
* cipher-2.asc: Likewise.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

* t-data.c: Include stddef.h.
(read_once_test): Change type of READ to size_t.
(read_test): Likewise.
(write_test): Likewise.

2001-10-29 Marcus Brinkmann <marcus@g10code.de>

* t-signers.c: New file.
* Makefile.am (TESTS): Add t-signers.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Revert last change.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Set environment to $(srcdir),
not current directory.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* t-data.c (write_test): New function.
(main): Invoke write_test for all rounds except TEST_OUT_CB.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Remove spurious duplicate to silence

automake.

2001-10-16 Marcus Brinkmann <marcus@g10code.de>

*
t-version.c: New file.
* t-data.c: Likewise.
* t-data-1.txt: Likewise.
* t-data-2.txt: Likewise.
* Makefile.am (TESTS): Add t-version, t-data.

2001-09-17 Werner Koch <wk@gnupg.org>

* t-keylist.c (check_two_contexts): New.

2001-09-03 Werner Koch <wk@gnupg.org>

* t-encrypt.c (print_op_info): New and use it after each operation.

2001-08-28 Werner Koch <wk@gnupg.org>

* t-sign.c (print_op_info): New and use it after each operation.

2001-03-15 Werner Koch <wk@gnupg.org>

* t-keylist.c (doit): List subkeys too, show caps.

2001-02-13 Werner Koch <wk@gnupg.org>

* t-verify.c (print_sig_stat): Repaled ulong by unsigned long
because we don't use the config stuff here.

2001-02-12 Werner Koch <wk@gnupg.org>

* tests/t-verify.c (print_sig_stat): Print info about the keys.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited
permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

```
(11:private-key(3:dsa(1:p129:eC_L&$2,6tx.gh1VirlqI9
,^g3.$DveUvX1'oIj)(1:q21: #UFK2z(tuVG)(1:g128:zu^Rab;qeQQA B?/6/aspfE/
gx!Mr0YY*oMrJc2xWG:.r6)(1:y128:Uf]j^@oEn4j#QrRq" RcEa E/}4C[3A
5+~~.#!+
)W&5d)ij)(1:x21:` )))
# libgpgme.vers - List of symbols to export.
# Copyright (C) 2002, 2004, 2005, 2009, 2012 g10 Code GmbH
#
# This file is part of GPGME.
#
# GPGME is free software; you can redistribute it and/or modify
# it under the terms of the GNU Lesser general Public License as
# published by the Free Software Foundation; either version 2.1 of
# the License, or (at your option) any later version.
#
# GPGME is distributed in the hope that it will be useful,
# but WITHOUT ANY WARRANTY; without even the implied warranty of
# MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
# GNU Lesser General Public License for more details.
#
# You should have received a copy of the GNU Lesser General Public
# License along with this program; if not, see <https://www.gnu.org/licenses/>.

#-----------------------------------------------------
# Please remember to add new functions also to gpgme.def
#-----------------------------------------------------

GPGME_1.1 {
 global:
   gpgme_set_engine_info;

    gpgme_ctx_get_engine_info;
   gpgme_ctx_set_engine_info;

   gpgme_data_set_file_name;
   gpgme_data_get_file_name;
   gpgme_data_identify;

   gpgme_sig_notation_clear;
   gpgme_sig_notation_add;
   gpgme_sig_notation_get;

   gpgme_free;

   gpgme_op_getauditlog_start;
   gpgme_op_getauditlog;

   gpgme_conf_release;
```

gpgme_conf_arg_new;
gpgme_conf_arg_release;
gpgme_conf_opt_change;
gpgme_op_conf_load;
gpgme_op_conf_save;
gpgme_op_conf_dir;

gpgme_cancel_async;

gpgme_op_assuan_result;
gpgme_op_assuan_transact;
gpgme_op_assuan_transact_start;

gpgme_check_version_internal;

gpgme_io_read;
gpgme_io_write;

gpgme_result_ref;
gpgme_result_unref;

gpgme_op_import_keys;
gpgme_op_import_keys_start;
gpgme_op_export_keys;
gpgme_op_export_keys_start;

gpgme_op_assuan_transact_ext;

gpgme_wait_ext;

gpgme_op_vfs_mount_result;
gpgme_op_vfs_mount;
gpgme_op_vfs_create;

gpgme_key_from_uid;
gpgme_set_sub_protocol;
gpgme_get_sub_protocol;

gpgme_op_passwd_start;
gpgme_op_passwd;

gpgme_set_global_flag;

gpgme_io_writen;

gpgme_set_pinentry_mode;
gpgme_get_pinentry_mode;

```
  gpgme_get_dirinfo;

  gpgme_op_spawn_start;
  gpgme_op_spawn;

  gpgme_set_offline;
  gpgme_get_offline;

  gpgme_set_status_cb;
  gpgme_get_status_cb;

  gpgme_pubkey_algo_string;
  gpgme_set_ctx_flag;
  gpgme_get_ctx_flag;
  gpgme_data_set_flag;

  gpgme_op_createkey_start;
  gpgme_op_createkey;
  gpgme_op_createsubkey_start;
  gpgme_op_createsubkey;
  gpgme_op_adduid_start;
  gpgme_op_adduid;
  gpgme_op_revuid_start;
  gpgme_op_revuid;
  gpgme_op_keysign_start;
  gpgme_op_keysign;
  gpgme_op_tofu_policy_start;
  gpgme_op_tofu_policy;
  gpgme_op_interact_start;
  gpgme_op_interact;

  gpgme_addrspec_from_uid;

  gpgme_set_sender;
  gpgme_get_sender;

  gpgme_op_query_swdb;
  gpgme_op_query_swdb_result;

   gpgme_op_set_uid_flag_start;
  gpgme_op_set_uid_flag;

  gpgme_op_decrypt_ext;
  gpgme_op_decrypt_ext_start;

  gpgme_data_new_from_estream;

};
```

```
GPGME_1.0 {
 global:
   gpgme_check_version;
   gpgme_get_engine_info;
   gpgme_engine_check_version;

   gpgme_err_code_from_errno;
   gpgme_err_code_to_errno;
   gpgme_err_make_from_errno;
   gpgme_error_from_errno;
   gpgme_strerror;
   gpgme_strerror_r;
   gpgme_strsource;

   gpgme_data_get_encoding;
   gpgme_data_new;
   gpgme_data_new_from_cbs;
   gpgme_data_new_from_fd;
   gpgme_data_new_from_file;
   gpgme_data_new_from_filepart;
   gpgme_data_new_from_mem;
   gpgme_data_new_from_stream;
   gpgme_data_read;
   gpgme_data_release;
   gpgme_data_release_and_get_mem;
   gpgme_data_seek;
   gpgme_data_set_encoding;
   gpgme_data_write;

   gpgme_get_protocol_name;
   gpgme_hash_algo_name;
   gpgme_pubkey_algo_name;

   gpgme_new;
   gpgme_get_armor;
   gpgme_get_include_certs;
   gpgme_get_io_cbs;
    gpgme_get_keylist_mode;
   gpgme_get_passphrase_cb;
   gpgme_get_progress_cb;
   gpgme_get_protocol;
   gpgme_get_textmode;
   gpgme_release;
   gpgme_set_armor;
   gpgme_set_include_certs;
   gpgme_set_io_cbs;
```

gpgme_set_keylist_mode;
gpgme_set_locale;
gpgme_set_passphrase_cb;
gpgme_set_progress_cb;
gpgme_set_protocol;
gpgme_set_textmode;
gpgme_signers_add;
gpgme_signers_clear;
gpgme_signers_count;
gpgme_signers_enum;

gpgme_key_ref;
gpgme_key_unref;
gpgme_key_release;

gpgme_trust_item_ref;
gpgme_trust_item_unref;

gpgme_cancel;
gpgme_op_card_edit;
gpgme_op_card_edit_start;
gpgme_op_decrypt;
gpgme_op_decrypt_result;
gpgme_op_decrypt_start;
gpgme_op_decrypt_verify;
gpgme_op_decrypt_verify_start;
gpgme_op_delete;
gpgme_op_delete_start;
gpgme_op_delete_ext;
gpgme_op_delete_ext_start;
gpgme_op_edit;
gpgme_op_edit_start;
gpgme_op_encrypt;
gpgme_op_encrypt_start;
gpgme_op_encrypt_ext;
gpgme_op_encrypt_ext_start;
gpgme_op_encrypt_sign;
gpgme_op_encrypt_sign_ext;
gpgme_op_encrypt_sign_start;
gpgme_op_encrypt_sign_ext_start;
gpgme_op_encrypt_result;

gpgme_op_export;
gpgme_op_export_ext;
gpgme_op_export_ext_start;
gpgme_op_export_start;
gpgme_op_genkey;
gpgme_op_genkey_result;

gpgme_op_genkey_start;
gpgme_get_key;
gpgme_op_import;
gpgme_op_import_result;
gpgme_op_import_start;
gpgme_op_keylist_end;
gpgme_op_keylist_ext_start;
gpgme_op_keylist_from_data_start;
gpgme_op_keylist_next;
gpgme_op_keylist_result;
gpgme_op_keylist_start;
gpgme_op_sign;
gpgme_op_sign_result;
gpgme_op_sign_start;
gpgme_op_trustlist_end;
gpgme_op_trustlist_next;
gpgme_op_trustlist_start;
gpgme_op_verify;
gpgme_op_verify_result;
gpgme_op_verify_start;
gpgme_wait;

gpgme_data_new_with_read_cb;
gpgme_data_rewind;
gpgme_get_sig_status;
gpgme_get_sig_string_attr;
gpgme_get_sig_ulong_attr;
gpgme_get_sig_key;
gpgme_key_get_string_attr;
gpgme_key_get_ulong_attr;
gpgme_key_sig_get_string_attr;
gpgme_key_sig_get_ulong_attr;
gpgme_op_import_ext;
gpgme_trust_item_get_int_attr;
gpgme_trust_item_get_string_attr;
gpgme_trust_item_release;

gpgme_err_code_from_syserror;
gpgme_err_set_errno;

gpgme_op_setexpire;
gpgme_op_setexpire_start;

gpgme_op_revsig;
gpgme_op_revsig_start;

local:
*;

```
};
# -*- mode: org -*-
#+TITLE: What's New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* What's New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:

| Version:        | 0.0.1                              |
| GPGME Version:  | 1.13.0                             |
| Author:         | Ben McGinnes <ben@gnupg.org>       |
| Author GPG Key: | DB4724E6FA4286C92B4E55C4321E4E2373590E5D |
| Language:       | Australian English, British English |
| xml:lang:       | en-AU, en-GB, en                   |

Last time the most obviously new thing was adding the /What's New/
section to the HOWTO.  Now it's moving it out of the HOWTO.


** New in GPGME 1130
  :PROPERTIES:
   :CUSTOM_ID: new-stuff-1-13-0
  :END:

Additions since GPGME 1.12.0 include:

- Moving the /What's New/ section out of the basic [[file:gpgme-python-howto.org][HOWTO]] document and
 into its own file so as to more readily include other documents
 beyond that HOWTO.
- Moving the preceding, archival, segments into [[file:what-was-new.org][another file]].
- Added =gpg.version.versionintlist= to make it easier for Python
 developers to check for a specific version number, even with beta
 versions (it will drop the "-betaN" part).
- Added expanded detail on issues pertaining to installing for Windows
 users.
- Bindings enter [[file:maintenance-mode][maintenance mode]] from January, 2019.
- Added documentation on maintenance mode and what changes can be made
```

to the code when in that status. Essentially that boils down to bug fixes only and no feature requests.
- The import-keys-hkp.py example script, which uses the =hkp4py= module to search the SKS servers for a key, has been tightened up to search for both hexadecimal key IDs and user ID strings with reduced chance of unnecessary repitition. There may still be some repetition if a key includes a user ID matching the hexadecimal value of a key ID.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these

rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.
^L
Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it

does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order
to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under

the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the
ordinary GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

^L
Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete
corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work
that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a)
Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will
operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.
^L
7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined
with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they
do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution
system which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot

impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this.
Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED
ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file
to most
effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston,

MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
1603972630
##Sketch 1 2
document()
layout('A4',1)
fp((0,0,0))
ft(1)
Fn('Helvetica-Bold')
Fs(18)
dstyle('Text')
fp((0,1,0.498))
ft(1)
lp((0,0,0))
lw(0.283465)
lc(1)
lj(0)
ld(())
la1()
la2()
dstyle('Application Box')
layer('Layer 1',1,1,0,0,(0,0,0))
lw(1)
r(0,0,0,0,688.145,44.1554)
lw(1)
r(0,0,0,0,682.363,85.0359)
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(605.383,329.758,0)
bs(605.383,230.546,0)
lw(1)
r(0,0,0,0,807.414,53.6148)
lp((0.392,0.584,0.929))

lw(4.25)
b()
bs(480.134,240.945,0)
bs(480.358,325.277,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(474.803,432.284,0)
bs(475.334,360.243,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(354.331,432.284,0)
bs(352.806,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(212.598,432.284,0)
bs(212.598,361.417,0)
fp((0.999,1,0.4))
lw(0.283465)
r(70.5968,0,0,-56.6929,191.608,488.976,0.0603744,0.151107)
lw(1)
r(0,0,0,0,88.5492,390.805)
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(226.772,524.409,0)
bs(226.772,488.976,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(403.937,528.718,0)
bs(403.937,488.976,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(240.945,432.284,0)
bs(240.574,394.994,0)
bs(595.276,396.85,0)

bs(595.276,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(333.071,432.284,0)
bs(333.07,425.196,0)
bs(333.07,382.677,0)
bs(240.945,382.677,0)
bs(240.945,361.417,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,318.897,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(10)
txt('GPG',(1,0,0,0.905764,344.004,335.686))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,446.763,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgConf',(0.552654,0,0,0.500564,481.802,340.184),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,191.338,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgSM',(0.552654,0,0,0.500574,226.376,340.185),1,1)
G_()
lp((0.392,0.584,0.929))
lw(4.25)

b()
bs(347.244,325.984,0)
bs(347.244,325.984,0)
bs(347.244,255.118,0)
bs(304.724,255.118,0)
bs(304.724,226.771,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(233.858,325.984,0)
bs(233.858,255.118,0)
bs(276.378,255.118,0)
bs(276.378,226.771,0)
fp((0,0,0))
le()
lw(1)
Fn('Palatino-Roman')
txt('2008-07-17',(0.608301,0,0,0.608301,708.661,65.8308))
lw(1)
r(0,0,0,0,750.427,153.265)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(219.685,325.984,0)
bs(219.685,198.425,0)
bs(219.685,162.992,0)
G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4333,162.992,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('LDAP
 Server',(0.552654,0,0,0.552654,92.1261,148.819),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')

Fs(18)
txt('(CRLs, Certificates)',(0.552654,0,0,0.552654,92.1261,134.646),1,1)
G_()
G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4331,99.2125,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('HTTP Server',(0.552654,0,0,0.552654,92.1259,85.0394),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('(CRLs)',(0.552654,0,0,0.552654,92.1259,70.8662),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.866,0,0,-31.2962,191.338,158.855,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('DirMngr',(0.552654,0,0,0.552654,224.02,142.978),1,1)
G_()
lw(2)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(219.15,126.18,0)
bs(219.685,77.9528,0)
bs(155.906,77.9528,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(233.858,127.559,0)
bs(233.858,99.2125,0)

bs(276.378,99.2125,0)
bs(276.378,85.0393,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(248.031,127.559,0)
bs(248.031,113.386,0)
bs(375.59,113.386,0)
bs(375.59,85.0393,0)
G()
fp((1,0.647,0.31))
lw(0.283465)
r(99.2124,0,0,-28.3464,333.07,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Certificate
 Cache',(0.552654,0,0,0.552654,382.606,69.8548),1,1)
fp((1,0.647,0.31))
lw(0.283465)
r(70.5589,0,0,-28.3464,248.031,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('CRL Cache',(0.552654,0,0,0.552654,284.147,70.6936),1,1)
G_()
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,240.945,0)
bs(503.149,283.464,0)
bs(588.189,283.465,0)
bs(588.189,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,283.464,0)
bs(503.149,283.464,0)
bs(361.417,283.464,0)
bs(361.417,325.984,0)

```
lw(1)
la2(([(-4.0,
 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(361.417,283.464,0)
bs(205.512,283.465,0)
bs(205.512,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.015,85.0393,0)
bs(574.015,141.732,0)
bs(262.204,141.732,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(602.361,85.0393,0)
bs(602.361,170.079,0)
bs(439.37,170.079,0)
bs(439.37,311.811,0)
bs(460.629,311.811,0)
bs(460.629,325.984,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(389.763,240.945,0)
bs(389.763,269.291,0)
bs(290.551,269.291,0)
bs(290.551,340.157,0)
bs(262.204,340.157,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(389.763,269.291,0)
bs(559.843,269.291,0)
bs(559.843,333.071,0)
bs(574.016,333.071,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(488.976,85.0393,0)
bs(488.976,127.559,0)
bs(389.763,127.559,0)
bs(389.763,212.598,0)
lw(2)
```

ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(205.512,127.559,0)
bs(205.512,113.386,0)
bs(170.079,113.386,0)
bs(170.079,141.732,0)
bs(155.906,141.732,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(622.961,356.76,0)
bs(622.961,518.503,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3459,573.199,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgAgent',(0.552654,0,0,0.500554,608.238,340.185),1,1)
G_()
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(721.712,467.717,0)
bs(721.712,297.838,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,686.278,297.637,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('SCdaemon',(0.552654,0,0,0.500564,721.316,283.492),1,1)
G_()
fp((1,0.647,0.31))
lw(0.283465)
lj(1)

r(86.162,0,0,-117.493,679.192,566.929,0.181818,0.333333)
G()
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(18)
txt('Smartcard',(0.552654,0,0,0.552654,698.127,491.036))
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-31.2962,686.279,557.593,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Card
 Reader',(0.552654,0,0,0.552654,721.318,541.975),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(73.6353,0,0,-41.2944,587.066,565.703,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('PIN Entry',(0.57675,0,0,0.729211,623.632,545.097),1,1)
G_()
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(643.758,340.157,0)
bs(643.758,340.157,0)
bs(707.539,340.158,0)
bs(707.539,304.724,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.016,283.465,0)
bs(587.066,283.464,0)
bs(686.278,283.464,0)
G()

```
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(98.9053,325.985,0)
bs(98.9053,240.945,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,63.7795,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('WatchGnuPG',(0.552654,0,0,0.552654,98.8185,338.713),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.5589,0,0,-28.1194,63.7795,240.718,0.0670228,0.168178)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Log
 Socket',(0.552654,0,0,0.552654,98.8175,225.1),1,1)
G_()
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,446.457,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,485.621,226.772),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
```

r(85.0392,0,0,-28.3464,545.669,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,584.834,70.8662),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(84.6546,0,0,-27.3609,347.245,239.959,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help
 Files',(0.552654,0,0,0.552654,388.252,224.705),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(84.6546,0,0,-27.3609,446.457,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help Files',(0.552654,0,0,0.552654,487.464,69.7854),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,248.032,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')

```
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Keybox Files',(0.552654,0,0,0.552654,289.59,226.322),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.866,0,0,-28.3464,574.016,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Private Keys',(0.552654,0,0,0.552654,609.449,226.772),1,1)
G_()
G()
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(24)
txt('Scute',(0.552654,0,0,0.599958,224.978,465.775),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Times-Roman')
Fs(10)
txt('(pkcs#11)',(1,0,0,1.08559,206.081,445.011))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(198.827,0,0,-56.6929,304.322,488.976,0.0603744,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
```

```
Fs(36)
txt('GPGME
 Library',(0.552654,0,0,0.552654,404.952,457.853),1,1)
G_()
G()
lw(1)
style('Application Box')
r(197.598,0,0,-42.5187,304.724,566.928,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('GPGME aware Application',(0.98062,0,0,0.937018,334.892,540.985))
G_()
G()
lw(1)
style('Application Box')
r(127.829,0,0,-41.7496,162.992,566.159,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('Legacy Application',(174.688,540.01))
G_()
G()
G()
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(749.296,162.296,0)
bs(705.89,162.296,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0,
 -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,100.083,0)
bs(744.472,100.083,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,131.189,0)
bs(744.472,131.189,0)
fp((0,0,0))
le()
lw(1)
```

Fn('Helvetica')
Fs(14)
style('Text')
txt('execute/access',(0.31891,0,0,0.280771,726.951,87.3768),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('closely linked',(0.31891,0,0,0.280771,724.715,149.589),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Assuan protocol',(0.31891,0,0,0.280771,728.535,118.483),1,1)
G_()
lw(1)
r(56.6929,0,0,-92.126,701.575,170.079)
G_()
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(248.031,325.984,0)
bs(248.031,297.638,0)
bs(538.583,297.638,0)
bs(538.583,340.157,0)
bs(566.929,340.157,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(375.591,325.984,0)
bs(375.591,304.724,0)
bs(531.496,304.724,0)
bs(531.496,347.244,0)
bs(566.929,347.244,0)
guidelayer('Guide
 Lines',1,0,0,1,(0,0,1))
grid((0,0,7.08661,7.08661),1,(0,0,1),'Grid')
00~0
 *H
0k10 UDE10U

Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10
011203093638Z
021203093638Z0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 100
 *H
0l+Pu.\-ZT$e'nE&h4<}BePm[%j-/7PcHKi@FKy~npcd${]K~Q00U37Tq8_eK40U#037Tq8_eK4om0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10U00
 *H
l8gD Z
wYL,M'j
pk2pf|L ;Rl}#h$~O!9;3e\A'v&P^$'Oc.-TS~A>:fQY<
-*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Introduction
 :PROPERTIES:
 :CUSTOM_ID: intro
 :END:

Version:	0.1.5
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
Language codes:	en-AU, en-GB, en

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.

** Python 2 versus Python
 3
  :PROPERTIES:

:CUSTOM_ID: py2-vs-py3
:END:

Though the GPGME Python bindings themselves provide support for both Python 2 and 3, the focus is unequivocally on Python 3 and specifically from Python 3.4 and above. As a consequence all the examples and instructions in this guide use Python 3 code.

Much of it will work with Python 2, but much of it also deals with Python 3 byte literals, particularly when reading and writing data. Developers concentrating on Python 2.7, and possibly even 2.6, will need to make the appropriate modifications to support the older string and unicode types as opposed to bytes.

There are multiple reasons for concentrating on Python 3; some of which relate to the immediate integration of these bindings, some of which relate to longer term plans for both GPGME and the python bindings and some of which relate to the impending EOL period for Python 2.7. Essentially, though, there is little value in tying the bindings to a version of the language which
is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data types with which GPGME deals considerably easier.

** Examples
:PROPERTIES:
:CUSTOM_ID: howto-python3-examples
:END:

All of the examples found in this document can be found as Python 3 scripts in the =lang/python/examples/howto= directory.

** Unofficial Drafts
:PROPERTIES:
:CUSTOM_ID: unofficial-drafts
:END:

In addition to shipping with each release of GPGME, there is a section on locations to read or download [[#draft-editions][draft editions]] of this document from at the end of it. These are unofficial versions produced in between major releases.

** What's New
:PROPERTIES:
:CUSTOM_ID: new-stuff

:END:

Full details of what is new are now available in the [[file:what-is-new.org][What's New]] file
and archives of the preceding /What's New/ sections are available in
the [[file:what-was-new][What Was New]] file.

*** New in GPGME 1130
:PROPERTIES:
:CUSTOM_ID:
new-stuff-1-13-0
:END:

See the [[file:what-is-new#new-stuff-1-13-0][What's New]] document for what is new in version 1.13.0.

*** New in GPGME 1120
:PROPERTIES:
:CUSTOM_ID: new-stuff-1-12-0
:END:

See the [[file:what-was-new#new-stuff-1-12-0][What Was New]] document for what was new in version 1.12.0.

* GPGME Concepts
:PROPERTIES:
:CUSTOM_ID: gpgme-concepts
:END:

** A C API
:PROPERTIES:
:CUSTOM_ID: gpgme-c-api
:END:

Unlike many modern APIs with which programmers will be more familiar
with these days, the GPGME API is a C API. The API is intended for
use by C coders who would be able to access its features by including
the =gpgme.h= header file with their own C source code and then access
its functions just as they would any other C headers.

This is a very effective method of gaining complete access to the API
and in the most efficient manner possible. It does, however, have the
drawback that it cannot be directly used by other languages without
some
means of providing an interface to those languages. This is
where the need for bindings in various languages stems.

** Python bindings
:PROPERTIES:
:CUSTOM_ID: gpgme-python-bindings
:END:

The Python bindings for GPGME provide a higher level means of
accessing the complete feature set of GPGME itself. It also provides
a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of
=gpgme.h= generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied
to the exact same version of GPGME used to generate that copy of
=gpgme.h=.

** Difference between the Python bindings and other GnuPG Python packages
:PROPERTIES:
:CUSTOM_ID: gpgme-python-bindings-diffs
:END:

There have been numerous attempts to add GnuPG support to Python over
the years. Some of the most well known are listed here, along with
what differentiates them.

*** The python-gnupg package maintained
by Vinay Sajip
:PROPERTIES:
:CUSTOM_ID: diffs-python-gnupg
:END:

This is arguably the most popular means of integrating GPG with
Python. The package utilises the =subprocess= module to implement
wrappers for the =gpg= and =gpg2= executables normally invoked on the
command line (=gpg.exe= and =gpg2.exe= on Windows).

The popularity of this package stemmed from its ease of use and
capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the
past; most of which stemmed from using unsafe methods of accessing the
command line via the =subprocess= calls. While some effort has been
made over the last two to three years (as of 2018) to mitigate this,
particularly by no longer providing shell access through those
subprocess calls, the wrapper is still somewhat limited in the scope

of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

*** The gnupg package created
and maintained by Isis Lovecruft
:PROPERTIES:
:CUSTOM_ID: diffs-isis-gnupg
:END:

In 2015 Isis Lovecruft from the Tor Project forked and then
re-implemented the python-gnupg package as just gnupg. This new
package also relied on subprocess to call the =gpg= or =gpg2=
binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however,
resulted in conflicts with the original python-gnupg and since its
functions were called in a different manner to python-gnupg, the
release of this package also resulted in a great deal of consternation
when people installed what they thought was an upgrade that
subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License
version 3.0 (or any later version).

*** The PyME package maintained by Martin Albrecht
:PROPERTIES:
:CUSTOM_ID: diffs-pyme
:END:

This package is the origin of these bindings, though they are somewhat
different now.
For details of when and how the PyME package was
folded back into GPGME itself see the [[file:short-history.org][Short History]] document.[fn:1]

The PyME package was first released in 2002 and was also the first
attempt to implement a low level binding to GPGME. In doing so it
provided access to considerably more functionality than either the
=python-gnupg= or =gnupg= packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME
itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version 2.1 (or any
later version).

* GPGME Python bindings installation
 :PROPERTIES:
 :CUSTOM_ID: gpgme-python-install
 :END:

** No PyPI
  :PROPERTIES:
  :CUSTOM_ID: do-not-use-pypi
  :END:

Most
 third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against =gpgme.h= and =gpgme.h= is generated from
=gpgme.h.in= at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require
either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding [[#snafu-cffi][CFFI and SWIG]] at the end of this
section for further details.

** Requirements
  :PROPERTIES:
  :CUSTOM_ID: gpgme-python-requirements
  :END:

The GPGME Python bindings only have three requirements:

1. A suitable version of Python 2 or Python 3. With Python 2 that
  means CPython
 2.7 and with Python 3 that means CPython 3.4 or
  higher.
2. [[https://www.swig.org][SWIG]].
3. GPGME itself. Which also means that all of GPGME's dependencies

must be installed too.

*** Recommended Additions
:PROPERTIES:
:CUSTOM_ID: gpgme-python-recommendations
:END:

Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide
a significant advantage in some way.

1. If possible, use Python 3 instead of 2.
2. Favour a more recent version of Python since even 3.4 is due to
reach EOL soon. In production systems and services, Python 3.6
should be robust enough to be relied on.
3. If possible add the following Python modules which are not part of
the standard library: [[http://docs.python-requests.org/en/latest/index.html][Requests]],
[[https://cython.org/][Cython]],
[[https://pendulum.eustace.io/][Pendulum]] and [[https://github.com/Selfnet/hkp4py][hkp4py]].

Chances are quite high that at least the first one and maybe two of
those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly
well known and commonly installed ones, however, which are in many
cases likely to have already been installed on many systems or be
familiar to Python programmers.

** Installation
:PROPERTIES:
:CUSTOM_ID: installation
:END:

Installing the Python bindings is effectively achieved by compiling
and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME
are installed you only need to confirm that the version(s) of Python
you want the bindings installed for are in your =$PATH=.

By default GPGME will attempt to install the bindings for the most
recent or highest version number of Python 2 and Python

3 it detects
in =$PATH=. It specifically checks for the =python= and =python3=
executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: =python=,
=python2= and =python2.7=.

For Python 3 it checks for these executables in this order: =python3=,
=python3.7=, =python3.6=, =python3.5= and =python3.4=.[fn:2]

On systems where =python= is actually =python3= and not =python2= it
may be possible that =python2= may be overlooked, but there have been
no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has
been extensive testing and work with these bindings with no issues
specifically relating to the new version of Python or any of the new
features of either the language or the bindings. This has also been
the case with Python 3.7.1rc1. With that in mind and given the
release of Python 3.7.1 is scheduled for around the same time as GPGME
1.12.0, the order of preferred
Python versions has been changed to
move Python 3.7 ahead of Python 3.6.

*** Installing GPGME
:PROPERTIES:
:CUSTOM_ID: install-gpgme
:END:

See the GPGME =README= file for details of how to install GPGME from
source.

** Known Issues
:PROPERTIES:
:CUSTOM_ID: snafu
:END:

There are a few known issues with the current build process and the
Python bindings. For the most part these are easily addressed should
they be encountered.

*** Breaking Builds
:PROPERTIES:
:CUSTOM_ID: snafu-a-swig-of-this-builds-character
:END:

Occasionally when installing GPGME with the Python bindings included
it may be observed that the =make= portion of that process induces a
large very number of warnings and, eventually errors which end that
part of the build process. Yet following that with =make check= and
=make install= appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to
dynamically generate the C bindings for GPGME in
 the first place. So
the entire process will always produce =lang/python/python2-gpg/= and
=lang/python/python3-gpg/= directories. These should contain the
build output generated during compilation, including the complete
bindings and module installed into =site-packages=.

Occasionally the errors in the early part or some other conflict
(e.g. not installing as */root/* or */su/*) may result in nothing
being installed to the relevant =site-packages= directory and the
build directory missing a lot of expected files. Even when this
occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the
root user or prepended with =sudo -H=[fn:3] in the =lang/python/=
directory:

#+BEGIN_SRC shell
 /path/to/pythonX.Y setup.py build
 /path/to/pythonX.Y setup.py build
 /path/to/pythonX.Y setup.py install
#+END_SRC

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or
 incomplete steps during the
=configure=, =make= and =make install= steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
=setup.py= and =gpgme.h= files).

**** IMPORTANT Note
   :PROPERTIES:
   :CUSTOM_ID: snafu-swig-build-note
   :END:

If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when

listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build
process before generating bindings for those other languages. In
these cases it may be preferable to configure all preferred language
bindings separately with alternative =configure= steps for GPGME using
the =--enable-languages=$LANGUAGE= option.

Alternatively
 =make= (or =gmake=, depending on your platform) may be
run with the the =-k= option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.

*** Reinstalling Responsibly
  :PROPERTIES:
  :CUSTOM_ID: snafu-lessons-for-the-lazy
  :END:

Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the
relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing
 the previous version(s) is simply a matter of changing to the
relevant =site-packages= directory for the version of Python in
question and removing the =gpg/= directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

*** Multiple installations
  :PROPERTIES:
  :CUSTOM_ID: snafu-the-full-monty

:END:

For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings *must*
match those used to
compile Python itself, including the version number(s) (at least going
by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME [[https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e][1.12.1]] the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, and so on
up until the current dev branch that it finds. Usually this will be in the
same prefix as GPGME itself, but is dictated by the =$PATH= when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find, including alternative prefixes.

*** Won't Work With Windows
:PROPERTIES:
:CUSTOM_ID: snafu-runtime-not-funtime
:END:

There are semi-regular reports of Windows users
having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
[[https://python.org][Python website]] (i.e. mostly MSI installers, sometimes self-extracting
=.exe= files).

The Windows versions of Python are not built using Cygwin, MinGW or

Msys2; they're built using Microsoft Visual Studio. Furthermore the version used is /considerably/ more advanced than the version which MinGW obtained a small number of files from many years ago in order to be able to compile anything at all. Not only that, but there are changes to the version of Visual Studio between some micro releases, though that is is particularly the case with Python 2.7, since it has been kept around far longer than it should have been.

There are two theoretical solutions to this issue:

1. Compile and install the GnuPG stack, including GPGME and the Python bindings using the same version of Microsoft Visual Studio used by the Python Foundation to compile the version of Python installed.

   If there are multiple versions of Python then this will need to be done with each different version of Visual Studio used for those versions of Python.

2. Compile and install Python using the same tools used by choice, such as MinGW or Msys2.

Do *not* use the official Windows installer for Python unless following the first method.

In this type of situation it may even be for the best to accept that there are less limitations on permissive software than free software and simply opt to use a recent version of the Community Edition of Microsoft Visual Studio to compile and build all of it, no matter what.

Investigations into the extent or the limitations of this issue are ongoing.

The following table lists the version of Microsoft Visual Studio which needs to be used when compiling GPGME and the Python bindings with each version of the CPython binary released [[https://www.python.org/downloads/windows/][for Windows]]:

CPython	Microsoft product name	runtime filename
2.7.6	Visual Studio 2008	MSVCR90.DLL
3.4.0	Visual Studio 2010	MSVCR100.DLL
3.5.0	Visual Studio 2015	*see below*
3.6.0	Visual Studio 2015	*see below*
3.7.0	Visual Studio 2017*	*see below*

It is important to note that MingW and Msys2 ship with the Visual C

runtime from Microsoft Visual Studio 2005 and are thus *incompatible*
with all the versions of CPython which can be used with the GPGME
Python bindings.

It is also important to note that from CPython 3.5 onwards, the Python
Foundation has adopted the reworking of the Visual C runtime which was
performed for Visual Studio 2015 and aimed at resolving many of these
kinds
of issues. Much greater detail on these issues and the correct
file(s) to link to are available from Matthew Brett's invaluable page,
[[https://matthew-brett.github.io/pydagogue/python_msvc.html][Using Microsoft Visual C with Python]]. It is also
worth reading the
Microsoft Developer Network blog post on [[http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx][the universal CRT]] and Steve
Dower's blog posts on Python extensions ([[http://stevedower.id.au/blog/building-for-python-3-5][part 1]] and
[[http://stevedower.id.au/blog/building-for-python-3-5-part-two][part 2]]).

The second of those two posts by Steve Dower contains the details of
specific configuration options required for compiling anything to be
used with official CPython releases. In addition to those
configuration and compiler settings to use, the versions of Visual
Studio prior to Visual Studio 2015 did not support 64-bit systems by
default. So compiling a 64-bit version of these
bindings for a 64-bit
version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the [[https://wiki.python.org/moin/WindowsCompilers][Windows compilers]] wiki
page on the
CPython wiki is another essential reference on the relevant versions
of Visual Studio to use and the degree of compatibility with CPython
releases.

Eventually someone will ask why there isn't an installable binary for
Windows, which the GPGME of the licenses do not preclude as long as
the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with
differing configuration options depending on the target Windows
version and whether the architecture is 64-bit or 32-bit makes it
difficult to provide a correct binary installer for Windows users. At
the bare minimum doing so would require the GnuPG project compile ten
different versions of the bindings with each release; both 32-bit and
64-bit versions for CPython 2.7 and 3.4,
with 64-bit versions for both
x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5,
3.6, 3.7 and later releases. That's the bare *minimum*, it'd probably
be higher.

Additionally, with only a binary installation used in conjunction with
the CPython installer from =python.org= the advanced options available
which utilise [[#cython][Cython]] will not be able to be used at all. Cython
depends on being able to compile the C code it generates and that too
would need to utilise a matching runtime to both the installed version
of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

1. Use a recent version of CPython; at least 3.5, but ideally 3.6 or
   later.

2. Use Visual Studio 2015 or the standalone build tools for Visual
   Studio 2017 (or later).

3. Compile both CPython and GPGME with these bindings using the tools
   selected in step 2.

4. Ignore MingW, Msys2 and the official CPython binary installers.

 5. Be thankful the answer to this question wasn't simply to say
   something like, install Linux or install FreeBSD (or even
   Apple's OS X).

*** CFFI is the Best and GPGME should use it instead of SWIG
   :PROPERTIES:
   :CUSTOM_ID: snafu-cffi
   :END:

There are many reasons for favouring [[https://cffi.readthedocs.io/en/latest/overview.html][CFFI]] and proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the bindings to Python using the =gpgme.h= file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of
 applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in

at least one of CFFI's dependencies before any of this can be addressed.

So if you're a massive fan of CFFI; that's great, but if you want this project to switch to CFFI then rather than just insisting that it should, I'd suggest you volunteer to bring CFFI up to the level this project needs.

If you're actually seriously considering doing so, then I'd suggest taking the =gpgme-tool.c= file in the GPGME =src/= directory and getting that to work with any of the CFFI API methods (not the ABI methods, they'll work with pretty much anything). When you start running into trouble with "ifdefs" then you'll know what sort of things are lacking. That doesn't even take into account the amount of work saved via SWIG's code generation techniques either.

***
Virtualised Environments
:PROPERTIES:
:CUSTOM_ID: snafu-venv
:END:

It is fairly common practice amongst Python developers to, as much as possible, use packages like virtualenv to keep various things that are to be installed from interfering with each other. Given how much of the GPGME bindings is often at odds with the usual pythonic way of doing things, it stands to reason that this would be called into question too.

As it happens the answer as to whether or not the bindings can be used with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching prefix of GPGME itself. Which means that when GPGME, and ideally the rest of the GnuPG stack, is installed to a prefix like =/usr/local= or =/opt/local= then the bindings would need to be installed to the main Python installation and not a virtualised abstraction. Attempts to separate the two in the past have been known to cause weird and intermittent errors ranging from
minor annoyances to complete failures
in the build process.

As a consequence we only recommend building with and installing to the main Python installations within the same prefix as GPGME is installed to or which are found by GPGME's configuration stage immediately prior to running the make commands. Which is exactly what the compiling and installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled
module may be installed into a virtualenv of the same major and minor
version matching the build. Alternatively it is possible to utilise a
=sites.pth= file in the =site-packages/= directory of a virtualenv
installation, which links back to the system installations
corresponding directory in order to import anything installed system
wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet
complete, preliminary testing of them indicates that both are viable
as
 long as the main installation is complete. Which means that
certain other options normally restricted to virtual environments are
also available, including integration with pythonic test suites
(e.g. [[https://docs.pytest.org/en/latest/index.html][pytest]]) and other large projects.

That said, it is worth reiterating the warning regarding non-standard
installations. If one were to attempt to install the bindings only to
a virtual environment without somehow also including the full GnuPG
stack (or enough of it as to include GPGME) then it is highly likely
that errors would be encountered at some point and more than a little
likely that the build process itself would break.

If a degree of separation from the main operating system is still
required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. [[https://www.virtualbox.org/][VirtualBox]]), a
hardware emulation layer (e.g. [[https://www.qemu.org/][QEMU]]) or an application container
(e.g.
 [[https://www.docker.com/why-docker][Docker]]).

Finally it should be noted that the limited tests conducted thus far
have been using the =virtualenv= command in a new directory to create
the virtual python environment. As opposed to the standard =python3
-m venv= and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command =python3 -m virtualenv /path/to/install/virtual/thingy=
instead.

*** Post installation
  :PROPERTIES:
  :CUSTOM_ID: snafu-docs
  :END:

Following installation it is recommended to move the
=post_installer.py= script from the =lang/python/examples/howto/=
directory to the =lang/python/= directory and run it. This will fix

or restore files needed by Sphinx which may be removed during a
distribution build for release. It will also generate reST files from
Org mode files with Pandoc and generate Texinfo files from Org mode
files with GNU Emacs and Org mode (in batch
 mode). Additionally it
will fix the UTF-8 declaration line in the Texinfo files (Emacs
expects "UTF-8" to be "utf-8").

* Fundamentals
 :PROPERTIES:
 :CUSTOM_ID: howto-fund-a-mental
 :END:

Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly or these Python bindings.

** No REST
  :PROPERTIES:
  :CUSTOM_ID: no-rest-for-the-wicked
  :END:

The first part of which is or will be fairly blatantly obvious upon
viewing the first example, but it's worth reiterating anyway. That
being that this API is /*not*/ a REST API. Nor indeed could it ever
be one.

Most, if not all, Python programmers (and not just Python programmers)
know how easy it is to work with a RESTful API. In fact they've
become so popular that many other APIs attempt to emulate REST-like
behaviour as much as they are able. Right down to the use of JSON
formatted output to facilitate the use of their API without having
 to
retrain developers.

This API does not do that. It would not be able to do that and also
provide access to the entire C API on which it's built. It does,
however, provide a very pythonic interface on top of the direct
bindings and it's this pythonic layer that this HOWTO deals with.

** Context
  :PROPERTIES:
  :CUSTOM_ID: howto-get-context
  :END:

One of the reasons which prevents this API from being RESTful is that most operations require more than one instruction to the API to perform the task. Sure, there are certain functions which can be performed simultaneously, particularly if the result known or strongly anticipated (e.g. selecting and encrypting to a key known to be in the public keybox).

There are many more, however, which cannot be manipulated so readily: they must be performed in a specific sequence and the result of one operation has a direct bearing on the outcome of subsequent operations. Not merely by generating an error either.

When dealing with this type
of persistent state on the web, full of
both the RESTful and REST-like, it's most commonly referred to as a session. In GPGME, however, it is called a context and every operation type has one.

* Working with keys
:PROPERTIES:
:CUSTOM_ID: howto-keys
:END:

** Key selection
:PROPERTIES:
:CUSTOM_ID: howto-keys-selection
:END:

Selecting keys to encrypt to or to sign with will be a common occurrence when working with GPGMe and the means available for doing so are quite simple.

They do depend on utilising a Context; however once the data is recorded in another variable, that Context does not need to be the same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that key's key ID or fingerprint, preferably the full fingerprint without any spaces in it. A long key ID will probably be okay, but is not advised and short key IDs are already a problem with some being generated to match specific patterns. It does not
matter whether the
pattern is upper or lower case.

So this is the best method:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC

This is passable and very likely to be common:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC

And this is a really bad idea:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
#+END_SRC

Alternatively it may be that the intention is to create a list of keys
which all match a particular search string. For instance all the
addresses at a particular domain, like this:

#+BEGIN_SRC python -i
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
#+END_SRC

*** Counting keys
  :PROPERTIES:
  :CUSTOM_ID: howto-keys-counting
  :END:

Counting the number of keys in your public keybox (=pubring.kbx=), the
format which has superseded
 the old keyring format (=pubring.gpg= and
=secring.gpg=), or the number of secret keys is a very simple task.

#+BEGIN_SRC python -i

```
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys:  {0}
 Number of public keys:  {1}
""".format(secnum, pubnum))
#+END_SRC

NOTE: The [[#cython][Cython]] introduction in the [[#advanced-use][Advanced and Experimental]]
section uses this same key counting code with Cython to demonstrate
some areas where Cython can improve performance even with the
bindings.  Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.


** Get key
  :PROPERTIES:
  :CUSTOM_ID: howto-get-key
  :END:

An alternative method of getting a single key via its fingerprint is
available directly within a Context
 with =Context().get_key=.  This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due to expire at the end of 2018:

#+BEGIN_SRC python -i
import gpg
```

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
#+END_SRC

Whereas this example demonstrates selecting the author's current key
with the =secret= key word argument set to =True=:

#+BEGIN_SRC python -i
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
#+END_SRC

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively
 display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

** Importing keys
  :PROPERTIES:
  :CUSTOM_ID: howto-import-key
  :END:

Importing keys is possible with the =key_import()= method and takes
one argument which is a bytes literal object containing either the
binary or ASCII armoured key data for one or more keys.

The following example retrieves one or more keys from the SKS
keyservers via the web using the requests module. Since requests
returns the content as a bytes literal object, we can then use that
directly to import the resulting data into our keybox.

#+BEGIN_SRC python -i
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)

```
result
 = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
   print(result)
elif result is not None and hasattr(result, "considered") is True:
   num_keys = len(result.imports)
   new_revs = result.new_revocations
   new_sigs = result.new_signatures
   new_subs = result.new_sub_keys
   new_uids = result.new_user_ids
   new_scrt = result.secret_imported
   nochange = result.unchanged
   print("""
 The total number of keys considered for import was:  {0}

    Number of keys revoked:  {1}
  Number of new signatures:  {2}
     Number of new subkeys:  {3}
    Number of new user IDs:  {4}
 Number of new secret keys:  {5}
  Number of unchanged keys:  {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
   for i in range(num_keys):
       print("{0}\n".format(result.imports[i].fpr))
else:
   pass
#+END_SRC
```

NOTE: When searching for a key ID of any length
 or a fingerprint
(without spaces), the SKS servers require the the leading =0x=
indicative of hexadecimal be included. Also note that the old short
key IDs (e.g. =0xDEADBEEF=) should no longer be used due to the
relative ease by which such key IDs can be reproduced, as demonstrated
by the Evil32 Project in 2014 (which was subsequently exploited in
2016).

Testing for whether a string in any given search is or may be a
hexadecimal value which may be missing the leading =0x= is a simple
matter of using a try/except statement which attempts to convert the
string as hex to an integer and then back to hex; then using that to
search with. Raising a ValueError simply results in treating the
string as a string. This is the method and logic utilised in the
=import-keys-hkp.py= script (see below).

*** Working with ProtonMail
  :PROPERTIES:
  :CUSTOM_ID: import-protonmail
  :END:

Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail
 public keys.

```
#+BEGIN_SRC python -i
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []

if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")

if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
  ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
  ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
  ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
  ksearch.append("{0}@protonmail.com".format(keyterm))
  ksearch.append("{0}@protonmail.ch".format(keyterm))
  ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") ==
 2 and keyterm.startswith("@") is False:
  uidlist = keyterm.split("@")
  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
```

```
        ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
    uidlist = keyterm.split("@")
    for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
else:
    ksearch.append(keyterm)

for k in ksearch:
    payload = {"op": "get", "search": k}
    try:
        r = requests.get(url, verify=True, params=payload)
        if r.ok is True:
            result = c.key_import(r.content)
        elif r.ok is False:
            result = r.content
    except Exception as e:
        result = None

    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None
   and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}
    Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
```

```
        nochange))
      for i in range(num_keys):
          print(result.imports[i].fpr)
      print("")
  elif result is None:
      print(e)
#+END_SRC
```

Both the above example, [[../examples/howto/pmkey-import.py][pmkey-import.py]],
and a version which prompts
for an alternative GnuPG home directory, [[../examples/howto/pmkey-import-alt.py][pmkey-import-alt.py]], are
available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool. One notable difference
being that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.

*** Importing with HKP for Python
:PROPERTIES:
:CUSTOM_ID: import-hkp4py
:END:

Performing the same tasks with the [[https://github.com/Selfnet/hkp4py][hkp4py module]] (available via PyPI)
is not too much different, but does provide a number of options of
benefit to end users. Not least of which being the ability to perform
some
checks on a key before importing it or not. For instance it may
be the policy of a site or project to only import keys which have not
been revoked. The hkp4py module permits such checks prior to the
importing of the keys found.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
  pattern = " ".join(sys.argv[1:])
```

```
elif len(sys.argv) == 2:
  pattern = sys.argv[1]
else:
  pattern = input("Enter the pattern to search for keys or user IDs: ")


if pattern is not None:
  try:
    key = server.search(hex(int(pattern, 16)))
    keyed = True
  except ValueError as ve:
    key = server.search(pattern)
    keyed = False

  if key is not None:
    keys.append(key[0])
    if keyed is True:
      try:
        fob = server.search(pattern)
      except:
        fob = None
      if fob is not
 None:
        keys.append(fob[0])
    else:
      pass
  else:
    pass

  for logrus in pattern.split():
    try:
      key = server.search(hex(int(logrus, 16)))
      hexed = True
    except ValueError as ve:
      key = server.search(logrus)
      hexed = False

    if key is not None:
      keys.append(key[0])
      if hexed is True:
        try:
          fob = server.search(logrus)
        except:
          fob = None
        if fob is not None:
          keys.append(fob[0])
      else:
        pass
```

```
        else:
            pass


if len(keys) > 0:
    for key in keys:
        import_result = c.key_import(key.key_blob)
        results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print(result)
    elif result is not None and hasattr(result, "considered") is True:
         num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
Number of new signatures:  {2}
   Number of new subkeys:  {3}
  Number of new user IDs:  {4}
Number of new secret keys:  {5}
Number of unchanged keys:  {6}

The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    else:
        pass
#+END_SRC

Since the hkp4py module handles multiple keys just as effectively as
one (=keys= is a list of responses per matching key), the example
above is able to do a little bit more with the returned
 data before
anything is actually imported.


*** Importing from ProtonMail with HKP for Python
```

:PROPERTIES:
:CUSTOM_ID: import-protonmail-hkp4py
:END:

Though this can provide certain benefits even when working with ProtonMail, the scope is somewhat constrained there due to the limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg" produces hundreds of results from any time the word appears in any part of a user ID. Performing the same search on the ProtonMail keyserver returns zero results, even though there are at least two test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that server by ProtonMail to require an exact match of the full email address of the ProtonMail user whose key is being requested. Presumably this is intended to reduce breaches of privacy of their users as an email address must already be known before a key for that address
can be obtained.

**** Import from ProtonMail via HKP for Python Example no. 1
:PROPERTIES:
:CUSTOM_ID: import-hkp4py-pm1
:END:

The following script is available with the rest of the examples under the somewhat less than original name, =pmkey-import-hkp.py=.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.

Usage:  pmkey-import-hkp.py [search strings]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
```

```
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
  keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
     ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
         ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  else:
     ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
     keys = server.search(k)
     if isinstance(keys, list) is True:
        for key in keys:
```

```
            allkeys.append(key)
            try:
                import_result = c.key_import(key.key_blob)
            except Exception as e:
                import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
         new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}
    Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
        pass
#+END_SRC
```

**** Import from ProtonMail via HKP for Python Example no. 2
   :PROPERTIES:
   :CUSTOM_ID: import-hkp4py-pm2
   :END:

Like
 its counterpart above, this script can also be found with the
rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything
passed as a =homedir= which either does not exist or which is not a
directory, as also being a pssible user ID to check for. It's not
guaranteed to pick up on all such cases, but it should cover most of
them.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.

Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 3:
   homedir = sys.argv[1]
   keyterms = sys.argv[2:]
elif len(sys.argv)
 == 3:
   homedir = sys.argv[1]
   keyterm = sys.argv[2]
   keyterms.append(keyterm)
elif len(sys.argv) == 2:
   homedir = ""
```

```
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  keyterm = input("Enter the key ID, UID or search string: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
  keyterms.append(keyterm)

if len(homedir) == 0:
  homedir = None
  homeless = False

if homedir is not None:
  if homedir.startswith("~"):
     if os.path.exists(os.path.expanduser(homedir)) is True:
        if os.path.isdir(os.path.expanduser(homedir)) is True:
           c.home_dir = os.path.realpath(os.path.expanduser(homedir))
        else:
           homeless = True
     else:
        homeless = True
  elif os.path.exists(os.path.realpath(homedir)) is True:
     if os.path.isdir(os.path.realpath(homedir)) is True:
        c.home_dir = os.path.realpath(homedir)
     else:
        homeless = True
   else:
     homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
# a search string.
if homeless is True:
  keyterms.append(homedir)
  c.home_dir = None
else:
  pass

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
```

```
    ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
    uidlist = keyterm.split("@")

  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
    uidlist = keyterm.split("@")
    for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
  else:
    ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
    keys = server.search(k)
    if isinstance(keys, list) is True:
      for key in keys:
        allkeys.append(key)
        try:
          import_result = c.key_import(key.key_blob)
        except Exception as e:
          import_result = c.key_import(key.key)
    else:
      paradox.append(keys)
      import_result = None
  except Exception
 as e:
    import_result = None
  results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
    print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
    num_keys = len(result.imports)
    new_revs = result.new_revocations
    new_sigs = result.new_signatures
    new_subs = result.new_sub_keys
    new_uids = result.new_user_ids
    new_scrt = result.secret_imported
    nochange = result.unchanged
    print("""
```

The total number of keys considered for import was: {0}

With UIDs wholely or partially matching the following string:

{1}

Number of keys revoked: {2}
Number of new signatures: {3}
Number of new subkeys: {4}
Number of new user IDs: {5}
Number of new secret keys: {6}
Number of unchanged keys: {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs,
new_subs, new_uids, new_scrt,
nochange))
for i in range(num_keys):
print(result.imports[i].fpr)
print("")
elif result is None:
pass
#+END_SRC

** Exporting keys
:PROPERTIES:
:CUSTOM_ID: howto-export-key
:END:

Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine. Two of those functions are for exporting public keys and the
third is for exporting secret keys.

*** Exporting public keys
:PROPERTIES:
:CUSTOM_ID: howto-export-public-key
:END:

There are two methods of exporting public keys, both of which are very
similar to the other. The default method, =key_export()=, will export
a public key or keys matching a specified pattern as normal. The
alternative, the =key_export_minimal()= method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

```
#+BEGIN_SRC
 python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = sys.argv[3]
elif len(sys.argv) == 3:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
   keyfile = sys.argv[1]
   logrus = input("Enter the UID matching the key(s) to export: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")
else:
   keyfile = input("Enter the path and filename to save the secret key to: ")
   logrus = input("Enter the UID matching the key(s) to export: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
   if os.path.exists(os.path.expanduser(homedir)) is True:
      c.home_dir = os.path.expanduser(homedir)
   else:
      pass
elif
 os.path.exists(homedir) is True:
   c.home_dir = homedir
else:
   pass

try:
   result = c.key_export(pattern=logrus)
except:
   result = c.key_export(pattern=None)

if result is not None:
   with open(keyfile, "wb") as f:
      f.write(result)
```

```
else:
  pass
#+END_SRC
```

It should be noted that the result will only return =None= when a
search pattern has been entered, but has not matched any keys. When
the search pattern itself is set to =None= this triggers the exporting
of the entire public keybox.

```
#+BEGIN_SRC python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus
 = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
     c.home_dir = os.path.expanduser(homedir)
  else:
     pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass
```

```
try:
  result = c.key_export_minimal(pattern=logrus)
except:
  result = c.key_export_minimal(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
else:
  pass
#+END_SRC
```

*** Exporting secret keys
  :PROPERTIES:
  :CUSTOM_ID: howto-export-secret-key
  :END:

Exporting secret keys is, functionally, very similar to exporting
public
 keys; save for the invocation of =pinentry= via =gpg-agent= in
order to securely enter the key's passphrase and authorise the export.

The following example exports the secret key to a file which is then
set with the same permissions as the output files created by the
command line secret key export options.

```
#+BEGIN_SRC python -i
import gpg
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
```

```
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
   keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
#+END_SRC
```

Alternatively the approach

of the following script can be used. This
longer example saves the exported secret key(s) in files in the GnuPG
home directory, in addition to setting the file permissions as only
readable and writable by the user. It also exports the secret key(s)
twice in order to output both GPG binary (=.gpg=) and ASCII armoured
(=.asc=) files.

```
#+BEGIN_SRC python -i
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
  gpgconfcmd = "gpgconf --list-dirs homedir"

a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
   logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
```

```
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
    homedir = os.path.realpath(userdir)
  else:
    homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
    homedir = None
  else:
    pass

if homedir is not None:
  c.home_dir
 = homedir
else:
  pass

if c.home_dir is not None:
  if c.home_dir.endswith("/"):
    gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
    gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
    hd = os.environ["GNUPGHOME"]
  else:
    try:
      hd = subprocess.getoutput(gpgconfcmd)
    except:
      process = subprocess.Popen(gpgconfcmd.split(),
                                 stdout=subprocess.PIPE)
      procom = process.communicate()
      if sys.version_info[0] == 2:
        hd = procom[0].strip()
      else:
        hd = procom[0].decode().strip()
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)
```

```
try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result
 = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
     f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
     f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
#+END_SRC
```

*** Sending public keys to the SKS Keyservers
  :PROPERTIES:
  :CUSTOM_ID: howto-send-public-key
  :END:

As with the previous section on importing keys, the =hkp4py= module adds another option with exporting keys in order to send them to the public keyservers.

The following example demonstrates how this may be done.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server
```

```
 = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")

if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
    export_result = c.key_export(pattern=logrus)
  except Exception as e:
    print(e)
    export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
    try:
      send_result = server.add(export_result)
    except:
      send_result = server.add(export_result.decode())
    if send_result is not None:
      print(send_result)
    else:
      pass
  except Exception as e:
    print(e)
else:
  pass
#+END_SRC
```

An expanded version of this script with additional functions for
specifying an alternative homedir location is in the examples
directory as =send-key-to-keyserver.py=.

The =hkp4py= module appears to
 handle both string and byte literal text
data equally well, but the GPGME bindings deal primarily with byte
literal data only and so this script sends in that format first, then
tries the string literal form.

* Basic Functions
 :PROPERTIES:
 :CUSTOM_ID: howto-the-basics

:END:

The most frequently called features of any cryptographic library will be the most fundamental tasks for encryption software. In this section we will look at how to programmatically encrypt data, decrypt it, sign it and verify signatures.

** Encryption
:PROPERTIES:
:CUSTOM_ID: howto-basic-encryption
:END:

Encrypting is very straight forward. In the first example below the message, =text=, is encrypted to a single recipient's key. In the second example the message will be encrypted to multiple recipients.

*** Encrypting to one key
:PROPERTIES:
:CUSTOM_ID: howto-basic-encryption-single
:END:

Once the the Context is set the main issues with encrypting data is essentially reduced
to key selection and the keyword arguments
specified in the =gpg.Context().encrypt()= method.

Those keyword arguments are: =recipients=, a list of keys encrypted to (covered in greater detail in the following section); =sign=, whether or not to sign the plaintext data, see subsequent sections on signing and verifying signatures below (defaults to =True=); =sink=, to write results or partial results to a secure sink instead of returning it (defaults to =None=); =passphrase=, only used when utilising symmetric encryption (defaults to =None=); =always_trust=, used to override the trust model settings for recipient keys (defaults to =False=); =add_encrypt_to=, utilises any preconfigured =encrypt-to= or =default-key= settings in the user's =gpg.conf= file (defaults to =False=); =prepare=, prepare for encryption (defaults to =False=); =expect_sign=, prepare for signing (defaults to =False=); =compress=, compresses the plaintext prior to encryption (defaults to =True=).

#+BEGIN_SRC python -i
import
gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

```
Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the =gpg.conf= file:

#+BEGIN_SRC python -i
import gpg

a_key = "0x12345678DEADBEEF"

with open("secret_plans.txt", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext,
 result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                 always_trust=True,
                                 add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC

If the =recipients= parameter is empty then the plaintext is encrypted
symmetrically.  If no =passphrase= is supplied as a parameter or via a
callback registered with the =Context()= then an out-of-band prompt
for the passphrase via pinentry will be invoked.


*** Encrypting to multiple keys
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-encryption-multiple
  :END:
```

Encrypting to multiple keys essentially just expands upon the key
selection process and the recipients from the previous examples.

The following example encrypts a message (=text=) to everyone with an
email address on the =gnupg.org= domain,[fn:4] but does /not/ encrypt
to a default key or other key which is configured to
 normally encrypt
to.

#+BEGIN_SRC python -i
import gpg

text = b"""Oh look, another test message.

The same rules apply as with the previous example and more likely
than not, the message will actually be drawn from reading the
contents of a file or, maybe, from entering data at an input()
prompt.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data
format.
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC

All it would take to change the above example to sign
 the message
and also encrypt the message to any configured default keys would
be to change the =c.encrypt= line to this:

#+BEGIN_SRC python -i
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,

```
                                always_trust=True,
                                add_encrypt_to=True)
#+END_SRC
```

The only keyword arguments requiring modification are those for which the default values are changing. The default value of =sign= is =True=, the default of =always_trust= is =False=, the default of =add_encrypt_to= is =False=.

If =always_trust= is not set to =True= and any of the recipient keys are not trusted (e.g. not signed or locally signed) then the encryption will raise an error. It is possible to mitigate this somewhat with something more like this:

```
#+BEGIN_SRC python -i
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org",
 secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

  try:
    ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                      add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
    for i in range(len(e.recipients)):
      for n in range(len(logrus)):
        if logrus[n].fpr == e.recipients[i].fpr:
          logrus.remove(logrus[n])
        else:
          pass
    try:
      ciphertext, result, sign_result = c.encrypt(text,
                                        recipients=logrus,
                                        add_encrypt_to=True)
      with open("secret_plans.txt.asc", "wb") as afile:
        afile.write(ciphertext)
    except:
      pass
#+END_SRC
```

This will attempt to encrypt to all the keys searched
 for, then remove
invalid recipients if it fails and try again.

** Decryption
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-decryption
  :END:

Decrypting something encrypted to a key in one's secret keyring is
fairly straight forward.

In this example code, however, preconfiguring either =gpg.Context()=
or =gpg.core.Context()= as =c= is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to =c= simply adds lines for no
gain.

#+BEGIN_SRC python -i
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
   try:
      plaintext, result, verify_result = gpg.Context().decrypt(cfile)
   except gpg.errors.GPGMEError as e:
      plaintext = None
      print(e)

if plaintext is not None:
   with open(newfile, "wb") as nfile:
     nfile.write(plaintext)

   else:
      pass
#+END_SRC

The data available in =plaintext= in this example is the decrypted
content as a byte object, the recipient key IDs and algorithms in
=result= and the results of verifying any signatures of the data in
=verify_result=.

If =gpg.Context().decrypt(cfile, verify=False)= is called instead,
then =verify_result= will be returned as =None= and the rest remains

as described here.

** Signing text and files
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-signing
 :END:

The following sections demonstrate how to specify keys to sign with.

*** Signing key selection
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-signers
  :END:

By default GPGME and the Python bindings will use the default key
configured for the user invoking the GPGME API. If there is no
default key specified and there is more than one secret key available
it may be necessary to specify the key or keys with which to sign
messages and files.

#+BEGIN_SRC python -i
import gpg

logrus = input("Enter
 the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
#+END_SRC

The signing examples in the following sections include the explicitly
designated =signers= parameter in two of the five examples; once where
the resulting signature would be ASCII armoured and once where it
would not be armoured.

While it would be possible to enter a key ID or fingerprint here to
match a specific key, it is not possible to enter two fingerprints and
match two keys since the patten expects a string, bytes or None and
not a list. A string with two fingerprints won't match any single
key.

*** Normal or default signing messages or files
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-normal
  :END:

The normal or default signing process is essentially the same as is most often invoked when also encrypting a message or file. So when the encryption component is not utilised, the result is to produce an encoded
and signed output which may or may not be ASCII armoured and which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the plaintext is already compressed. ASCII armouring will be determined according to the value of =gpg.Context().armor=.

The compression algorithm is selected in much the same way as the symmetric encryption algorithm or the hash digest algorithm is when multiple keys are involved; from the preferences saved into the key itself or by comparison with the preferences with all other keys involved.

```
#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC
```

Though everything in this example is accurate, it is more likely that reading the input data from another
file and writing the result to a
new file will be performed more like the way it is done in the next example. Even if the output format is ASCII armoured.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
```

```
  afile.write(signed_data)
#+END_SRC


*** Detached signing messages and files
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-detached
  :END:

Detached signatures will often be needed in programmatic uses of
GPGME, either for signing files (e.g. tarballs of code releases) or as
a component of message signing (e.g. PGP/MIME encoded email).

#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.asc",
 "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
#+END_SRC


*** Clearsigning messages or text
  :PROPERTIES:
```

```
  :CUSTOM_ID: howto-basic-signing-clear
  :END:
```

Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

```
#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with
 open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC
```

In spite of the appearance of a clear-signed message, the data handled
by GPGME in signing it must still be byte literals.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
  afile.write(signed_data)
#+END_SRC
```

```
** Signature verification
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-verification
 :END:
```

Essentially there are two principal methods of verification of a
signature. The first of these is for use with the normal or default
signing method and for clear-signed messages. The second is for use

with files and data with detached signatures.

The following example is intended for use with the default signing
method where the file was not ASCII armoured:

```
#+BEGIN_SRC python
 -i
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"

c = gpg.Context()

try:
   data, result = c.verify(open(gpg_file))
   verified = True
except gpg.errors.BadSignatures as e:
   verified = False
   print(e)

if verified is True:
   for i in range(len(result.signatures)):
      sign = result.signatures[i]
      print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
         time.ctime(sign.timestamp)))
else:
   pass
#+END_SRC
```

Whereas this next example, which is almost identical would work with
normal ASCII armoured files and with clear-signed files:

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
```

```
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
      sign = result.signatures[i]
      print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC
```

In both of the previous examples it is also possible to compare the original data that was signed against the signed data in =data= to see if it matches with something like this:

```
#+BEGIN_SRC python -i
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
else:
  pass
#+END_SRC
```

The following two examples, however, deal with detached signatures. With his method of verification the data that was signed does not get returned since it is already being explicitly referenced in the first argument of =c.verify=. So =data= is =None= and only the information in =result= is available.

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()
```

```
try:
  data,
 result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC

#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
```

#+END_SRC

*
Creating keys and subkeys
:PROPERTIES:
:CUSTOM_ID: key-generation
:END:

The one thing, aside from GnuPG itself, that GPGME depends on, of course, is the keys themselves. So it is necessary to be able to generate them and modify them by adding subkeys, revoking or disabling them, sometimes deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's greatest secret agent, Danger Mouse. Since Danger Mouse is a secret agent he needs to be able to protect information to =SECRET= level clearance, so his keys will be 3072-bit keys.

The pre-configured =gpg.conf= file which sets cipher, digest and other preferences contains the following configuration parameters:

#+BEGIN_SRC conf
expert
allow-freeform-uid
allow-secret-key-import
trust-model tofu+pgp
tofu-default-policy unknown
enable-large-rsa
enable-dsa2
cert-digest-algo SHA512
default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128
AES BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP
Uncompressed
personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES
personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
personal-compress-preferences ZLIB BZIP2 ZIP Uncompressed
#+END_SRC

** Primary key
:PROPERTIES:
:CUSTOM_ID: keygen-primary
:END:

Generating a primary key uses the =create_key= method in a Context.
It contains multiple arguments and keyword arguments, including:

=userid=, =algorithm=, =expires_in=, =expires=, =sign=, =encrypt=,
=certify=, =authenticate=, =passphrase= and =force=. The defaults for
all of those except =userid=, =algorithm=, =expires_in=, =expires= and
=passphrase= is =False=. The defaults for =algorithm= and
=passphrase= is =None=. The default for =expires_in= is =0=. The
default for =expires= is =True=. There is no default for =userid=.

If =passphrase= is left as =None=
then the key will not be generated
with a passphrase, if =passphrase= is set to a string then that will
be the passphrase and if =passphrase= is set to =True= then gpg-agent
will launch pinentry to prompt for a passphrase. For the sake of
convenience, these examples will keep =passphrase= set to =None=.

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
                     sign=True, certify=True)
#+END_SRC
```

One thing to note here is the use of setting the =c.home_dir=
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this
example in a separate location rather than adding it to existing and
active key store data. As with the default directory, =~/.gnupg=, any
temporary or separate directory needs the permissions set to only
permit access by the directory
owner. On posix systems this means
setting the directory permissions to 700.

The =temp-homedir-config.py= script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
=GenkeyResult= object, which includes the following data:

```
#+BEGIN_SRC python -i
print("""
Fingerprint: {0}
Primary Key: {1}
Public Key: {2}
```

```
 Secret Key:  {3}
Sub Key:  {4}
User IDs:  {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
        dmkey.uid))
#+END_SRC
```

Alternatively the information can be confirmed using the command line program:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>

  bash-4.4$
#+END_SRC
```

As with generating keys manually, to preconfigure expanded preferences for the cipher, digest and compression algorithms, the =gpg.conf= file must contain those details in the home directory in which the new key is being generated. I used a cut down version of my own =gpg.conf= file in order to be able to generate this:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
quit
 Secret key is available.

 sec  rsa3072/026D2F19E99E63AA
     created: 2018-03-15  expires: 2019-03-15  usage: SC
     trust: ultimate      validity: ultimate
 [ultimate] (1). Danger Mouse <dm@secret.example.net>

 [ultimate] (1). Danger Mouse <dm@secret.example.net>
     Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH,
IDEA, CAST5, 3DES
     Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
     Compression: ZLIB, BZIP2, ZIP, Uncompressed
     Features: MDC, Keyserver
 no-modify

 bash-4.4$
#+END_SRC
```

** Subkeys
  :PROPERTIES:
  :CUSTOM_ID: keygen-subkeys
  :END:

Adding subkeys to a primary key is fairly similar to creating the
primary key with the =create_subkey= method. Most of the arguments
are the same, but not quite all. Instead of the =userid= argument
there is now a =key= argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key. Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
#+END_SRC
```

As with the primary key, the results here can be checked with:

```
#+BEGIN_SRC python -i
print("""
Fingerprint:  {0}
Primary Key:  {1}
  Public Key:  {2}
 Secret Key:  {3}
Sub Key:  {4}
User IDs:  {5}
""".format(dmsub.fpr, dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
           dmsub.uid))
#+END_SRC
```

As well as on the command line with:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
```

```
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>
 ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

 bash-4.4$
#+END_SRC


** User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids
  :END:


*** Adding User IDs
   :PROPERTIES:
   :CUSTOM_ID: keygen-uids-add
   :END:

By comparison to creating primary keys and subkeys, adding a new user
ID to an existing key is much simpler.  The method used to do this is
=key_add_uid= and the only arguments it takes are for the =key= and
the new =uid=.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr
 = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
#+END_SRC

Unsurprisingly the result of this is:

#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <danger.mouse@secret.example.net>
```

```
uid          [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
#+END_SRC
```

```
*** Revoking User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids-revoke
  :END:
```

Revoking a user ID is a fairly similar process, except that it uses the =key_revoke_uid= method.

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid
 = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
#+END_SRC
```

```
** Key certification
 :PROPERTIES:
 :CUSTOM_ID: key-sign
 :END:
```

Since key certification is more frequently referred to as key signing, the method used to perform this function is =key_sign=.

The =key_sign= method takes four arguments: =key=, =uids=, =expires_in= and =local=. The default value of =uids= is =None= and which results in all user IDs being selected. The default value of both =expires_in= and =local= is =False=; which results in the signature never expiring and being able to be exported.

The =key= is the key being signed rather than the key doing the signing. To change the key doing the signing refer to the signing key selection above for signing messages and files.

If the =uids= value is not =None= then it must either be a string to
match a single user ID or a list of strings to match multiple user
IDs. In this case the matching of those strings must be precise and
it
 is case sensitive.

To sign Danger Mouse's key for just the initial user ID with a
signature which will last a little over a month, do this:

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
#+END_SRC
```

```
*** Verifying key certifications
   :PROPERTIES:
   :CUSTOM_ID: key-sign-verify
   :END:

#+BEGIN_SRC python -i
import gpg
import time

c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
   for sig in user.signatures:
      print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
          sig.uid)
#+END_SRC
```

Which for Danger Mouse displays the following:

```
#+BEGIN_EXAMPLE
 0x92E3F6115435C65A  Thu Mar 15 13:17:44 2018  Danger Mouse <dm@secret.example.net>
  0x321E4E2373590E5D  Mon Nov 26 12:46:05 2018  Ben McGinnes <ben@adversary.org>
#+END_EXAMPLE
```

The two key signatures listed are for the self-certification of Danger Mouse's key made when the key was created in March, 2018; and the second is a signature made by the author and set to expire at the end of the year. Note that the second signature was made with the following code (including the preceding code to display the output of the certifications or key signatures):

```
#+BEGIN_SRC python -i
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
ts = tp.total_seconds()
total_secs = math.ceil(ts)
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
keys
 = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
#+END_SRC
```

Note that this final code block includes the use of a module which is /not/ part of Python's standard library, the [[https://pendulum.eustace.io/][pendulum module]]. Unlike the standard datetime module, pendulum makes working with dates and times significantly easier in Python; just as the requests module makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using the GPGME Python bindings, they are both highly recommended more generally.

* Advanced or Experimental Use Cases
 :PROPERTIES:
 :CUSTOM_ID: advanced-use
 :END:

** C plus Python plus SWIG plus Cython
  :PROPERTIES:
  :CUSTOM_ID: cython
  :END:

In
 spite of the apparent incongruence of using Python bindings to a C
interface only to generate more C from the Python; it is in fact quite
possible to use the GPGME bindings with [[http://docs.cython.org/en/latest/index.html][Cython]]. Though in many cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable. One of the better and easier examples being the one of
the early examples in this HOWTO, the [[#howto-keys-counting][key counting]] code. Running that
example as an executable Python script, =keycount.py= (available in
the =examples/howto/= directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically
 and timed it using
=time= utility, with the following results:

#+BEGIN_SRC shell
 bash-4.4$ time keycount.py

 Number of secret keys: 23
 Number of public keys: 12112

 real 11m52.945s
 user 0m0.913s
 sys 0m0.752s

 bash-4.4$
#+END_SRC

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the [[http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html][Cython Basic Tutorial]] to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the =gpg= module to the end of the script:

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys:  {0}
   Number
 of public keys:  {1}

""".format(secnum, pubnum))
#+END_SRC
```

Save that into a file called =keycount.pyx= and then create a
=setup.py= file which contains this:

```
#+BEGIN_SRC python -i
from distutils.core import setup
from Cython.Build import cythonize

setup(
   ext_modules = cythonize("keycount.pyx")
)
#+END_SRC
```

Compile it:

```
#+BEGIN_SRC shell
 bash-4.4$ python setup.py build_ext --inplace
 bash-4.4$
#+END_SRC
```

Then run it in a similar manner to =keycount.py=:

#+BEGIN_SRC shell
 bash-4.4$ time python3.7 -c "import keycount"

 Number of secret keys: 23
 Number of public keys: 12113

 real 6m47.905s
 user 0m0.785s
 sys 0m0.331s

 bash-4.4$
#+END_SRC

Cython turned =keycount.pyx= into an 81KB =keycount.o= file in the
=build/= directory, a 24KB =keycount.cpython-37m-darwin.so= file to be
imported into Python 3.7 and a 113KB =keycount.c= generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the =keycount.pyx= file or the full
 1,452 bytes of the
full executable =keycount.py= example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The =keycount.pyx= and =setup.py= files used to generate this example
have been added to the =examples/howto/advanced/cython/= directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the
[[http://docs.cython.org/en/latest/src/tutorial/pure.html#magic-attributes-within-the-pxd][Magic Attributes]] section
of the Cython documentation.

* Miscellaneous extras and work-arounds
 :PROPERTIES:
 :CUSTOM_ID: cheats-and-hacks
 :END:

Most of the things in the following sections are here simply because
there was no better place to put them, even though some are only
peripherally related to the GPGME Python bindings. Some are also
workarounds for functions not integrated
 with GPGME as yet. This is
especially true of the first of these, dealing with [[#group-lines][group lines]].

** Group lines
  :PROPERTIES:
  :CUSTOM_ID: group-lines
  :END:

There is not yet an easy way to access groups configured in the
gpg.conf file from within GPGME. As a consequence these central
groupings of keys cannot be shared amongst multiple programs, such as
MUAs readily.

The following code, however, provides a work-around for obtaining this
information in Python.

```
#+BEGIN_SRC python -i
import subprocess
import sys

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
  gpgconfcmd = "gpgconf --list-options gpg"

process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
  lines = procom[0].splitlines()
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
     break

groups = line.split(":")[-1].replace("",
 ").split(',')

group_lines = []
group_lists = []

for group in groups:
  group_lines.append(group.split("="))
  group_lists.append(group.split("="))

for glist in group_lists:
  glist[1] = glist[1].split()
```

#+END_SRC

The result of that code is that =group_lines= is a list of lists where
=group_lines[i][0]= is the name of the group and =group_lines[i][1]=
is the key IDs of the group as a string.

The =group_lists= result is very similar in that it is a list of
lists. The first part, =group_lists[i][0]= matches
=group_lines[i][0]= as the name of the group, but =group_lists[i][1]=
is the key IDs of the group as a list.

A demonstration of using the =groups.py= module is also available in
the form of the executable =mutt-groups.py= script. This second
script reads all the group entries in a user's =gpg.conf= file and
converts them into crypt-hooks suitable for use with the Mutt and
Neomutt mail clients.

** Keyserver access for Python
  :PROPERTIES:
  :CUSTOM_ID:
 hkp4py
  :END:

The [[https://github.com/Selfnet/hkp4py][hkp4py]] module by Marcel Fest was originally a port of the old
[[https://github.com/dgladkov/python-hkp][python-hkp]] module from Python 2 to Python 3 and updated to use the
[[http://docs.python-requests.org/en/latest/index.html][requests]] module instead. It has since been modified to
provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the =hkp= protocol prefix as =http= and =hkps= as
=https=, the module is able to be used even with servers which do not
support the full scope of keyserver functions.[fn:5] It also works quite
readily when incorporated into a [[#cython][Cython]] generated and compiled version
of any code.

*** Key import format
   :PROPERTIES:
   :CUSTOM_ID: hkp4py-strings
   :END:

The hkp4py module returns key data via requests as string literals
(=r.text=) instead of byte literals (=r.content=). This means that
the retrurned key data must be encoded to UTF-8 when importing
 that
key material using a =gpg.Context().key_import()= method.

For this reason an alternative method has been added to the =search=
function of =hkp4py.KeyServer()= which returns the key in the correct
format as expected by =key_import=. When importing using this module,
it is now possible to import with this:

```
#+BEGIN_SRC python -i
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
#+END_SRC
```

Without that recent addition it would have been necessary to encode
the contents of each =hkp4py.KeyServer().search()[i].key= in
=hkp4py.KeyServer().search()= before trying to import it.

An example of this is included in the [[#howto-import-key][Importing Keys]] section of this
HOWTO and the corresponding executable version of that example is
available in the =lang/python/examples/howto= directory as normal; the
executable version is the =import-keys-hkp.py= file.

** GPGME version checking
 :PROPERTIES:
 :CUSTOM_ID: gpgme-version-check
  :END:

For various reasons it may be necessary to check which version of
GPGME the bindings have been built against; including whether a
minimum required version of GPGME is in use.

For the most part the =gpg.version.versionstr= and
=gpg.version.versionlist= methods have been quite sufficient. The
former returns the same string as =gpgme-config --version=, while the
latter returns the major, minor and patch values in a list.

To check if the installed bindings have actually been built against
the current installed libgpgme version, this check can be performed:

```
#+BEGIN_SRC python -i
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,
                                      stderr=subprocess.PIPE)
```

```
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0]
 >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
    print("The GPGME Python bindings match libgpgme.")
  else:
    print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
#+END_SRC
```

For many developers, however, the preferred checking means checking for a minimum version or point release. This is now readily available via the =gpg.version.versionintlist= method (added in version =1.12.1-beta79=). It is also now possible to easily check whether the installed GPGME Python bindings were built from a development or beta branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

```
#+BEGIN_SRC python -i
import gpg

try:
  if gpg.version.is_beta is True:
    print("The installed GPGME Python bindings were built from beta code.")
   else:
    print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
    if gpg.version.versionintlist[1] == 12:
      if gpg.version.versionintlist[2] == 1:
        print("This is the minimum version for using versionintlist.")
      elif gpg.version.versionintlist[2] > 1:
        print("The versionintlist method is available.")
      else:
        pass
```

```
    elif gpg.version.versionintlist[1] > 12:
        print("The versionintlist method is available.")
    else:
        pass
  elif gpg.version.versionintlist[0] > 1:
    print("The versionintlist method is available.")
  else:
    pass
except Exception as e:
  print(e)
#+END_SRC
```

The points where =pass= is used in the above example will most likely
also produce an =Exception= error since those results should only
occur in versions which do not have the =gpgme.version.is_beta=
 and
=gpgme.version.versionintlist= methods available.

* Copyright and Licensing
 :PROPERTIES:
 :CUSTOM_ID: copyright-and-license
 :END:

** Copyright
  :PROPERTIES:
  :CUSTOM_ID: copyright
  :END:

Copyright The GnuPG Project, 2018.

** Draft Editions of this HOWTO
  :PROPERTIES:
  :CUSTOM_ID: draft-editions
  :END:

Draft editions of this HOWTO may be periodically available directly
from the author at any of the following URLs:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 no SSL)]]
- [[https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html][GPGME Python Bindings HOWTO draft (HTML multiple files, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto/index.html][GPGME Python Bindings HOWTO draft

(HTML
 multiple files, AWS S3 no SSL)]]

These draft versions have been generated from this document via GNU
Emacs [[https://orgmode.org/][Org mode]] to =.texi= and [[https://www.gnu.org/software/texinfo/][GNU Texinfo]]
to HTML. Though it is
likely that the specific [[https://files.au.adversary.org/crypto/gpgme-python-howto][file]]
[[http://files.au.adversary.org/crypto/gpgme-python-howto.org][version]] used will be on the same server
with the generated output formats. Occasionally I may include the Org
mode generated XHTML versions:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft
(HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft
(HTML single file, AWS S3 no SSL)]]

That XHTML version, however, is exported in a way which inherits a
colour scheme from [[https://github.com/holomorph/emacs-zenburn][the author's Emacs theme]] (which is a higher
contrast
version
 of [[http://kippura.org/zenburnpage/][Zenburn]] ported by [[https://github.com/holomorph][Holomorph]]). So it's
fine for people who
prefer dark themed web pages, but not so great for everyone else.

The GNU Texinfo and reStructured Text versions ship with the software,
while the GNU Emacs Info version is generated from the Texinfo
version using GNU Texinfo or GNU Makeinfo. The Texinfo format is
generated from the original Org mode source file in Org mode itself
either within GNU Emacs or via the command line by invoking Emacs in
batch mode:

#+BEGIN_SRC shell
 emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
 emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
#+END_SRC

The reStructuredText format is also generated from the Org mode source
file, except it is generated using [[https://pandoc.org][Pandoc]] with either of the following
commands (depending on the filename):

#+BEGIN_SRC shell
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst
 gpgme-python-howto.org
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
#+END_SRC

Note that the Org mode source files are identified as such via a mode
line at the top of each file and have had their =.org= file extensions

dropped in order to make scripted generation of output formats easier
and not require renaming files post-conversion.

Due to a bug in Org mode's texinfo conversion method, the recommended
steps for generating the Texinfo files for all the files in the
=lang/python/doc/src/= directory are as follows:

```
#+BEGIN_SRC shell
 for x in * ; do
    emacs $x --batch -f org-texinfo-export-to-texinfo --kill
    cat $x.texi | sed -e 's/@documentencoding UTF-8/@documentencoding utf-8/g' > ../texinfo/$x.texi
    pandoc -f org -t rst+smart -o ../rst/$x.rst $x
 done ;
 rm -fv *.texi
 cd ../texinfo
 mkdir info
 mkdir html
 for x in *.texi ; do
    makeinfo -v $x
    makeinfo --html --no-split $x
 done ;
 mv *.info info/
 mv
 *.html html/
#+END_SRC
```

This code snippet includes the generation of the reStructuredText
files and would be expected to be run from the =doc/src/= directory
containing the Org mode source files. It also assumes that the
commands are being run on POSIX compliant systems with basic tools
like sed, the Bourne shell and GNU Emacs[fn:6] available. The code
snippet also includes the steps for generating the Emacs Info files
and HTML files from the Texinfo files. Using reStructuredText files
with Sphinx is best left for the documentation of that project.

In addition to these there is a significantly less frequently updated
version as a HTML [[https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html][WebHelp site]]
(AWS S3 SSL); generated from DITA XML
source files, which can be found in [[https://dev.gnupg.org/source/gpgme/browse/ben%252Fhowto-dita/][an
alternative branch]] of the GPGME
git repository.

Various generated output formats may occasionally be found in
subdirectories
 of the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python][gpgme-python]] directory. In
particular within
the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita][DITA]],
[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst][reStructuredText]] and

[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo][Texinfo]] subdirectories. The
=rst=
directory contains output files generated with Sphinx and may include a
considerable number of its possible output formats, but there are no
guarantees as to how recent these are or even if they are present.

These draft editions are not official documents and the version of
documentation in the master branch or which ships with released
versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding
that they may contain errors or may contain content
subject to change prior to an official release.

** License GPL compatible
:PROPERTIES:
:CUSTOM_ID: license
:END:

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.

* Footnotes

[fn:1] =short-history= and/or =short-history.html=.

[fn:2] With no issues reported specific to Python 3.7, the release of
Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing
with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of
3.6 now. Production environments with more conservative requirements
will always enforce their own policies anyway and installation to each
supported
minor release is quite possible too.

[fn:3] Yes, even if you use virtualenv with everything you do in
Python. If you want to install this module as just your user account
then you will need to manually configure, compile and install the
/entire/ GnuPG stack as that user as well. This includes libraries
which are not often installed that way. It can be done and there are

circumstances under which it is worthwhile, but generally only on
POSIX systems which utilise single user mode (some even require it).

[fn:4] You probably don't really want to do this. Searching the
keyservers for "gnupg.org" produces over 400 results, the majority of
which aren't actually at the gnupg.org domain, but just included a
comment regarding the project in their key somewhere.

[fn:5] Such as with ProtonMail servers. This also means that
restricted servers which only advertise either HTTP or HTTPS end
points and not HKP or HKPS end points must still be identified as as
HKP or HKPS within the Python
Code. The =hkp4py= module will rewrite
these appropriately when the connection is made to the server.

[fn:6] Okay, Emacs might not necessarily qualify as a basic tool, but
it is common enough that having it installed on a system isn't too
great an expectation, nor is it difficult to add to most POSIX
systems, even if the users of those systems do not personally use it.
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am: Remove build rules for libgpgme-pth.
* gpgme.m4: Remove support for libgpgme-pth.

2011-05-26 Marcus Brinkmann <marcus@g10code.com>

* decrypt.c (gpgme_op_decrypt_start, gpgme_op_decrypt): Check CTX.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_edit)
(gpgme_op_card_edit_start, gpgme_op_card_edit): Likewise.
* encrypt.c (gpgme_op_encrypt_start, gpgme_op_encrypt): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.
* export.c (gpgme_op_export_start,
gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)

(gpgme_op_getauditlog): Likewise.
* gpgconf.c (gpgme_op_conf_load, gpgme_op_conf_save): Likewise.
* import.c (gpgme_op_import_start, gpgme_op_import_keys_start)
(gpgme_op_import_keys, gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_start, gpgme_op_keylist_ext_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext): Likewise.
* passwd.c (gpgme_op_passwd_start, gpgme_op_passwd): Likewise.
* sign.c (gpgme_op_sign_start, gpgme_op_sign): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next): Likewise.
* verify.c (gpgme_op_verify_start, gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* vfs-create.c (gpgme_op_vfs_transact, gpgme_op_vfs_create):
Likewise.
* vfs-mount.c (gpgme_op_vfs_mount, gpgme_op_vfs_transact): Likewise.
* gpgme.c (gpgme_set_protocol)
(gpgme_set_sub_protocol)
(gpgme_set_armor, gpgme_set_include_certs)
(gpgme_set_keylist_mode, gpgme_set_passphrase_cb)
(gpgme_set_progress_cb, gpgme_set_io_cbs, gpgme_set_locale)
(gpgme_ctx_set_engine_info, gpgme_sig_notation_clear): Likewise.
* gpgme.c (gpgme_new): Check for valid R_CTX.
(gpgme_cancel, gpgme_cancel_async, gpgme_release): Likewise.

2011-04-06 Werner Koch <wk@g10code.com>

* gpgme-config.in: Add option --host. Change options --cflags and
--libs to collapse duplicate include and lib dirs. Try to put
extra libs at the end.

* gpgme.h.in: Use INSERT__TYPEDEFS_FOR_GPGME_H to include platform
specific typedefs.

2011-02-03 Werner Koch <wk@g10code.com>

* extra-stati.h: New.
* mkstatus: Extend to also process extra-stati.h
* Makefile.am (main_sources): Add extra-stati.h
(status-table.h): Depend on extra-stati.h and adjust rule.

2011-02-03
Marcus Brinkmann <marcus@g10code.com>

* w32-io.c (_gpgme_io_socket): Return fd, not res.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* assuan-support.c (my_socket, my_connect): New functions.
(_gpgme_assuan_system_hooks): Add my_Socket, my_connect.
* priv-io.h (_gpgme_io_socket): New prototype.
* w32-io.c (pid_to_handle, handle_to_oid, fd_to_handle): Remove macros.
(is_socket): Remove function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Remove some dead code.
(_gpgme_io_spawn): Translate handles before DuplicateHandle them.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* w32-util.c (mkstemp): Don't use CreateFile instead of open (the
function is not used on Windows CE, and the callers were not
adjusted).

2011-01-21 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Fix the case that is
not self-assignment.

2010-12-08 Werner Koch <wk@g10code.com>

* gpgme-tool.c (strcpy_escaped_plus): New.
(DIM, xtoi_1, xtoi_2): New.
(cmd_keylist):
Allow for multiple patterns.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* w32-io.c (create_reader, create_writer): Use small stack size on
Windows CE.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* gpgme.h.in (gpgme_conf_arg_new): Make VALUE arg const void *.
* gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgme_conf_arg_new): Likewise.
* engine-gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgconf_write): Remove debug hack.

2010-11-19 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Support
self-assignment. Requested by Marc Mutz.

2010-11-17 Marcus Brinkmann <mb@g10code.com>

* vasprintf.c (int_vasprintf) [HAVE_W32CE_SYSTEM]: Just use a

fixed size buffer, as va_copy is not easy to fake.

2010-11-15 Marcus Brinkmann <mb@g10code.com>

* w32-ce.h (strcasecmp, strdup) [_MSC_VER]: Define.
* genkey.c, passphrase.c: Include util.h.

* w32-util.c (_gpgme_w32ce_get_debug_envvar): Fix return value.

2010-11-15 Werner Koch <wk@g10code.com>

*
data-compat.c (gpgme_data_new_from_filepart)
(gpgme_data_new_from_file) [W32CE && _MSC_VER]: Return not
GPG_ERR_NOT_IMPLEMENTED.

* w32-ce.h (HKEY_PERFORMANCE_DATA, HKEY_CURRENT_CONFIG, _IOLBF)
(abort) [_MSC_VER]: Provide these macros.

* ath.h [W32CE && _MSC_VER]: Include winsock2.h.

* ath.c (ath_read, ath_write) [W32CE && _MSC_VER]: Do not call
non-available functions.

2010-11-04 Werner Koch <wk@g10code.com>

* w32-ce.h [_MSC_VER && W32CE]: Undef leave.
* export.c: Include util.h so that we get the above undef.

* memrchr.c: Remove. Used to be a replacement function required
by the formerly included assuan code.

2010-11-03 Werner Koch <wk@g10code.com>

* debug.c (_gpgme_debug) [W32CE]: Replace locatime by GetLocalTime.

* signers.c (gpgme_signers_clear): Remove useless return.
Reported by Patrick Spendrin.

* w32-util.c: s/__inline__/GPG_ERR_INLINE/

* setenv.c: Include string.h due to our strerror replacement.

* w32-ce.h (access, bsearch):
New macros.
* w32-ce.c (_gpgme_wince_access): New.
(RegQueryValueExA): Change DATA to a void*.
(_gpgme_wince_bsearch): New. Taken from glibc 2.6.

Guard include of sys/stat.h and sys/types.h.

2010-11-02 Werner Koch <wk@g10code.com>

* data-fd.c (read, write, lseek) [W32CE && ! __MINGW32CE__]: New.
Taken from Pedro Alves Public Domain code.

* w32-ce.h (SHGetSpecialFolderPath): Remove our defines and
prototypes. We use the system provided prototypes now.
* w32-ce.c: Include shlobj.h
(_WIN32_IE): Define to 0x0400
(CreateFileA): New.
* w32-util.c: Explicitly include windows headers before util.h.
(_gpgme_w32ce_get_debug_envvar): Do not use wchar_t strings for
read_w32_registry_string.
(mkstemp): Use CreateFile instead of open.

* w32-io.c (handle_to_fd, fd_tohandle): Add. We need them for W32.
* w32-util.c (_WIN32_IE): Define to 0x0400.

* util.h [W32]: Include windows.h.
* w32-sema.c: Do not include windows.h directly.
* ath.c (ssize_t, pid_t)[_MSC_VER]: Add new
types.
* gpgme.c (gpgme_result_ref, gpgme_result_unref): Do not use a
void pointer in pointer arithmetic.
* w32-util.c: Include util.h prior to ath.h. Don't include
windows.h directly.
(F_OK): Define if not defined.
* w32-ce.c: Include string.h.
(RegQueryValueExA): Use WINAPI modifier to match the declaration.
* vfs-create.c: Include string.h because under W32CE with MSC we
get a warning related to our strerror replacement.
* encrypt-sign.c: Include stdlib.h, string.h and errno.h.
* priv-io.h [W32CE]: Include w32-ce.h
* w32-ce.h: Include winsock2.h and ws2tcpip.h.
(_MSV_VER): Remove useless macro.
(pid_t): Add typedef.

Guard all includes of unistd.h and sys/time.h.

2010-10-28 Marcus Brinkmann <marcus@g10code.com>

* opassuan.c (gpgme_op_assuan_transact_ext): Fix uninitialized
value use. Reported by Marc Mutz.

2010-10-07 Werner Koch <wk@g10code.com>

* gpgme-tool.c (ARGP_ERR_UNKNOWN): Use EDEADLK if available.

* w32-util.c (_gpgme_w32ce_get_debug_envvar) [W32CE]:
New.
* debug.c (debug_init) [W32CE]: Use new function.

2010-09-16 Werner Koch <wk@g10code.com>

* import.c: Include "util.h".
(parse_import): Return GPG_ERR_MISSING_ISSUER_CERT.

* util.h: Add fallback define for GPG_ERR_MISSING_ISSUER_CERT.
* op-support.c: Include "util.h".
(_gpgme_parse_inv_recp): Handle new code 12.

2010-09-02 Marcus Brinkmann <marcus@g10code.de>

* error.c (gpgme_err_code_to_errno): Fix cut and paste bug (thanks
to Marc Mutz).

2010-09-01 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c: Revert change from 2009-06-18, as it created a race
condition.

2010-08-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.def: Add gpgme_err_code_from_syserror and gpgme_err_set_errno.
* libgpgme.vers: Likewise.
* gpgme.h.in (gpgme_error_from_errno): Fix return type to
gpgme_error_t.
(gpgme_err_code_from_syserror, gpgme_err_set_errno): New prototype.
(gpgme_error_from_syserror): New inline function (why are
gpgme_err_make_from_errno and gpgme_error_from_errno
not inline
functions?).
* error.c (gpgme_error_from_errno): Fix return type to gpgme_error_t.
(gpgme_err_set_errno, gpgme_err_code_from_syserror): New functions.

2010-08-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (result_encrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml): Check vigorously for null pointers.

* w32-io.c (GPGCEDEV_IOCTL_ASSIGN_RVID): New macro.
(_gpgme_io_spawn): Use ASSIGN_RVID.

2010-06-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Remove debug printf.

2010-06-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use special hack for Windows CE to
get at stdin and stdout.

* engine-gpgsm.c (gpgsm_new): Translate returned achild_fds back
to child_fds.

* debug.h (TRACE_SUC6): New macro.
* w32-io.c (MAX_SLAFD): New macro.
(fd_table): New static variable.
(new_fd, release_fd): New functions.
(fd_to_handle, handle_to_fd, handle_to_socket):
Remove macros.
(MAX_READERS, MAX_WRITERS): Increase to 64.
(notify_table): Increase to MAX_SLAFD.
(struct reader_context_s, struct writer_context_s): Add member
file_sock.
(reader, writer): Use file_hd vs file_sock to decide if socket
operations to use. Remove auto-detect mode.
(create_reader, create_writer): Set file_sock. Unblock pending
thread only if this is a pipe fd.
(_gpgme_io_pipe): Allocate fds from table and return slot indices
instead of windows handles. This allows to properly handle RVIDs.
(_gpgme_io_close): Handle dup'ed file descriptors.
(build_commandline) [HAVE_W32_SYSTEM]: Use RVID from fd table now.
(_gpgme_io_spawn): Use fd table now.
(_gpgme_io_fd2str): Use RVID from fd table now.
(_gpgme_io_dup): Implement using fd table.
(_gpgme_io_socket): Allocate fds from table.
(_gpgme_io_connect): Use fd from table.

* w32-glib-io.c (find_channel): Check that the slot is used.

2010-06-09 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c [HAVE_W32CE_SYSTEM]:
Include assuan.h and winioctl.h.
(GPGCEDEV_IOCTL_UNBLOCK) [HAVE_W32CE_SYSTEM]: Define.
(set_synchronize) [HAVE_W32CE_SYSTEM]: Stub it out.
(is_socket): Allow to return -1 for auto-detect (old behaviour).
(is_socket) [HAVE_W32CE_SYSTEM]: Return -1.
(reader): Handle auto-detect case. Handle ctx->stop_me before

checking for EOF.
(destroy_reader) [HAVE_W32CE_SYSTEM]: Unblock a pending reader.
(writer): Handle auto-detect case. Handle ctx->stop_me with
ERROR_BUSY.
(destroy_writer) [HAVE_W32CE_SYSTEM]: Unblock a pending writer.
(_gpgme_io_pipe) [HAVE_W32CE_SYSTEM]: Implement in terms of a
half-pipe.
(build_commandline) [HAVE_W32CE_SYSTEM]: New function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Implement it differently
for this platform.
(_gpgme_io_fd2str) [HAVE_W32CE_SYSTEM]: Implement it for RVIDs.
(_gpgme_io_dup) [HAVE_W32CE_SYSTEM]: Stub it out.

* gpgme-tool.c (result_add_timestamp): Add missing NULL argument.
(result_sign_to_xml): Protect against NULL
fingerprint.
(struct server): New members input_fd, input_filename,
input_stream output_fd, output_filename, output_stream,
message_filename, message_stream.
(server_reset_fds): Deallocate those.
(server_parse_fd): New function.
(server_data_obj): Take optional filename argument and direction
argument. Also take new argument to return a filestream that
needs to be closed after destroying the data object.
Change all callers, too.
(input_notify, output_notify): Removed.
(cmd_input, cmd_output): New functions.
(gpgme_server): Do not register input and output notifier.
(register_commands): Use cmd_input and cmd_output.
(cmd_message): Rewritten to use server_parse_fd.
(cmd_delete, cmd_keylist): Fix inverted option check.
(main) [HAVE_W32CE_SYSTEM]: Sleep a bit to work around bug in ssh.

* genkey.c (gpgme_op_genkey): Return err with TRACE_ERR.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_timegm) [HAVE_W32_SYSTEM]: New static
function.
(_gpgme_parse_timestamp)
[HAVE_W32_SYSTEM]: Use it.

* gpgme-tool.c (main): Protect call to setlocale with
HAVE_SETLOCALE.

* Makefile.am (system_components): Remove custom cppflags from
RCCOMPILE (because gpg-error adds -idirafter that makes RC bail.
[HAVE_W32CE_SYSTEM]: Add w32-ce.h and w32-ce.c, clear

libexec_PROGRAMS.
* w32-ce.h, w32-ce.c: New files.

* priv-io.h: Include <sys/types.h>
* util.h: Likewise.

2010-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: Include ath.h
(HAVE_ALLOW_SET_FOREGROUND_WINDOW) [!HAVE_W32CE_SYSTEM]: Define
it.
(RTLD_LAZY, dlopen, dlsym,
dlclose) [!HAVE_ALLOW_SET_FORGROUND_WINDOW]: Don't define anymore.
(_gpgme_allow_set_foreground_window) [!HAVE_ALLOW_SET_FOREGROUND_WINDOW]:
Make it a stub.
(read_w32_registry_string): Use FooA variants of Windows functions
instead of Foo (which dispatches depending on UNICODE).
[!HAVE_W32CE_SYSTEM]: Don't check environment.
(w32_shgetfolderpath): Remove.
(find_program_at_standard_place): Call
SHGetSpecialFolderPath
(which is available on all Windows systems
and also Windows CE).
(mkstemp): Use ath_self instead of getpid.
(_gpgme_mkstemp): Use GetTempPathA instead of GetTempPath.

* gpgme.h.in: Use _WIN32 instead of _MSC_VER. Include time.h for
time_t.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c, gpgme.c, engine-gpgsm.c, engine-gpg.c,
op-support.c, engine-assuan.c, gpgme-tool.c: Include <locale.h>
only if available with HAVE_LOCALE_H and conditionalize use of
LC_CTYPE on its definition.
* engine-gpgconf.c: Do not include <locale.h>.

* engine-gpgsm.c (gpgsm_new, start): Cast between int and
assuan_fd_t.
* assuan-support.c (my_pipe, my_close, my_read, my_write): Likewise.
* gpgme-tool.c (server_data_obj, server_reset_fds, gpgme_server),
(my_recvmsg, my_sendmsg, my_spawn): Likewise.
* engine-assuan.c (start): Likewise.
* engine-g13.c (start): Likewise.

2010-05-06 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c, w32-io.c, w32-qt-io.cpp,

w32-sema.c, w32-util.c:
Do not include <signal.h>.

* sign.c, data-user.c, conversion.c, debug.c, verify.c, data.c,
decrypt.c, delete.c, assuan-support.c, import.c, engine-gpgsm.c,
data-mem.c, op-support.c, w32-io.c, w32-util.c, data-compat.c: Use
gpg_error_from_syserror instead gpg_error_from_errno, and use
gpg_err_set_errno to set error number.
* setenv.c: Include <gpg-error.h> and define __set_errno to use
gpg_err_set_errno.
* gpgme-tool.c (ARGP_ERR_UNKNOWN): Define to EDEADLOCK (which is
mapped in Windows CE) instead of E2BIG (which is not).
(gt_import_keys): Initialize err.

2010-04-19 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Cast to avoid warning.
* engine-g13.c (g13_new): Make ARGV array of pointer to const
char.
(g13_assuan_simple_command) [!USE_DESCRIPTOR_FUNCTION]: Don't define.
* ops.h (_gpgme_key_append_name): Same in prototype.
* key.c (_gpgme_key_append_name): Make SRC argument pointer to
const char.
* posix-util.c
(_gpgme_get_uiserver_socket_path): Make HOMEDIR
const.
* vfs-mount.c (gpgme_op_vfs_transact_start): Never define this
potentially useful but currently unused function.
* vfs-create.c (gpgme_op_vfs_transact_start): Likewise.

2010-04-16 Werner Koch <wk@g10code.com>

* w32-io.c (is_socket): New.
(reader, writer): Use it to figure out the API to use.

2010-03-15 Werner Koch <wk@g10code.com>

* gpgme.h.in: Add autoconf template to set generated file to
read-only in an emacs buffer.

2010-03-12 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_STATUS_SUCCESS): Use the right file for the
change; see below.

* passwd.c (op_data_t): New.
(passwd_start): Setup OPD.
(passwd_status_handler): Return GPG_ERR_NOT_SUPPORTED if needed.

* context.h (OPDATA_PASSWD): New.
* gpgme.h (GPGME_STATUS_SUCCESS): New.

2010-03-09 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (gpgsm_keylist): Try to start the agent.

2010-02-17 Werner Koch <wk@g10code.com>

* posix-io.c (notify_table):
Change implementation.
(notify_table_item_t, notify_table_size, notify_table_lock): New.
(_gpgme_io_close, _gpgme_io_set_close_notify): Adjust for new
implementation.

2010-02-16 Werner Koch <wk@g10code.com>

* gpgme-tool.c (spacep, has_option, skip_options): New.
(cmd_export): Implement option --minimal.

* gpgme.h.in (GPGME_EXPORT_MODE_MINIMAL): New.
* export.c (export_start, export_ext_start): Implement it.
* engine-gpg.c (export_common): Ditto.

2010-01-25 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_connect): Fix return code check to make it work.

* version.c (do_subsystem_inits): Remove superfluous second
WSAStartup.

2010-01-22 Werner Koch <wk@g10code.com>

* w32-io.c (writer): Try to use send first.
(reader): Try to use recv first.

2010-01-08 Werner Koch <wk@g10code.com>

* engine-gpg.c (gpg_passwd): New.
(_gpgme_engine_ops_gpg): Register.
* passwd.c (parse_error): New.
(passwd_status_handler): Use it.

2010-01-07 Marcus Brinkmann <marcus@g10code.de>

*
gpgme-tool.c (result_xml_write_cb_t, struct result_xml_state):
New types.

(MAX_TAGS): New macro.
(result_init, result_xml_indent, result_xml_tag_start)
(result_xml_tag_data, result_xml_tag_end, result_add_error)
(result_add_pubkey_algo, result_add_hash_algo, result_add_keyid)
(result_add_fpr, result_add_timestamp, result_add_sig_mode)
(result_add_value, result_add_string, result_encrypt_to_xml)
(result_decrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml, result_keylist_to_xml)
(result_vfs_mount_to_xml): New functions.
(gt_result): Rewritten.

2010-01-05 Werner Koch <wk@g10code.com>

* gpgme-tool.c (gt_passwd, cmd_passwd): New.
(register_commands): Register.

* gpgme.h.in (gpgme_op_passwd_start, gpgme_op_passwd): New.
* libgpgme.vers, gpgme.def: Add new functions.
* passwd.c: New.
* Makefile.am (main_sources): Add passwd.c
* engine.c, engine.h (_gpgme_engine_op_passwd): New.
* engine-backend.h (struct
engine_ops): Add PASSWD.
* engine-gpgsm.c (gpgsm_passwd): New.
(_gpgme_engine_ops_gpgsm): Register.
(gpgsm_reset): Reset only if we have a connection.

* gpgme.h.in (GPGME_PK_ECDSA, GPGME_PK_ECDH): New.
* gpgme.c (gpgme_pubkey_algo_name): Add them.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Test for TLS, not __GNUC__

2009-12-15 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Calloc, not malloc, the fd_items.

2009-12-10 Werner Koch <wk@g10code.com>

* debug.c (debug_init): Test on sgid process.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (LTRCCOMPILE): Refactor with ...
(RCCOMPILE): ... this new macro.
(SUFFIXES): Add .lo.

(gpgme_res_ldflag): Removed.
(gpgme_res): Use libtool object file name here.
(libgpgme_la_LDFLAGS): Remove gpgme_res_ldflag usage.
(libgpgme_la_LIBADD): Add gpgme_res.

* ath.c (ath_self) [HAVE_W32_SYSTEM]: Fix typo.

2009-12-02 Werner Koch <wk@g10code.com>

* gpgconf.c (gpgme_conf_arg_release):
No return in a function
returning void. Reported by Wyllys Ingersoll.

2009-12-01 Werner Koch <wk@g10code.com>

* gpgme-tool.c (cmd_getauditlog): Add flag --html.
(hlp_getauditlog): New.

* gpgme-tool.c (GT_GCC_A_SENTINEL, GT_GCC_A_PRINTF): New.
(gt_write_status): Use sentinel.
(argp_error, log_error): Use printf attribute.
(argp_parse): Remove extra argument to argp_error.
(_gt_progress_cb, gt_get_engine_info, gt_get_keylist_mode)
(gt_result): Add NULL arg.

2009-11-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan.c (opassuan_start): Allocate result structure before
beginning operation.

2009-11-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use assuan_fd_t and assuan_fdopen
on fds.

2009-11-13 <wk@g10code.com>

* sign.c (_gpgme_sign_status_handler): Handle SIG_CREATED_SEEN.
* engine-uiserver.c (uiserver_sign): Make sending SENDER optional.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset):
Instead of last change, only set
sub protocol if it is not the default.

2009-11-10 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Ignore GPG_ERR_NOT_IMPLEMENTED
while setting the sub protocol.

* engine-uiserver.c (uiserver_new): Pass fdpassing flag to
assuan_socket_connect.
(set_recipients): Replace fingerprint by user id.

* engine-gpgsm.c (set_recipients): Fix non-terminating loop in
case of a missing key.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set default sub protocol.
* gpgme-tool.c: Implement get sub protocol.

* gpgme.h.in (gpgme_get_sub_protocol): Add prototype.
* gpgme.def, libgpgme.vers: Add gpgme_get_sub_protocol.
* context.h (struct gpgme_context): New member sub_protocol.
* gpgme.c (gpgme_set_sub_protocol): Set CTX->sub_protocol.
(gpgme_get_sub_protocol): New function.
* op-support.c (_gpgme_op_reset): Set sub protocol.

* Makefile.am (uiserver_components): New variable.
(main_sources):
Add it.
* ops.h, key.c (_gpgme_key_append_name): Take CONVERT argument,
implement it. Adjust callers.
(gpgme_key_from_uid): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_DEFAULT.
(gpgme_encrypt_flags_t): Add GPGME_ENCRYPT_PREPARE,
GPGME_ENCRYPT_EXPECT_SIGN.
(gpgme_set_sub_protocol, gpgme_key_from_uid): New functions.
* libgpgme.vers, gpgme.def: Add new functions.
* gpgme.c (gpgme_set_protocol): Add UIServer protocol.
(gpgme_set_sub_protocol): New function.
(gpgme_get_protocol_name): Add UIServer and default protocol.
* assuan-support.c: Return correct error values, implement
socketpair for POSIX.
* priv-io.h, posix-io.c, w32-io.c, w32-glib-io.c,
w32-qt-io.cpp (_gpgme_io_spawn): Add ATFORK and ATFORKVALUE
arguments. Implement it for POSIX. Adjust all callers.
* engine.h, engine-backend.h (_gpgme_engine_set_protocol)
(_gpgme_engine_op_decrypt_verify): New prototypes. Adjust all
users.
* engine.c (engine_ops, gpgme_get_engine_info): Add UIServer
engine.
(_gpgme_engine_set_protocol,

_gpgme_engine_op_decrypt_verify): New
function.
* decrypt-verify.c (decrypt_verify_start): Call
_gpgme_engine_op_decrypt_verify.
* util.h, posix-util.c,
w32-util.c (_gpgme_get_uiserver_socket_path): New function.
* engine-gpgsm.c (gpgsm_set_fd): Fix _gpgme_io_pipe invocation.
* gpgme-tool.c: Some support for UIServer protocol.
* engine-uiserver.c: New file.

2009-11-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Close server side FDs.

2009-11-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (struct gpgme_tool): New members write_data and
write_data_hook.
(gt_write_data): New function.
(gt_result): Output vfs_mount result.
(server_write_data): New function.
(gpgme_server): Initialize write_data members.

2009-11-05 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c (struct engine_g13): Remove members RESULT_CB and
RESULT_CB_VALUE.
(g13_assuan_simple_command, status_handler): Don't use those
anymore.
(g13_transact): Remove them from argument list, too.
* vfs-mount.c (_gpgme_vfs_mount_status_handler): New function.
(_gpgme_op_vfs_mount): Pass it to transact.

* engine-assuan.c (llass_new): Update use of assuan_socket_connect.
* engine-gpgsm.c (gpgsm_new): Update use of assuan_pipe_connect.
* engine-g13.c (g13_new): Likewise.

* priv-io.h (IOSPAWN_FLAG_NOCLOSE): New flag.
* w32-io.c (_gpgme_io_spawn): Implement this flag.
* posix-io.c (_gpgme_io_spawn): Likewise.
* w32-glib-io.c (_gpgme_io_spawn): Likewise.
* assuan-support.c (my_spawn): Set this flag.

* decrypt.c (gpgme_op_decrypt_start): Fix use of debug macro.
* decrypt-verify.c (gpgme_op_decrypt_verify_start): Likewise.
* delete.c (gpgme_op_delete_start): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_card_edit_start):
Likewise.

* encrypt.c (gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export_ext_start)
(gpgme_op_export_keys_start,
gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start): Likewise.
* import.c (gpgme_op_import_start, gpgme_op_import_keys_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start): Likewise.
* sign.c (gpgme_op_sign_start): Likewise.
* verify.c (gpgme_op_verify_start): Likewise.
* vfs-create.c (gpgme_op_vfs_create): Likewise.
* vfs-mount.c (gpgme_op_vfs_mount): Likewise.

2009-11-04 Marcus Brinkmann <marcus@g10code.de>

* ath.h (ath_self): New prototype. Include <stdint.h>
* ath.c, ath-pth.c, ath-pthread.c (ath_self): New function.
* debug.h: Rewrite most macros to beautify debug output.
(_gpgme_debug_buffer): Remove tagname and tag argument.
(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New prototypes.
* debug.c: Include <time.h>. Don't include assuan.h.
(frame_nr, FRAME_NR): New thread-specific variable and macro.
(debug_init): Do not initialize assuan.
Call _gpgme_debug after
initialization instead using printf directly.
(_gpgme_debug): Do not call debug_init (we now ensure proper
initialization by user). Add timestamp and thread/process ID.
(_gpgme_debug_buffer): Do not take tagname and tag argument.
(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New functions.
* version.c (gpgme_check_version_internal, gpgme_check_version):
Fix debug string. Do not initialize assuan.
* posix-io.c (get_max_fds): Use 0 not NULL (nicer debug output).

2009-11-04 Werner Koch <wk@g10code.com>

* gpgme-tool.c (register_commands): Add HELP feature.

2009-11-03 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_PROTOCOL_UISERVER): New.

2009-11-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (main_sources): Change g13.c to vfs-mount.c. Add
vfs-create.c
* vfs-create.c: New file.

* g13.c: Renamed to ...
* vfs-mount.c: ... this new file.
* gpgme.h.in (gpgme_op_vfs_create): New prototype.
* gpgme.def, libgpgme.vers: Add gpgme_op_vfs_create.
*
gpgme-tool.c (gt_vfs_create, cmd_vfs_create): New functions.
(register_commands): Add VFS_CREATE and CREAET.

2009-11-02 Marcus Brinkmann <marcus@g10code.de>

* debug.h (_gpgme_debug_buffer): Make TAG argument const const.
* debug.c (_gpgme_debug_buffer): Likewise.
* gpgme-tool.c (input_notify, output_notify): Adjust type to new
assuan interface.
* decrypt.c (gpgme_op_decrypt_result): Remove unused variable.
* opassuan.c (gpgme_op_assuan_transact): Fix return value.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (noinst_PROGRAMS): New target gpgme-tool.
(gpgme_tool_LDADD): New variable.
* gpgme-tool.c: New file.
* ops.h (_gpgme_sig_notation_clearm _gpgme_signers_clear): New
prototypes.
* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_GPGCONF (when
had that gone missing?).
(_gpgme_sig_notation_clear): New function without debug output.
(gpgme_release): Call it and _gpgme_signers_clear.
* signers.c (_gpgme_signers_clear): New
function without debug output.
* g13.c (gpgme_op_vfs_mount): Add debug output.
* assuan-support.c (my_spawn): Allow fd_child_list to be NULL.
* conversion.c (_gpgme_encode_percent_string): Fix infinite loop.
* debug.h: Put tag in front of debug lines, should make for nicer
output.
* engine-assuan.c (llass_new): Use our new system hooks for libassuan.
* engine-g13.c (g13_new): Remove redundant assuan context allocation.
* version.c (gpgme_check_version_internal): Delay debug output
until after gpgme_check_version was called.

2009-10-28 Marcus Brinkmann <marcus@g10code.de>

* signers.c, encrypt-sign.c, encrypt.c, delete.c, keylist.c,
edit.c, import.c, export.c: Fix last change in debug output.

2009-10-27 Marcus Brinkmann <marcus@g10code.de>

* edit.c (gpgme_op_edit_start, gpgme_op_edit)

(gpgme_op_card_edit_start, gpgme_op_card_edit): Add debug output.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.
* encrypt.c (gpgme_op_encrypt_start,
gpgme_op_encrypt)
(gpgme_op_encrypt_result): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey)
(gpgme_op_genkey_result): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)
(gpgme_op_getauditlog): Likewise.
* import.c (gpgme_op_import_result, gpgme_op_import_start)
(gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_result, keylist_colon_handler)
(gpgme_op_keylist_start, gpgme_op_keylist_ext_start)
(gpgme_op_keylist_next, gpgme_op_keylist_end, gpgme_get_key): Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext, gpgme_op_assuan_result)
(gpgme_op_assuan_transact): Likewise.
* signers.c (gpgme_signers_add, gpgme_signers_clear): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next, gpgme_op_trustlist_end): Likewise.
* verify.c (gpgme_op_verify_start,
gpgme_op_verify)
(gpgme_op_verify_result): Likewise.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (struct gpgme_io_event_done_data)
(gpgme_io_event_done_data_t): New types.
(struct _gpgme_op_assuan_result): Deprecate the err member.
(gpgme_op_assuan_result): Deprecate (for now).
(gpgme_op_assuan_transact_ext): New prototype.
(gpgme_op_assuan_transact): Deprecate.
(struct _gpgme_op_g13_result): Replace with ...
(struct _gpgme_op_vfs_mount_result): ... this.
(gpgme_op_g13_mount): Replace with ...
(gpgme_op_vfs_mount): ... this.
* gpgme.def (gpgme_op_assuan_transact_ext, gpgme_wait_ext)
(gpgme_op_vfs_mount_result, gpgme_op_vfs_mount): New.
(gpgme_op_g13_mount): Remove.
* libgpgme.vers: Likewise.
* engine-backend.h (struct engine_ops): Remove RESULT_CB and
RESULT_CB_VALUE args in opassuan_transact member. Add CANCEL_OP
member.
* ops.h (_gpgme_cancel_with_err, _gpgme_wait_on_condition): Add

OP_ERR argument.
(_gpgme_wait_one_ext):
New prototype.
* context.h (ctx_op_data_id_t): Add OPDATA_VFS_MOUNT.
* engine-g13.c (g13_cancel_op): New function.
(parse_status): Remove declaration.
(g13_assuan_simple_command): Do nothing with status lines for now.
(status_handler): Update opaque value access.
(_gpgme_engine_ops_g13): Add new cancel_op member.
* gpgme.c (_gpgme_cancel_with_err): Add new parameter OP_ERR.
Handle operational errors.
(gpgme_cancel, gpgme_io_read, gpgme_io_write): Add debug output.
* data.c (_gpgme_data_inbound_handler)
(_gpgme_data_outbound_handler): Adjust opaque value access.
* engine-gpg.c (command_handler, status_handler)
(colon_line_handler): Likewise.
* engine-gpgsm.c (status_handler): Likewise.
* engine-gpg.c (_gpgme_engine_ops_gpg): Add cancel_op member.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Likewise.
* g13.c: Rewritten (and will be rewritten again).
* engine.h (_gpgme_engine_op_assuan_transact): Remove result_cb
and result_cb_value parameters from prototype.
(_gpgme_engine_cancel_op):
New prototype.
* engine.c (engine_ops) [! ENABLE_ASSUAN]: Add missing comma.
(_gpgme_engine_op_assuan_transact): Remove result_cb and
result_cb_value parameter.
(_gpgme_engine_cancel_op): New function.
* wait.h (_gpgme_run_io_cb): Add new argument OP_ERR.
(struct io_cb_data): New struct to pass opaque data and get a
op_err return value. Needed because we can't modify I/O callback
handler signature because it is exposed to the user.
* wait.c (_gpgme_run_io_cb): Add OP_ERR parameter. Handle
operational errors.
* wait-user.c (_gpgme_user_io_cb_handler): Handle operational
errors.
* wait-private.c (_gpgme_wait_on_condition): New argument to
retrieve the operational result. Handle operational errors in
session based protocols.
(_gpgme_wait_one_ext): New function.
(_gpgme_wait_one): Pass argument in invocation of
_gpgme_wait_on_condition.
* wait-global.c (struct ctx_list_item): Add member OP_ERR.
(ctx_done): New argument OP_ERR.
(ctx_wait): New argument
OP_ERR.
(gpgme_wait_ext): New function based on gpgme_wait but handling
operational errors.

(gpgme_wait): Implement in term of gpgme_wait_ext.
* keylist.c (gpgme_op_keylist_next): Pass argument in invocation
of _gpgme_wait_on_condition.
* trustlist.c (gpgme_op_trustlist_next): Pass argument in
invocation of _gpgme_wait_on_condition.
* engine-assuan.c (struct engine_llass): Replace members RESULT_CB
and RESULT_CB_VALUE by LAST_OP_ERR.
(_gpgme_engine_assuan_last_op_err): Add this hack function.
(llass_cancel_op): New function.
(_gpgme_engine_llass_ops): Add cancel_op member.
(llass_status_handler): Update opaque value access.
(llass_transact): Remove RESULT_CB and RESULT_CB_VALUE arguments.
* opassuan.c: Move compat hacks to the end of file.
(opassuan_start): Do not set OPD->result.err.
Do not pass RESULT_Cb and CTX to _gpgme_engine_op_assuan_transact.
(gpgme_op_assuan_transact_ext): New function.

* debug.h (DEBUG_GLOBAL): New debug level.
* conversion.c (gnupg_errors,
_gpgme_map_gnupg_error): Removed.
* data-user.c (gpgme_data_new_from_cbs): Add debug output.
* data-fd.c (gpgme_data_new_from_fd): Likewise.
* data-stream.c (gpgme_data_new_from_stream): Likewise.
* decrypt.c (gpgme_op_decrypt_result, gpgme_op_decrypt_start)
(gpgme_op_decrypt): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* sign.c (gpgme_op_sign_result): Fix debug message.
* data-mem.c (gpgme_data_new): Improve debug output.
* verify.c (parse_trust): Use atoi instead of
_gpgme_map_gnupg_error.
* decrypt.c (_gpgme_decrypt_status_handler): Likewise.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Remove @NETLIBS@ from LIBADDs.
(g13_components): New variable.
(main_sources): Add $(g13_components).
* g13.c, engine-g13.c: New files.
* engine.c (engine_ops): Check for assuan for assuan engine, add
g13 engine.
* util.h (_gpgme_get_g13_path,
_gpgme_encode_percent_string): New
prototypes.
* conversion.c (_gpgme_encode_percent_string): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_G13.
(struct _gpgme_op_g13_result, gpgme_g13_result_t): New types.

(gpgme_op_g13_mount): New function.
* gpgme.def, libgpgme.vers: Add gpgme_op_g13_mount.
* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_G13.
(gpgme_get_protocol_name): Add GPGME_PROTOCOL_G13.
* posix-util.c (_gpgme_get_g13_path): New function.
* w32-util.c (_gpgme_get_g13_path): New function.
* engine-backend.h (_gpgme_engine_ops_g13): New declaration.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (netlibs): Remove.
(assuan_cflags, assuan_libs): Add.

* Makefile.am (assuan_cppflags, assuan_libobjs): Removed.
(gpgsm_components): Move engine-assuan.c to ...
(assuan_components): ... this new variable.
(main_sources): Add this new variable.
(AM_CPPFLAGS): Remove $(assuan_cppflags).
(AM_CFLAGS): Add @LIBASSUAN_CFLAGS@.
(libgpgme_la_DEPENDENCIES,
libgpgme_pth_la_DEPENDENCIES)
(libgpgme_glib_la_DEPENDENCIES, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_pthread_la_DEPENDENCIES): Remove $(assuan_libobjs).
(libgpgme_la_LIBADD, libgpgme_pth_la_LIBADD)
(libgpgme_glib_la_LIBADD, libgpgme_qt_la_LIBADD))
(libgpgme_pthread_la_LIBADD): Replace $(assuan_libobjs) by
@LIBASSUAN_LIBS@.
* priv-io.h [!HAVE_W32_SYSTEM]: Declare _gpgme_io_recvmsg,
_gpgme_io_sendmsg, _gpgme_io_waitpid.
* engine-backend.h: Define with [ENABLE_ASSUAN] instead
of [ENABLE_GPGSM].
* posix-io.c (_gpgme_io_waitpid): Make non-static.
* util.h (ENABLE_ASSUAN): Declare _gpgme_assuan_system_hooks,
_gpgme_assuan_malloc_hooks, _gpgme_assuan_log_cb.
* engine-gpgsm.c: Don't map assuan error codes. Use
assuan_release instead of assuan_disconnect.
(map_assuan_error): Remove function.
(gpgsm_new): Use new assuan context interface.
* engine-assuan.c: Use assuan_release instead of
assuan_disconnect.
(llass_new): Use new assuan context
interface.

2009-10-07 <wk@g10code.com>

* priv-io.h [W32]: Include windows.h instead of sys/socket.h.

2009-08-06 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Allow for no fingerprint.

* engine-gpgsm.c (gpgsm_sign): Hook up the status func for the
SIGNER command.
* gpgme.h.in (GPGME_STATUS_INV_SGNR, GPGME_STATUS_NO_SGNR): New.
* sign.c (op_data_t): Add fields IGNORE_INV_RECP and INV_SGNR_SEEN.
(_gpgme_op_sign_init_result): Factor code out to ...
(sign_init_result): .. new. Init new fields.
(sign_start): Use sign_init_result.
(_gpgme_sign_status_handler): Take care of the new INV_SGNR.
Return an error if no signature has been created.

2009-07-07 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (struct engine_gpgsm): Add fields
input_helper_data and input_helper_memory.
(close_notify_handler): Release these new fields.
(gpgsm_import): Implement the keyarray feature.

* engine-gpg.c (gpg_import): Actually return GPG_ERR_INV_VALUE.

*
engine-gpgsm.c (gpgsm_import): Return an error for unknown data
encodings.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* debug.h: Everywhere, use %p instead of 0x%x to print pointer.
[HAVE_STDINT_H]: Include <stdint.h>.
(_TRACE, TRACE, TRACE0, TRACE1, TRACE2, TRACE3, TRACE6): Cast tag
to (uintptr_t) before casting it to (void*) to silence GCC
warning.

* gpgme.h.in (_GPGME_DEPRECATED_OUTSIDE_GPGME): New macro.
* sign.c (_GPGME_IN_GPGME): Define it.
* keylist.c (_GPGME_IN_GPGME): Define it.

* debug.c (_gpgme_debug_begin, _gpgme_debug_add): Handle error in
vasprintf and asprintf.

* priv-io.h: Include <sys/socket.h>. Declare _gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (GPGME_CONF_PATHNAME): Revert last change, it's
back! (GPA still uses it...).

* gpgme.def: Fix stupid typo.
* w32-io.c (_gpgme_io_pipe): Add missing declaration.

* gpgme.h.in (GPGME_CONF_PATHNAME): Remove obsolete macro.

* w32-io.c (_gpgme_io_pipe): Allocate
reader/writer thread right
away.
(_gpgme_io_read, _gpgme_io_write, _gpgme_io_select)
(_gpgme_io_dup): Never allocate threads here.
(find_writer, find_reader): Check return value of thread creation
function.

* context.h (CTX_OP_DATA_MAGIC): New macro.
(struct ctx_op_data): New member MAGIC.
* op-support.c (_gpgme_op_data_lookup): Initialize magic.
* gpgme.c (gpgme_result_unref, gpgme_result_ref): Check magic.

2009-06-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_result_unref): Hot fix to release a lock.

* gpgme.c (result_ref_lock): New global variable.
(gpgme_result_ref, gpgme_result_unref): use it.

2009-06-16 Werner Koch <wk@g10code.com>

* version.c: Include stdlib.h.

* gpgme.h.in (gpgme_data_encoding_t): Add GPGME_DATA_ENCODING_URL,
GPGME_DATA_ENCODING_URLESC, GPGME_DATA_ENCODING_URL0.
* data.c (gpgme_data_set_encoding): Adjust for new values.
* engine-gpg.c (string_from_data): New.
(gpg_import): Implement --fetch-key feature.

* gpgme.h.in
(gpgme_op_export_keys_start, gpgme_op_export_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* export.c (gpgme_op_export_keys_start, gpgme_op_export_keys): New.
(export_keys_start): New.

* gpgme.h.in (gpgme_export_mode_t, GPGME_EXPORT_MODE_EXTERN): New.
(gpgme_op_export_start, gpgme_op_export, gpgme_op_export_ext_start)
(gpgme_op_export_ext): Change arg RESERVED to MODE of new
compatible type.
* export.c (gpgme_export_ext_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext): Ditto.
(export_start): Ditto.

* engine.c (_gpgme_engine_op_export): Ditto.
* engine-backend.h (struct engine_ops): Ditto.
* engine-gpgsm.c (gpgsm_export, gpgsm_export_ext): Ditto.
* engine-gpg.c (gpg_export, gpg_export_ext): Ditto. Implement
mode EXTERN.
(gpg_export, gpg_export_ext): Factor common code out to ..
(export_common): .. this.

* gpgme.h.in (gpgme_op_import_keys_start, gpgme_op_import_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* import.c (gpgme_op_import_keys_start,
gpgme_op_import_keys): New.
(_gpgme_op_import_keys_start): New.
* engine.c (_gpgme_engine_op_import): Add arg KEYARRAY.
* engine-backend.h (struct engine_ops): Ditto.
* engine-gpgsm.c (gpgsm_import): Ditto. Not functional.
* engine-gpg.c (gpg_import): Ditto. Implement it.

2009-06-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_result_ref, gpgme_result_unref): Add
prototypes.
* gpgme.def, libgpgme.vers (gpgme_result_ref, gpgme_result_unref):
Add these.
* context.h (struct ctx_op_data): Add member "references".
* gpgme.c (gpgme_result_ref, gpgme_result_unref): New functions.
(_gpgme_release_result): Use gpgme_result_unref.
* op-support.c (_gpgme_op_data_lookup): Initialize references.

2009-06-12 Werner Koch <wk@g10code.com>

* gpgme-w32spawn.c (translate_get_from_file): Parse optional spawn
flags. Add new arg R_FLAGS. Fix segv on file w/o LF.
(translate_handles): Add new arg R_FLAGS. Avoid possible segv.
(main): Pass flags for my_spawn.
(my_spawn):
Add arg FLAGS and implement AllowSetForegroundWindow.

* priv-io.h (IOSPAWN_FLAG_ALLOW_SET_FG): New.
* w32-io.c (_gpgme_io_spawn): Add arg FLAGS and implement it.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* posix-io.c (_gpgme_io_spawn): Add dummy arg FLAGS.
* engine-gpg.c (start): Call spawn with new flag.

* w32-util.c (_gpgme_allow_set_foregound_window): Rename to
_gpgme_allow_set_foreground_window. Change all callers.
* posix-util.c (_gpgme_allow_set_foreground_window): Ditto.

2009-06-10 Werner Koch <wk@g10code.com>

 * w32-util.c (_gpgme_allow_set_foregound_window): Add trace support.

2009-06-09 Werner Koch <wk@g10code.com>

 * engine-gpg.c (gpg_io_event): Test for cmd.fd.

 * version.c (gpgme_check_version_internal): Make result const.

 * gpgme.c: Include priv-io.h.
(gpgme_io_read, gpgme_io_write): New.
* libgpgme.vers (GPGME_1.1): Add them.
* gpgme.def: Ditto.

 * Makefile.am (main_sources): Remove gpgme.h.
(include_HEADERS):
Rename to nodist_include_HEADERS so that a
VPATH build won't use the distributed one.

 * util.h (GPG_ERR_NOT_OPERATIONAL): Define.

2009-05-28 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.h.in (gpgme_check_version_internal): New prototype.
(gpgme_check_version): New macro, overriding function of the same
name.
* libgpgme.vers, gpgme.def: Add gpgme_check_version_internal.o
* context.h (_gpgme_selftest): New variable declaration.
* version.c: Include "context.h".
(gpgme_check_version): Set _gpgme_selftest on success.
(gpgme_check_version_internal): New function.
* gpgme.c (_gpgme_selftest): Define it.
(gpgme_new): Check the selftest result.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.h.in (gpgme_encrypt_flags_t): Add
GPGME_ENCRYPT_NO_ENCRYPT_TO.
* engine-gpg.c (gpg_encrypt): Pass --no-encrypt-to to gpg if
GPGME_ENCRYPT_NO_ENCRYPT_TO flag is set.

2009-05-14 Werner Koch <wk@g10code.com>

 * gpgme.h.in (gpgme_status_code_t):
Explicitly initialize for
better maintainability and to help debugging.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.h.in: Add compile time check for _FILE_OFFSET_BITS.

2009-04-15 Marcus Brinkmann <marcus@g10code.de>

 * posix-io.c (_gpgme_io_socket, _gpgme_io_connect): New functions.
 * w32-io.c (_gpgme_io_connect): Fix stupid error.

2009-04-08 Marcus Brinkmann <marcus@g10code.de>

 * w32-glib-io.c (giochannel_table): New members used, fd, socket.
(find_channel): Drop CREATE argument.
(new_dummy_channel_from_fd, new_channel_from_fd)
(new_channel_from_socket): New functions.
(_gpgm_io_fd2str): Implement for sockets.
(_gpgme_io_write, _gpgme_io_read): Translate EAGAIN errors
correctly.
(_gpgme_io_pipe): Fix for new channel bookkeeping.
(_gpgme_io_close, _gpgme_io_dup): Likewise.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
 * w32-io.c (MAX_READERS, MAX_WRITERS): Bump up to 40.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
 * w32-qt-io.cpp
(_gpgme_io_socket, _gpgme_io_connect): New stubs.
 * version.c [HAVE_W32_SYSTEM]: Include "windows.h.
(do_subsystem_inits) [HAVE_W32_SYSTEM]: Call WSAStartup.
 * engine-assuan.c (llass_status_handler): Ignore EAGAIN errors.

2009-03-18 Werner Koch <wk@g10code.com>

 * gpgme.h.in (GPGME_KEYLIST_MODE_EPHEMERAL): New.
 * engine-gpgsm.c (gpgsm_keylist): Send new option.

2009-03-13 Werner Koch <wk@g10code.com>

 * gpgme-config.in: Make sure locale is set to C.

2009-02-24 Werner Koch <wk@g10code.com>

 * gpgme.h.in (struct _gpgme_op_assuan_result): New.
(gpgme_assuan_result_t): New.
(gpgme_op_assuan_result): Change return type.
(struct _gpgme_assuan_sendfnc_ctx)
(gpgme_assuan_sendfnc_ctx_t, gpgme_assuan_sendfnc_t):Remove.
(gpgme_assuan_inquire_cb_t): Changed.
 * opassuan.c (op_data_t): Make use of a result structure.

(gpgme_op_assuan_result): Change return type.
(opassuan_start): Use result structure.
(result_cb): Ditto.
* engine-assuan.c (struct _gpgme_assuan_sendfnc_ctx):
Remove.
(inquire_cb_sendfnc): Remove.
(inquire_cb): Change for new callback scheme. Not yet finished.
(llass_status_handler): Allow sending a CANCEL from the inquire CB.

2009-02-04 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_spawn): Make ARGV argument const to
match prototype.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.

2009-02-03 Werner Koch <wk@g10code.com>

* gpgme.h.in (struct _gpgme_subkey): Add fields IS_CARDKEY and
CARD_NUMBER..
* key.c (gpgme_key_unref): Release field CARD_NUMBER.
* keylist.c (keylist_colon_handler): Factor common code out to ...
(parse_sec_field15): New. Set card number.

2009-01-26 Werner Koch <wk@g10code.com>

* opassuan.c, dirinfo.c, engine-assuan.c: New.
* Makefile.am: Add them.
* engine-backend.h: Add _gpgme_engine_ops_assuan.
(struct engine_ops): Add field OPASSUAN_TRANSACT. Update all
engine intializers.
* Makefile.am (gpgsm_components): Add engine-assuan.c.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_ASSUAN.
(gpgme_assuan_data_cb_t,
gpgme_assuan_sendfnc_ctx_t)
(gpgme_assuan_inquire_cb_t, gpgme_assuan_status_cb_t): New.
(gpgme_op_assuan_transact_start, gpgme_op_assuan_transact): New.
* gpgme.c (gpgme_get_protocol_name): Ditto.
(gpgme_set_protocol): Support it.
* engine.c (gpgme_get_engine_info): Ditto.
(engine_ops): Register it.
(_gpgme_engine_op_assuan_transact): New.
* libgpgme.vers (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* gpgme.def (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* engine-backend.h (struct engine_ops): Add GET_HOME_DIR and
initialize to NULL for all engines.
* engine.c (engine_get_home_dir): New.

(gpgme_get_engine_info): Use it.
(_gpgme_set_engine_info): Use it.
* engine.h (engine_assuan_result_cb_t): New.
* context.h (ctx_op_data_id_t): Add OPDATA_ASSUAN.

* util.h (GPG_ERR_UNFINISHED): Define if not yet defined.

* version.c (gpgme_check_version): Protect trace arg against NULL.

2009-01-19 Werner
Koch <wk@g10code.com>

* rungpg.c: Rename to engine-gpg.c
* Makefile.am (main_sources): Ditto.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (status-table.h): Use $(builddir) to find gpgme.h.

2008-11-18 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Always initialize I/O
subsystem. Fixes regression from 2007-08-02.

* decrypt.c (_gpgme_decrypt_status_handler): Use
_gpgme_map_gnupg_error to parse the error code for decrypt.algorithm.

2008-10-30 Marcus Brinkmann <marcus@g10code.de>

* wait-private.c (_gpgme_wait_on_condition): Remove unused
variable IDX.
* wait-global.c: Include ops.h to silence gcc warning.
(_gpgme_wait_global_event_cb): Pass error value directly.
* wait-user.c: Include ops.h to silence gcc warning.

* posix-io.c (_gpgme_io_spawn): Make ARGV argument const to
silence gcc warning. Cast argument to execv to silence warning.
* w32-io.c (_gpgme_io_spawn): Likewise.
* priv-io.h (_gpgme_io_spawn): Likewise for
prototype.

2008-10-24 Werner Koch <wk@g10code.com>

* rungpg.c (gpg_keylist_preprocess): Escape backslashes too.

2008-10-23 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist_preprocess): Convert percent escaped

string to C coded string.

2008-10-20 Werner Koch <wk@g10code.com>

* Makefile.am (EXTRA_DIST): Add gpgme.h.in.

* gpgme.h: Rename to gpgme.h.in.
* gpgme.h.in (GPGME_VERSION): Use autoconf substitution.

* posix-io.c: Include sys/uio.h. Fixes bug #818.

2008-10-18 Marcus Brinkmann <marcus@g10code.com>

* w32-util.c (find_program_in_registry): Don't define.
(_gpgme_get_gpg_path, _gpgme_get_gpgsm_path)
(_gpgme_get_gpgconf_path): Do not check for fooProgram in the
registry anymore. It is now no longer possible to overwrite the
default location in that way.

2008-10-17 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_fd2str): Use "%d" and not "%ld" to work
around a bug in mingw32.

2008-09-23 Marcus Brinkmann <marcus@g10code.com>

*
gpgme.c (gpgme_sig_notation_clear): Clear CTX->sig_notations.
Submitted by "Daniel Mueller" <daniel@danm.de>

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

* rungpg.c (gpg_new): Don't use errno with ttyname_r.

2008-08-11 Marcus Brinkmann <marcus@g10code.com>

* rungpg.c (gpg_cancel): Remove cmd fd before status fd.
* gpgme.c (_gpgme_cancel_with_err): New function.
(gpgme_cancel): Reimplement in terms of _gpgme_cancel_with_err.
* wait-private.c (_gpgme_wait_on_condition): Use
_gpgme_cancel_with_err.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.
* wait-global.c (_gpgme_wait_global_event_cb, gpgme_wait): Likewise.

2008-08-08 Marcus Brinkmann <marcus@g10code.com>

* rungpg.c (command_handler): Remove I/O callback on error, too.

2008-06-29 Marcus Brinkmann <marcus@g10code.com>

* gpgme.c (gpgme_cancel_async): Remove unused variable.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: Add gpgme_cancel_async.
* gpgme.def: Likewise.

* context.h:
Include "sema.h".
(struct gpgme_context): New members lock and canceled.
* gpgme.c (gpgme_new): Initialize lock.
(gpgme_release): Destroy lock.
(gpgme_cancel_async): New function.
* op-support.c (_gpgme_op_reset): Reset the canceled flag.
* wait-global.c (gpgme_wait): Check cancel flag before processing
any I/O callbacks.
* wait-private.c (_gpgme_wait_on_condition): Likewise.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.

2008-06-26 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_mkstemp): Replace sprint by stpcpy.
(mkstemp): Need to use GetSystemTimeAsFileTime for better
compatibility.

2008-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-w32spawn.c: New file.
* Makefile.am (libexec_PROGRAMS) [HAVE_W32_SYSTEM]: New variable
with gpgme-w32spawn.
* engine-gpgsm.c (gpgsm_new): Use server translated handles.
(gpgsm_set_locale): Return early if locale value is NULL.
* util.h (_gpgme_mkstemp)
(_gpgme_get_w32spawn_path) [HAVE_W32_SYSTEM]: New function
prototypes.
*
w32-util.c: Include <stdint.h>, <sys/stat.h> and <unistd.h>.
(letters, mkstemp, _gpgme_mkstemp, _gpgme_get_w32spawn_path): New
functions.
* rungpg.c (gpg_decrypt, gpg_encrypt, gpg_encrypt_sign)
(gpg_genkey, gpg_import, gpg_verify, gpg_sign): Pass data over
special filename FD rather than stdin.
(struct arg_and_data_s): Add member ARG_LOCP.
(struct fd_data_map_s): Add member ARG_LOC.
(struct engine_gpg): Add member ARG_LOC to status and colon.
(_add_arg, add_arg_with_locp): New function.

(add_arg_ext): Reimplement in terms of _add_arg.
(gpg_new): Remember argument location for status FD.
(build_argv): Set argument location if requested. Also set
argument location of fd_data_map for data items.
(start): Adjust caller of _gpgme_io_spawn.
* priv-io.h (struct spawn_fd_item_s): Add members peer_name and
arg_loc.
(_gpgme_io_spawn): Remove parent fd list argument.
* posix-io.c (get_max_fds): New function.
(_gpgme_io_dup): Add tracing.
(_gpgme_io_spawn):
Remove parent fd list. Change meaning of child
fd list to contain all child fds that should be inherited. Close
all other file descriptors after fork.
* w32-io.c, w32-glib-io.c, w32-qt-io.c(_gpgme_io_spawn): Remove
parent fd list. Change meaning of child fd list to contain all
child fds that should be inherited. Do not inherit any file
descriptors, but DuplicateHandle them. Spawn process through
wrapper process. Provide wrapper process with a temporary file
containing handle translation data. Return translated handle
names.
* w32-io.c (reader): Add more tracing output.
(_gpgme_io_read): Likewise.
* engine-gpgconf.c (gpgconf_read): Adjust caller of
_gpgme_io_spawn.
* version.c (_gpgme_get_program_version): Likewise.

2008-06-20 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Change ARGV initialization for
compatibility with old compilers. Fix amount of memmove. Fix
CR removal.

2008-06-19 Werner Koch <wk@g10code.com>

* gpgme.h (GPGME_CONF_PATHNAME):
Replace by GPGME_CONF_FILENAME,
change all callers and provide compatibility macro.
(gpgme_conf_type_t): Add complex types 34..37.
* engine-gpgconf.c (gpgconf_parse_option, arg_to_data)
(_gpgme_conf_arg_new, _gpgme_conf_arg_release): Add new types.

2008-06-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_parse_option): Fix comma detection.

2008-05-09 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Do not pass empty lines to the
callback.

2008-05-07 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_write): Change argv[0] to a
self-explaining string. Needs a proper fix, though.

* rungpg.c (gpg_keylist, gpg_keylist_ext): Factor common code out
to ..
(gpg_build_keylist_options): .. new. Allow combination of extern
and intern mode.
(gpg_new): DFT_TTYNAME is an array, thus check the first character.

2008-05-06 Werner Koch <wk@g10code.com>

* version.c (extract_version_string): New.
(_gpgme_get_program_version):
Use it to allow for suffixes in the
version line.

2008-04-28 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Fixed segv. Avoid memmove for
each line.

2008-04-22 Marcus Brinkmann <marcus@g10code.de>

* w32-qt-io.cpp, kdpipeiodevice.cpp: New versions from Frank
Osterfeld, implement blocking select.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read, gpgme_data_write): Retry on EINTR.

2008-03-06 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_add_sig): Terminate UID in case SRC is NULL.
Reported by Marc Mutz.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (release_op_data): Release OPD->result.recipients.
* encrypt.c (release_op_data): Release invalid_recipient.

2008-02-15 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_read): Fix end-of-line handline.

2008-02-14 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_spawn): Add arg R_PID to return the pid.
* posix-io.c
(_gpgme_io_spawn): Ditto.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* priv-io.h (_gpgme_io_spawn): Adjust prototyp and change all callers.
* rungpg.c (start): Call _gpgme_allow_set_foregound_window.

* w32-util.c (_gpgme_allow_set_foregound_window): New.
* posix-util.c (_gpgme_allow_set_foregound_window): New.
* engine-gpgsm.c (default_inq_cb): New.
(gpgsm_new) [W32]: Enable pinentry notifications.
(status_handler): Handle inquiries.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version by Frank Osterfeld, fixes race
condition.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_input_enc): Rename to ...
(map_data_enc): ... this. Also change all callers.
(gpgsm_encrypt, gpgsm_export, gpgsm_export_ext, gpgsm_genkey)
(gpgsm_sign): Set encoding for output.

2008-01-28 Werner Koch <wk@g10code.com>

* keylist.c (gpgme_get_key): Skip duplicated keys. Fixes bug 876.

2008-01-14
 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_config_load_cb): Fix program_name
field.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

* engine-gpgconf.c (gpgconf_config_load_cb2): Handle the flag
NO_ARG_DESC.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgconf_components): New variable.
(main_sources): Add gpgconf.c.
* gpgme.h (gpgme_protocol_t): New protocol GPGME_PROTOCOL_GPGCONF.
(gpgme_conf_level_t, gpgme_conf_type_t, gpgme_conf_arg_t)
(gpgme_conf_opt_t, gpgme_conf_comp_t, gpgme_conf_arg_new)
(gpgme_conf_arg_release, gpgme_conf_opt_change)
(gpgme_conf_release, gpgme_op_conf_load, gpgme_op_conf_save): New
types.
* gpgconf.c, engine-gpgconf.c: New files.
* engine.h: (_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New prototypes.
* op-support.c (_gpgme_op_reset): Ignore not implemented locale
function.
* posix-util.c (_gpgme_get_gpgconf_path): New
function.
* w32-util.c (_gpgme_get_gpgconf_path): New function.
* engine-gpgsm.c:
(_gpgme_engine_ops_gpgsm): Add stubs for conf_load and conf_save.
* rungpg.c:
(_gpgme_engine_ops_gpg): Add stubs for conf_load and conf_save.
* gpgme.def: Add new gpgconf related interfaces.
* libgpgme.vers: Likewise.
* util.h (_gpgme_get_gpgconf_path): New prototype.
* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_GPGCONF.
* engine-backend.h (_gpgme_engine_ops_gpgconf): New prototype.
(struct engine_ops): Add members for conf_load and conf_save.
* engine.c (engine_ops): Add _gpgme_engine_ops_gpgconf.
(_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New functions.
(gpgme_get_engine_info): Allow protocol GPGME_PROTOCOL_GPGCONF.

2007-11-28 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Search
for installation directory. Remove old fallback default.
(find_program_in_inst_dir): New function.

2007-11-26 Werner Koch <wk@g10code.com>

*
engine-gpgsm.c (struct engine_gpgsm): Add field INLINE_DATA and
always reset it before calling start.
(gpgsm_new): Clear it.
(status_handler): Implement it.
(gpgsm_getauditlog) [USE_DESCRIPTOR_PASSING]: Use INLINE_DATA.

2007-11-23 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Implement a no-reset flag.
* getauditlog.c (getauditlog_start): Use that flag.

2007-11-20 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Add new reason code 11.

2007-11-22 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_op_getauditlog_start, gpgme_op_getauditlog): New.
* libgpgme.vers: Ditto.
* gpgme.def: Ditto.
* getauditlog.c: New.
* engine-backend.h (struct engine_ops): Add member GETAUDITLOG.
* engine-gpgsm.c (gpgsm_getauditlog): New.
(_gpgme_engine_ops_gpgsm): Insert new function.
(gpgsm_new): Try to enable audit log support.
* rungpg.c (_gpgme_engine_ops_gpg): Insert dummy entry.

2007-11-12 Marcus Brinkmann <marcus@g10code.de>

*
kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-11 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-09 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld and Marc
Mutz.

2007-10-05 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, w32-qt-io.cpp: New versions from Frank
Osterfeld.

2007-10-04 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.h, kdpipeiodevice.cpp, kdpipeiodevice.moc,
w32-qt-io.cpp: New versions from Frank Osterfeld.

2007-10-02 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, kdpipeiodevice.moc: New versions.
* w32-qt-io.cpp (_gpgme_io_fd2str): Print actual_fd if available.
(_gpgme_io_dup): Only acquire a reference, do not actually dup.

Submitted by Frank Osterfeld.

* priv-io.h, engine-gpgsm.c: Add comments.
* w32-qt-io.cpp (_gpgme_io_select): Remove code handling frozen FDs.
* w32-glib-io.c (_gpgme_io_close):
Always dereference the channel,
even if not primary.
(_gpgme_io_dup): Acquire a reference. Replace unused
implementation by assertion.

2007-09-28 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (iocb_data_t): Add SERVER_FD_STR.
(gpgsm_new): Set it.
(gpgsm_set_fd): Use it.

* w32-glib-io.c (find_channel): Add a new primary flag.
(_gpgme_io_close): Close channel only if primary.
(_gpgme_io_dup): Put newfd into the table as shallow copy.

* priv-io.h (struct io_select_fd_s): Remove member FROZEN.
* w32-io.c (_gpgme_io_select): Ditto.
* w32-glib-io.c (_gpgme_io_select): Ditto.

* posix-io.c (_gpgme_io_select): Ditto.
* rungpg.c (read_status): Ditto.
* wait.c (fd_table_put): Ditto.

* rungpg.c (gpg_io_event): Add tracing.
(start): Use gpg_io_event for sending the start event.
* engine-gpgsm.c (gpgsm_io_event): Add tracing.
(start): Use gpgsm_io_event for sending the start event.
* wait.c (_gpgme_add_io_cb, _gpgme_run_io_cb): Add tracing.

2007-09-28 Marcus Brinkmann
 <marcus@g10code.de>

* kdpipeiodevice.moc, w32-qt-io.cpp, kdpipeiodevice.cpp: New
versions from Frank Osterfeld.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_spawn),
w32-qt-io.cpp (_gpgme_io_spawn), w32-io.c (_gpgme_io_spawn): Close
the process handle, return 0.

* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_UNKNOWN.
* gpgme.c (gpgme_get_protocol_name): Implement support for

GPGME_PROTOCOL_UNKNOWN.

* kdpipeiodevice.h: Fix last change.

* w32-glib-io.c (_gpgme_io_pipe), w32-qt-io.c (_gpgme_io_pipe),
w32-io.c (_gpgme_io_pipe), posix-io.c (_gpgme_io_pipe): Fix debug
output.

2007-09-25 Marcus Brinkmann <marcus@g10code.de>

* conversion.c, keylist.c: Include <sys/types.h>.

* kdpipeiodevice.h: Use namespace _gpgme_.
* kdpipeiodevice.cpp: Use namespace _gpgme_.
[Q_OS_WIN32 && NOMINMAX]: Do not define NOMINMAX again.
* w32-qt-io.cpp: Change namespace of KDPipeIODevice to
gpgme::KDPipeIODevice.

2007-09-17 Werner Koch <wk@g10code.com>

*
rungpg.c (gpg_new): Make robust against undefined ttyname or
ttytype.

2007-09-14 Werner Koch <wk@g10code.com>

* data-mem.c (gpgme_data_release_and_get_mem): Fix tracing bug.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_release): Call gpgme_sig_notation_clear.

2007-09-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_new): Handle return value of _gpgme_getenv (fixes
small memory leak).

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_qt_la_SOURCES): Move
moc_kdpipeiodevice.cpp to EXTRA_DIST, as this is only included by
another file (it's more like a header file than a cpp file, but
automake doesn't know that).

* w32-qt-io.cpp (_gpgme_io_spawn): Fix several cast errors and typos.
* w32-io.c (_gpgme_io_write): Use TRACE_SYSRES instead of TRACE_SYS.
(libgpgme_qt_la_LIBADD): Add QT4_CORE_LIBS, not QT4_CORE_LIB.

* kdpipeiodevice.h, kdpipeiodevice.cpp, moc_kdpipeiodevice.cpp,
kdpipeiodevice.moc, w32-qt-io.c:
New files.
* Makefile.am (ltlib_gpgme_extra): Rename to ltlib_gpgme_glib.
(ltlib_gpgme_qt): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_qt).
(libgpgme_qt_la_SOURCES): New variable.
(AM_CPPFLAGS): Add @QT4_CORE_INCLUDES@
(AM_CFLAGS): Add @QT4_CORE_CFLAGS@.
(libgpgme_qt_la_LDFLAGS, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_qt_la_LIBADD): New variables.

* sema.h (struct critsect_s): Rename "private" to "priv" to make
C++ users happy. Change users.
* posix-sema.c (_gpgme_sema_cs_enter, _gpgme_sema_cs_leave)
(_gpgme_sema_cs_destroy): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_enter)
(_gpgme_sema_cs_leave, _gpgme_sema_cs_destroy): Likewise.
* w32-glib-io.c (gpgme_get_giochannel): Change return type to
void*.
(gpgme_get_fdptr): New function.
* w32-io.c (gpgme_get_fdptr): New function
* gpgme.def: Add gpgme_get_fdptr.

2007-08-22 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_write): Return early if COUNT is zero.
(writer): Remove superfluous
check.

2007-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Move include of gpg-error.h out of extern "C".

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Add member CHAIN_MODEL.
* verify.c (parse_trust): Set Chain_MODEL.

2007-08-02 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_spawn): Use DETACHED_PROCESS flag.
* w32-io.c (_gpgme_io_spawn): Ditto.
(_gpgme_io_write): Map ERROR_NO_DATA to EPIPE.
* debug.c (_gpgme_debug): Enable assuan logging.
(_gpgme_debug_subsystem_init): New.
* version.c (do_subsystem_inits): Disable assuan logging and
initialize the debug system.

(gpgme_check_version): Do not trace before the subsystems are
initialized.

2007-07-17 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Include <errno.h> and "debug.h".
(_gpgme_debug): Save and restore ERRNO.
(TOHEX): New macro.
(_gpgme_debug_buffer): New function.
* conversion.c, data-compat.c, data-mem.c, data.c, engine-gpgsm.c,
gpgme.c,
keylist.c, posix-io.c, rungpg.c, sign.c, version.c,
w32-io.c, wait.c: Replace DEBUG macros by TRACE_* variants. In
most of these files, add many more tracepoints.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (status_handler): Do not send BYE here.

* w32-io.c (struct reader_context_s, struct writer_context_s): New
members REFCOUNT.
(create_reader, create_writer): Initialize C->refcount to 1.
(destroy_reader, destroy_writer): Only destroy if C->refcount
drops to 0.
(find_reader, find_writer, kill_reader, kill_writer): Beautify.
* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.
* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Reverting to version 2007-07-10.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_read, user_write, user_seek): Set errno and
return -1 instead returning the error code directly.
* data-compat.c (old_user_seek):
Likewise.
* gpgme.c (gpgme_sig_notation_add): Return error properly.

* Revert the "close_notify_handler" returns int stuff. Always
close in the _gpgme_io_close implementations.
* engine-gpgsm.c (status_handler): Try to terminate the connection
in case of error.
* w32-io.c (_gpgme_io_read): Return C->error_code in ERRNO.
(_gpgme_io_write): Likewise.

* priv-io.h (_gpgme_io_set_close_notify): Change type of HANDLER
to _gpgme_close_notify_handler.

(_gpgme_close_notify_handler): New type.
(_gpgme_io_dup): Remove prototype.
* posix-io.c (notify_table, _gpgme_io_set_close_notify): Change
type of HANDLER to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-io.c (notify_table, _gpgme_io_set_close_notify,
_gpgme_io_close): Change type of HANDLER to
_gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-glib-io.c
(_gpgme_io_dup): Remove function.
(_gpgme_io_set_close_notify, notify_table): Change type of HANDLER
to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
* rungpg.c (close_notify_handler): Change return type to int,
return 1.
* engine-gpgsm.c (close_notify_handler): Change return type to
int, return 0 for status FD and 1 for all other FDs.
(start): Do not duplicate the status FD.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Replace implicit rule by suffix rule. Add
SUFFIXES for that.

2007-07-12 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits) [W32]: Make sure that the socket
system has been started.

2007-07-10 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.
* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Use _gpgme_dup() instead of dup().

2007-07-08
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c [HAVE_W32_SYSTEM]: Enable the bunch of the file.
* funopen.c (funopen): Rename to _gpgme_funopen.

2007-04-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Fix error handling for ttyname_r.
* rungpg.c (gpg_new): Likewise.
Submitted by Stephen Tether.

2007-02-26 Werner Koch <wk@g10code.com>

* verify.c (op_data_t): New element PLAINTEXT_SEEN.
(_gpgme_verify_status_handler): Return an error if more than one
plaintext has been seen.
(parse_error): New arg SET_STATUS. Also detect it based on an
ERROR status (gpg > 1.4.6).

2007-01-26 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Fixed stupid quoting bug.
* w32-glib-io.c (build_commandline): Ditto.

* rungpg.c (gpg_set_locale): Avoid dangling pointer after free.

* gpgme-config.in: New options --get-gpg and --get-gpgsm.

2007-01-18 Marcus Brinkmann <marcus@g10code.de>

* data.h (_gpgme_data_get_fd): Add prototype.
(gpgme_data_get_fd_cb):
New type.
(struct _gpgme_data_cbs): New member get_fd.
* data.c (_gpgme_data_get_fd): New function.
* data-fd.c (fd_get_fd): New function.
(fd_cbs): Add fd_get_fd.
* data-stream.c (stream_get_fd): New function.
(stream_cbs): Add stream_get_fd.
* data-mem.c (mem_cbs): Add NULL for get_fd callback.
* data-user.c (user_cbs): Likewise.
* engine-gpgsm.c (gpgsm_set_fd) [USE_DESCRIPTOR_PASSING]: Try to
short-cut by passing the data descriptor directly.

2007-01-17 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (build_commandline): Quote all command line arguments.
* w32-glib-io.c (build_commandline): Likewise.

2007-01-10 Werner Koch <wk@g10code.com>

* ttyname_r.c (ttyname_r) [W32]: Return a dummy name.

2007-01-08 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Do assuan init only if building
with Assuan.
* setenv.c: Include assuan-def.h only if building with Assuan
support.

* op-support.c (_gpgme_op_reset): Set LC_MESSAGES only if
if
defined.
* engine-gpgsm.c (gpgsm_set_locale): Ditto.
* rungpg.c (gpg_set_locale): Ditto.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_protocol): Shut down the engine when
switching protocols.
(gpgme_ctx_set_engine_info): Likewise for engine info.
* engine.h (_gpgme_engine_reset): New function prototype.
* engine.c (_gpgme_engine_reset): New function.
* engine-backend.h (struct engine_ops): New member RESET.
* rungpg.c (_gpgme_engine_ops_gpg): Add NULL for reset function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm)
[USE_DESCRIPTOR_PASSING]: Add gpgsm_reset for reset.
(_gpgme_engine_ops_gpgsm) [!USE_DESCRIPTOR_PASSING]: Add NULL for
reset function.
(gpgsm_reset) [USE_DESCRIPTOR_PASSING]: New function.
* op-support.c (_gpgme_op_reset): Try to use the engine's reset
function if available.
* engine-gpgsm.c (gpgsm_new): Move code to dup status_fd to ...
(start): ... here.
* posix-io.c (_gpgme_io_recvmsg, _gpgme_io_sendmsg): New functions.

*
engine.h (_gpgme_engine_new): Remove arguments lc_ctype and
lc_messages from prototype.
(_gpgme_engine_set_locale): New prototype.
* engine.c (_gpgme_engine_set_locale): New function.
* op-support.c (_gpgme_op_reset): Call _gpgme_engine_set_locale.
* engine-backend.h (struct engine_ops): Add new member SET_LOCALE.
Remove arguments lc_messages and lc_ctype from member NEW.
* engine-gpgsm.c (struct engine_gpgsm): New members lc_ctype_set
and lc_messages_set.
(gpgsm_new): Remove lc_messages and lc_ctype
arguments.
(gpgsm_set_locale): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_set_locale.
* rungpg.c (struct engine_gpg): Add new members lc_messages and
lc_ctype.
(gpg_release): Release lc_messages and lc_ctype if set.

(gpg_new): Remove lc_messages and lc_ctype arguments.
(gpg_set_locale): New function.
(_gpgme_engine_ops_gpg): Add gpg_set_locale.
(add_arg): Implement in terms of:
(add_arg_ext): New function.
(start): Set lc-messages and lc-ctype arguments here.

2006-12-03
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct engine_gpgsm): Move members
input_fd_server, output_fd_server, message_fd_server to ...
(iocb_data): ... here (as server_fd).
(close_notify_handler): Reset tags as well.
(gpgsm_new): Implement support for descriptor
passing.
(fd_type_t): New type.
(gpgsm_clear_fd): New function. Use it instead of _gpgsm_io_close
for unused communication channels.
(gpgsm_set_fd): Rewritten to support descriptor passing. All
relevant callers adjusted as well (previously of _gpgme_io_close).

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* version.c: Include "assuan.h".
(do_subsystem_inits): Call assuan_set_assuan_err_source.

2006-12-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_real_la_SOURCES): Rename to main_sources.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
libgpgme_glib_la_SOURCES, libgpgme_pth_la_SOURCES): Add
$(main_sources).
(libgpgme_la_DEPENDENCIES, libgpgme_la_LIBADD,
libgpgme_pthread_la_DEPENDENCIES,
libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_DEPENDENCIES, libgpgme_pth_la_LIBADD,
libgpgme_glib_la_DEPENDENCIES, libgpgme_glib_la_LIBADD): Remove
libgpgme-real.la.
(noinst_LTLIBRARIES): Removed.
(libgpgme_glib_la_CFLAGS, libgpgme_pth_la_CFLAGS): Removed.
(AM_CFLAGS): New variable.

2006-11-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Replace AssuanError with gpg_error_t and
ASSUAN_CONTEXT with assuan_context_t.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Check return value of
assuan_pipe_connect.

* rungpg.c: Include <unistd.h>.
(gpg_new): Support --display, --ttyname, --ttytype, --lc-ctype and
--lc-messages. Fixes issue 734.

2006-10-24 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (gpgme_op_trustlist_next): Return error if OPD is
NULL.

2006-10-23 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Unlock CTX_LIST_LOCK while calling
_gpgme_engine_io_event().

*
keylist.c (gpgme_op_keylist_next): Return error if OPD is NULL.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (gpgme_data_release_and_get_mem): Release the data
object properly.

2006-09-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_colon_handler): Move debug output after
initialising KEY.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options): Add NETLIBS.
* Makefile.am (libgpgme_la_LIBADD, libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_LIBADD, libgpgme_glib_la_LIBADD): Add NETLIBS.

* rungpg.c (read_status): Fix comparison disguising as an
assignment.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_locale): Remove conditional on
HAVE_W32_SYSTEM, and just check for LC_MESSAGES.

2006-07-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): Strip potential carriage return.
* genkey.c (get_key_parameter): Skip potential carriage return.
* version.c (_gpgme_get_program_version):
Strip potential carriage
return.

* data.c (gpgme_data_set_file_name): Allow to clear the file name
by passing NULL.

2006-06-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Also clone the engine info.

2006-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (cflags_pth): Revert accidental removal of
pthread support with last change.

2006-02-28 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (O_BINARY) [!O_BINARY]: New macro.
(_gpgme_io_pipe): Open pipes in binary mode.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

* engine.c (gpgme_engine_check_version): Reimplemented to allow
checking the version correctly even after changing the engine
information. Bug reported by Stphane Corthsy.

* rungpg.c (read_colon_line): Invoke colon preprocess handler if
it is set.
(colon_preprocessor_t): New type.
(struct engine_gpg): New member colon.preprocess_fnc.
(gpg_keylist_preprocess): New function.
* keylist.c
(keylist_colon_handler): Allow short key IDs.

2006-02-15 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (create_writer): Make C->have_data a manually reset
event.
(writer): Move code from end of if block to beginning, so it
is also run the first time.
(_gpgme_io_write): Move assert check after error check. Reset
the is_empty event, and also do it eagerly.
(_gpgme_io_select): Unconditionally wait for the is_empty event.

2006-01-26 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_conf_int): New.
* posix-util.c (_gpgme_get_conf_int): New.
* w32-io.c (get_desired_thread_priority): New.
(create_reader, create_writer): Use it here.

2006-01-04 Werner Koch <wk@g10code.com>

* debug.h (_gpgme_debug_srcname): New. Use it with the debug macros.

* w32-glib-io.c (_gpgme_io_set_nonblocking): Add debug
statements. Disable error return for failed nonblocking call.

2006-01-03 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_close): Only close fd if there
is no
channel for it.

2005-12-31 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (find_channel): Set channel to unbuffered.
(_gpgme_io_select): Fix debug output.

2005-12-23 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Append field PKA_ADDRESS.
* verify.c (release_op_data, _gpgme_verify_status_handler): Set
this field.

2005-12-20 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_status_code_t): Added GPGME_STATUS_PKA_TRUST_BAD
and GPGME_STATUS_PKA_TRUST_GOOD.
(struct _gpgme_signature): New field pka_trust.
* verify.c (_gpgme_verify_status_handler): Set pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

* keylist.c (keylist_colon_handler): Store fingerprints of the
subkeys. Reset the secret flag of subkeys for stub secret keys.
(NR_FIELDS): Bumped up to 16

2005-11-27 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Use new_file_name in
engine_get_version invocation. Reported by Stphane Corthsy.

2005-11-24
Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_fd2str): Remove debug printf.

2005-11-18 Werner Koch <wk@g10code.com>

* w32-glib-io.c: Include glib.h before windows to avoid a symbol
shadowing warning.
(find_channel): Better use g_io_channel_win32_new_fd instead of
the autodetection function g_io_channel_unix_new.
(_gpgme_io_select): Rewritten. It is now a fully working select
implementation.

2005-11-18 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_fd2str): New prototype.
* posix-io.c (_gpgme_io_fd2str): New function.
* w32-io.c (_gpgme_io_fd2str): New function.
* rungpg.c: Use this new function.
* w32-glib-io.c (_gpgme_io_fd2str): Rewrote the file handle code
again. Two's company, three's the musketeers.

* w32-glib-io.c: Rewrote the file handle code. We don't create
system fds for every handle (doesn't work for inherited handles),
but we create pseudo fds in a private namespace that designate a
handle and potentially
a giochannel.

2005-11-18 Werner Koch <wk@g10code.com>

* versioninfo.rc.in: Set file version to LT-version + Svn-revision.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c: New file.
* gpgme.def (gpgme_get_giochannel): Add symbol.
* Makefile.am (system_components) [HAVE_DOSISH_SYSTEM]: Remove
w32-io.c.
(ltlib_gpgme_extra): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_extra).
(system_components_not_extra): New variable.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
(libgpgme_pth_la_SOURCES): Add $(system_components_not_extra).
(libgpgme_glib_la_LDFLAGS, libgpgme_glib_la_DEPENDENCIES,
(libgpgme_glib_la_LIBADD, libgpgme_glib_la_CFLAGS)
[BUILD_W32_GLIB]: New variables.
* gpgme-config.in (glib): New option.

* gpgme.m4 (AM_PATH_GPGME_GLIB): New macro.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* w32-io.c (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* posix-io.c (_gpgme_io_kill):
Removed.
(_gpgme_io_waitpid): Declare static.

2005-10-24 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Don't minimize window, hide it.

2005-10-21 Werner Koch <wk@g10code.com>

* Makefile.am: Fixed cut+paste problem

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Build versioninfo.lo, not versioninfo.o. Also, fix
the whole mess.

2005-10-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_edit): Don't add a key argument if in card edit
mode.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme.dll gpgme.dll.a): Use $(srcdir) for
gpgme.def.

* gpgme.h (gpgme_free): New prototype.
* data-mem.c (gpgme_free): New function.
* libgpgme.vers (GPGME_1.1): Add gpgme_free.
* gpgme.def: Add gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_decode_percent_string): Add new argument BINARY
to prototype.
* verify.c (parse_notation): Likewise for invocation.
* conversion.c (_gpgme_decode_percent_string):
Likewise to
declaration. If set, do not replace '\0' characters with a
printable string.
* gpgme.h (struct _gpgme_key_sig): New field notations.

* ops.h (_gpgme_parse_notation): New prototype.
* sig-notation.c (_gpgme_parse_notation): New function.
* key.c (gpgme_key_unref): Free all signature notations.
* keylist.c (op_data_t): New member tmp_keysig.
(finish_key): Clear OPD->tmp_keysig.
* gpgme.c (gpgme_set_keylist_mode): Remove check.
* rungpg.c (gpg_keylist): Support listing signature notations.
(gpg_keylist_ext): Likewise.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* engine.h (_gpgme_set_engine_info): Add prototype.
* engine-backend.h (struct engine_ops): Change return type of
get_file_name() to const char * to silence gcc warning.
* engine.c (engine_get_file_name): Change return type to const
char * to silence gcc warning.
(gpgme_get_engine_info): Use transitional variable to go from
const char * to char * to silence gcc warning.
(_gpgme_set_engine_info):
Likewise.
* engine-gpgsm.c (struct engine_gpgsm): Change type of LINE to
char * to silence gcc warning.
(gpgsm_new): Make ARGV a pointer to const char.
(status_handler): Change type of SRC, END, DST, ALINE and NEWLINE
to char * to silence gcc warning.

* gpgme.def: Add gpgme_data_set_file_name,
gpgme_data_get_file_name, gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* libgpgme.vers: Add gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* Makefile.am (libgpgme_real_la_SOURCES): Add sig-notation.c.
* context.h (struct gpgme_context): New field sig_notations.
* gpgme.h (struct _gpgme_sig_notation): New member value_len and
critical.
(GPGME_SIG_NOTATION_CRITICAL): New symbol.
(gpgme_sig_notation_flags_t): New type.
(gpgme_sig_notation_add, gpgme_sig_notation_clear,
gpgme_sig_notation_get): New prototypes.
* ops.h (_gpgme_sig_notation_create, _gpgme_sig_notation_free):
New prototypes.
*
sig-notation.c (_gpgme_sig_notation_free): New file.
* verify.c (parse_notation): Use support functions.
(release_op_data): Likewise.
* rungpg.c (append_args_from_sig_notations): New function.
(gpg_encrypt_sign, gpg_sign): Call it.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* data.h (struct gpgme_data): New member file_name.
* data.c (gpgme_data_set_filename): New function.
(_gpgme_data_release): Free DH->filename if necessary.
(gpgme_data_get_filename): New function.
* rungpg.c (gpg_encrypt): Set filename option.
(gpg_encrypt_sign): Likewise.
(gpg_sign): Likewise.
* libgpgme.vers (GPGME_1.1): Add gpgme_data_set_file_name and
gpgme_data_get_file_name.

* decrpyt.c, verify.c, gpgme.h: Replace plaintext_filename with
file_name.

2005-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key): Add field is_qualified.
(struct _gpgme_subkey): Likewise.
* keylist.c (set_subkey_capability, set_mainkey_capability): Set
field is_qualified.

2005-09-23
 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): Removed use of environment variable
again.
(create_reader, create_writer): Set thread priority higher.

2005-09-19 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): New environment variable to change
the size of the pipe buffer.

2005-09-13 Werner Koch <wk@g10code.com>

* ath.c: Changes to make it work under W32.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Set to ath.h and ath.c.
(ath_pth_src, ath_pthread_src): Removed.
(w32_o_files): Replace ath-compat.o with ath.o.
(libgpgme_pth_la_CFLAGS): New variable.
* ath-compat.c, ath-pthread-compat.c, ath-pth-compat.c: Removed.
* ath.h (ath_pthread_available, ath_pth_available): Removed.
(ath_init) [!_ATH_EXT_SYM_PREFIX]: Do not define macro.
(struct ath_ops, ath_init) [_ATH_COMPAT]: Removed.

(_ATH_COMPAT): Macro removed.
* posix-sema.c (_gpgme_sema_subsystem_init): Do not call
_gpgme_ath_init.

2005-09-12
Marcus Brinkmann <marcus@g10code.de>

* keylist.c (release_op_data): Do not free opd->tmp_uid.

2005-09-07 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Quote argv[0].

2005-08-26 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (command_handler): Use _gpgme_io_write instead of write.

* edit.c (command_handler): Do not depend on PROCESSED being
available.

* engine.h (engine_command_handler_t): Add new argument processed.
* ops.h (_gpgme_passphrase_command_handler_internal): Rename
prototype to ...
(_gpgme_passphrase_command_handler): ... this one.
* passphrase.c (_gpgme_passphrase_command_handler_internal):
Rename to ...
(_gpgme_passphrase_command_handler): ... this one.
* edit.c (command_handler): Add new argument processed. Remove
local variable with the same name. Always return processed as
true.
* rungpg.c (command_handler): Send a newline character if the
handler did not.

2005-08-26 Werner Koch <wk@g10code.com>

* w32-util.c (read_w32_registry_string):
Updated from code used by
GnuPG. This allows for expanding strings and features the
implicit fallback key.
(w32_shgetfolderpath, find_program_at_standard_place): New.
(_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): With no registry
entry, locate the programs at the standard place.
(dlopen, dlsym, dlclose): New, so that we can keep on using what
we are accustomed to.

* debug.c (debug_init): Use PATHSEP_C so that under W32 a
semicolon is used which allows us to create files with drive
letters.

* w32-io.c (_gpgme_io_read, _gpgme_io_write): Print content in
debug mode too.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_PLAINTEXT.
(struct _gpgme_op_decrypt_result): New member plaintext_filename.
(struct _gpgme_op_verify_result): Likewise.
* ops.h (_gpgme_parse_plaintext): Add prototype.
* op-support.c (_gpgme_parse_plaintext): New function.
* decrypt.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_decrypt_status_handler):
Handle GPGME_STATUS_PLAINTEXT.
* verify.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_verify_status_handler): Handle GPGME_STATUS_PLAINTEXT.

2005-08-08 Werner Koch <wk@g10code.com>

* util.h (stpcpy): Renamed to ..
(_gpgme_stpcpy): .. this and made inline. This avoids duplicate
definitions when linking statically.
* stpcpy.c: Removed.

2005-08-19 Werner Koch <wk@g10code.com>

* gpgme.def: New.
* versioninfo.rc.in: New.
* Makefile.am: Adds support for building a W32 DLL.

* ttyname_r.c (ttyname_r) [W32]: Return error.
* ath-compat.c [W32]: select and co are not yet supported; return
error.
* data-stream.c (stream_seek): Use ftell if ftello is not available.

2005-07-26 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Allow key IDs.

2005-06-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Only call GPGME_CONFIG if found.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

*

gpgme.h (struct _gpgme_signature): New members pubkey_algo and
hash_algo.
* verify.c (parse_valid_sig): Parse pubkey and hash algo numbers.
(parse_new_sig): Parse pubkey, hash algo and timestamp for ERRSIG.

(_gpgme_decrypt_status_handler): Fix last change.

* gpgme.h (struct _gpgme_recipient): New structure.
(gpgme_recipient_t): New type.
(struct _gpgme_op_decrypt_result): Add member recipients.
* decrypt.c (op_data_t): New member last_recipient_p.
(_gpgme_op_decrypt_init_result): Initialize last_recipient_p.
(parse_enc_to): New function.
(_gpgme_decrypt_status_handler): Handle status ENC_TO and
NO_SECKEY.

* wait-global.c (gpgme_wait): Break out of the fd processing loop
after an error.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-06-02 Marcus Brinkmann <marcus@g10code.de>

* wait.h (_gpgme_run_io_cb): New prototype.
* wait.c (_gpgme_run_io_cb): New function.
* wait-global.c (gpgme_wait): Call it.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.
*
wait-private.c (_gpgme_wait_on_condition): Likewise.

2005-06-02 Werner Koch <wk@g10code.com>

* passphrase.c (_gpgme_passphrase_status_handler): Take care of
GPGME_STATUS_NEED_PASSPHRASE_PIN.
(_gpgme_passphrase_command_handler_internal): Also act on the key
"passphrase.pin.ask".

* gpgme.h: Added status codes GPGME_STATUS_SIG_SUBPACKET,
GPGME_STATUS_NEED_PASSPHRASE_PIN, GPGME_STATUS_SC_OP_FAILURE,
GPGME_STATUS_SC_OP_SUCCESS, GPGME_STATUS_CARDCTRL,
GPGME_STATUS_BACKUP_KEY_CREATED.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* data-user.c: Include <errno.h>.

2005-05-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set the CTX->include_certs default to the

default.

2005-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_select): Fix loop increment.

2005-05-05 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_release): Only call user hook if provided.
(user_seek): Return EBADF if no user hook is provided.
(user_read):
Likewise.
(user_write): Likewise.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_INCLUDE_CERTS_DEFAULT): New macro.
* engine-gpgsm.c (gpgsm_sign): Send the include-certs option after
the reset, just for cleanliness, and do not sent it at all if the
default is requested.
* gpgme.c (gpgme_set_include_certs): Allow to use
GPGME_INCLUDE_CERTS_DEFAULT.

2005-04-21 Werner Koch <wk@g10code.com>

* verify.c (calc_sig_summary): Set the key revoked bit.

2005-04-14 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Use LI->ctx when checking a context
in the list, not the user-provided CTX.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

* wait-global.c (gpgme_wait): If no context is found, and we
should not hang, set *status to 0 and return NULL.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* data.h (EOPNOTSUPP) [_WIN32]: Remove definition.
* data.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]:
Remove definition.
(gpgme_data_read, gpgme_data_write, gpgme_data_seek): Return
ENOSYS instead EOPNOTSUPP.
* data-compat.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]: Remove definition.
(gpgme_error_to_errno): Map GPG_ERR_NOT_SUPPORTED
to ENOSYS.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* io.h: Rename to ...
* priv-io.h: ... this.
* Makefile.am (libgpgme_real_la_SOURCES): Change io.h to priv-io.h.
* data.c, engine-gpgsm.c, posix-io.c, rungpg.c, version.c,
w32-io.c, wait-private.c, wait-global.c, wait-user.c, wait.c:
Change all includes of "io.h" to "priv-io.h"

2005-03-09 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Do not
cast away type checks.

* io.h [W32]: Do not include stdio.h. If it is needed do it at
the right place.

* data.h [W32]: Removed kludge for EOPNOTSUP.
* data.c, data-compat.c [W32]: Explicitly test for it here.

Replaced use of _WIN32 by HAVE_W32_SYSTEM except for public header
files.

2005-03-07
 Timo Schulz <twoaday@g10code.de>

    * gpgme.h: [_WIN32] Removed ssize_t typedef.
    * ath.h: [_WIN32] Added some (dummy) types.
    * io.h: [_WIN32] include stdio.h.
    * data.h: [_WIN32] Define EOPNOTSUPP.
    * w32-io.c [_WIN32] (_gpgme_io_subsystem_init): New.
    * gpgme.c [_WIN32] (gpgme_set_locale): Disabled.

2004-12-12 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Fix assertion.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* util.h [HAVE_CONFIG_H && HAVE_TTYNAME_R] (ttyname_r): Define
prototype.
* ttyname_r.c: New file.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* putc_unlocked.c, funopen.c: I just claim copyright on these
files and change their license to LGPL, because they are totally
trivial wrapper functions.

* isascii.c: Change copyright notice to the one from ctype/ctype.h
in the GNU C Library (CVS Head 2004-10-10), where isascii is
defined as a macro doing exactly the same as the
function in this
file.
* memrchr.c: Update from the GNU C Library (CVS Head 2001-07-06).
* stpcpy.c: Update from the GNU C Library (CVS Head 2004-10-10).
* ath.c, ath-compat.c, ath.h, ath-pth.c, ath-pth-compat.c,
ath-pthread.c, ath-pthread-compat.c, context.h, conversion.c,
data.c, data-compat.c, data-fd.c, data.h, data-mem.c,
data-stream.c, data-user.c, debug.c, debug.h, decrypt.c,
decrypt-verify.c, delete.c, edit.c, encrypt.c, encrypt-sign.c,
engine-backend.h, engine.c, engine-gpgsm.c, engine.h, error.c,
export.c, genkey.c, get-env.c, gpgme.c, gpgme.h, import.c, io.h,
key.c, keylist.c, mkstatus, Makefile.am, ops.h, op-support.c,
passphrase.c, posix-io.c, posix-sema.c, posix-util.c, progress.c,
rungpg.c, sema.h, sign.c, signers.c, trust-item.c, trustlist.c,
util.h, verify.c, version.c, w32-io.c, w32-sema.c, w32-util.c,
wait.c, wait-global.c, wait.h, wait-private.c, wait-user.c: Change
license to LGPL.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers
(GPGME_1.1): New version.
* engine-backend.h (struct engine_ops): Add argument FILE_NAME to
member get_version(). Add arguments FILE_NAME and HOME_DIR to
member new(). Change return type of get_file_name and get_version
to char *.
* engine-gpgsm.c (gpgsm_get_version): Change return type to char
pointer. Do not cache result.
(gpgsm_new): Add file_name and home_dir argument, and use them
instead of the defaults, if set.
* rungpg.c (struct engine_gpg): New member file_name.
(gpg_get_version): Change return type to char pointer, and do not
cache result.
(gpg_release): Free gpg->file_name.
(gpg_new): Take new arguments file_name and home_dir. Set the
--homedir argument if HOME_DIR is not NULL. Set gpg->file_name.
(start): Use gpg->file_name instead _gpgme_get_gpg_path, if set.
* engine.h (_gpgme_engine_info_copy, _gpgme_engine_info_release):
New prototypes.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info.
* engine.c: Include <assert.h>.
(gpgme_get_engine_info):
Set *INFO within the lock. Move
ENGINE_INFO and ENGINE_INFO_LOCK to ....

(engine_info, engine_info_lock): ... here. New static variables.
(engine_get_version): Add file_name argument to
get_version invocation. Change return type to char pointer.
(gpgme_engine_check_version): Rewritten to free() the return value
of engine_get_version after using it.
(_gpgme_engine_info_release): New function.
(gpgme_get_engine_info): Rewritten.
(_gpgme_engine_info_copy): New function.
(_gpgme_set_engine_info): New function.
(gpgme_set_engine_info): New function.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info, and use that.
* gpgme.h (struct _gpgme_engine_info): Change type of file_name
and version to char * (remove the const). New member home_dir.
(gpgme_set_engine_info, gpgme_ctx_get_engine_info,
gpgme_ctx_set_engine_info): New prototypes.
* context.h (struct gpgme_context): New member engine_info.
* gpgme.c (gpgme_new): Allocate CTX->engine_info.
(gpgme_release):
Deallocate CTX->engine_info.
(gpgme_ctx_get_engine_info, gpgme_ctx_set_engine_info): New
functions.
* op-support.c (_gpgme_op_reset): Look for correct engine info and
pass it to _gpgme_engine_new.
* version.c (gpgme_check_version): Adjust to
_gpgme_compare_versions returning an int.
(_gpgme_compare_versions): Return an int value, not a const char
pointer.
* ops.h (_gpgme_compare_versions): Same for prototype.

2004-10-03 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_trust): If no reason is provided, set
SIG->validity_reason to 0.
(calc_sig_summary): Set GPGME_SIGSUM_CRL_TOO_OLD if appropriate.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Return 0 if ERR is 0.
(start): Call map_assuan_error on return value of
assuan_write_line.

2004-10-05 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_data_lookup): Use char pointer for
pointer arithmetic.

2004-09-30 Marcus Brinkmann

<marcus@g10code.de>

* gpgme.m4: Implement the --api-version check.

* rungpg.c (read_status): Move the polling of the output data pipe
to just before removing the command fd, from just before adding
it. This avoids buffering problems.

* data.c (_gpgme_data_inbound_handler): Use _gpgme_io_read, not
read, to improve debug output.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_IMPORT_NEW, GPGME_IMPORT_UID, GPGME_IMPORT_SIG,
GPGME_IMPORT_SUBKEY, GPGME_IMPORT_SECRET,
(GPGME_KEYLIST_MODE_LOCAL, GPGME_KEYLIST_MODERN_EXTERN,
GPGME_KEYLIST_MODE_SIGS, GPGME_KEYLIST_MODE_VALIDATE): Change from
enum to macros.
(gpgme_keylist_mode_t): Define as unsigned int.
(gpgme_key_t): Change type of keylist_mode to
gpgme_keylist_mode_t.

2004-09-23 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_outbound_handler): Close the file descriptor
if we get an EPIPE.

* data-stream.c (stream_seek): Call ftello and return the current
offset.
* data.h (struct
gpgme_data): Change type of data.mem.offset to
off_t.
* data.c (gpgme_data_seek): Check dh->cbs->seek callback, not read
callback. If SEEK_CUR, adjust the offset by the pending buffer
size. Clear pending buffer on success.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Add copyright notice.

2004-08-18 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Always run the
status handler.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-sk-comment, not --no-comment.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Make sure tail points to the
byte following the uid.
(_gpgme_key_add_sig): Likewise. Don't use calloc, but malloc and
memset.

2004-06-02 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: Remove C-style comment, which is not supported by
older binutils.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options):
Support --api-version.

* libgpgme.vers: List all gpgme symbols under version GPGME_1.0.

* decrypt.c (_gpgme_decrypt_status_handler): Fix last change.
* verify.c (parse_error): Likewise.

* verify.c (parse_error): Do not skip location of where token.

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_REVKEYSIG.
* verify.c (_gpgme_verify_status_handler): Add handling of
GPGME_STATUS_REVKEYSIG.
(parse_trust): Likewise.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_decrypt_result): New fields
wrong_key_usage and _unused.
* decrypt.c (_gpgme_decrypt_status_handler): Don't skip over
character after a matched string, as in a protocol error this
could skip over the trailing binary zero.
Handle decrypt.keyusage error notifications.

* gpgme.h (struct _gpgme_key): New member keylist_mode.
* keylist.c (keylist_colon_handler): Set the keylist_mode of KEY.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_signature):
Change member WRONG_KEY_USAGE
to unsigned int. Same for member _unused.

* keylist.c (set_mainkey_trust_info): Rewritten.
(set_subkey_capability): Handle 'd' (disabled).
(set_mainkey_capability): Rewritten.

2004-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Quote first argument to AC_DEFUN.

2004-04-21 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_unref): Allow passing NULL like free does.
The rule of least surprise.

2004-04-15 Werner Koch <wk@gnupg.org>

* verify.c (prepare_new_sig, _gpgme_verify_status_handler): Remove
unused result.signatures items.

* keylist.c (gpgme_get_key): Return an error if FPR is NULL.

2004-04-08 Werner Koch <wk@gnupg.org>

* verify.c (_gpgme_verify_status_handler): Ignore the error status
if we can't process it.
* decrypt-verify.c (decrypt_verify_status_handler): Backed out
yesterday's hack. It is not any longer required.

2004-04-07 Werner Koch <wk@gnupg.org>

* decrypt-verify.c (decrypt_verify_status_handler):
Hack to cope
with meaningless error codes from the verify status function.

2004-04-05 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_STATUS_NEWSIG.

* verify.c (parse_error): Compare only the last part of the where
token.
(prepare_new_sig): New.
(parse_new_sig): Use prepare_new_sig when required.
(_gpgme_verify_status_handler): Handle STATUS_NEWSIG.

* engine-gpgsm.c (gpgsm_keylist_ext): Send with-validation
option. Fixed pattern construction.
(status_handler): Add debugging output.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect _only_ tty related code with
isatty(). Submitted by Bernhard Herzog.

2004-03-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect all tty related code with
isatty().

* rungpg.c (gpg_cancel): Set GPG->fd_data_map to NULL after
releasing it.
* engine-gpgsm.c (gpgsm_cancel): Only call assuan_disconnect if
GPGSM->assuan_ctx is not NULL. Set it to NULL afterwards.

2004-03-07
 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Do not emit include and lib directory for
prefix "/usr" or "".

2004-03-03 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (gpgsm_export_ext): Properly insert a space
between patterns.

2004-02-18 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Ignore setting of --prefix.

2004-02-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_cancel): New function.
(gpg_release): Call it here.
(_gpgme_engine_ops_gpg): Add it here.
* engine-gpgsm.c (gpgsm_cancel): Fix last change.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_cancel): New function.
* engine-backend.h (struct engine_ops): New member cancel.
* engine.h (_gpgme_engine_cancel): New prototype.
* engine.c (_gpgme_engine_cancel): New function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Add new member cancel.
(gpgsm_cancel): New function.
(gpgsm_release): Use it.
* rungpg.c (_gpgme_engine_ops_gpg): Add new member cancel.

2004-02-17
Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_KEYLIST_MODE_VALIDATE.
* engine-gpgsm.c (gpgsm_keylist): Send this to gpgsm.

2004-02-15 Werner Koch <wk@gnupg.org>

* memrchr.c (memrchr): Fixed implementation. Problem pointed out
by Adriaan de Groot.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-comment, not --comment "".

* data-compat.c (gpgme_data_new_from_filepart): Call fseeko if
available.
* data-stream.c (stream_seek): Likewise.

2004-01-16 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_map_gnupg_error): Handle numerical codes as
used by GnuPG 1.9.x

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key_sig): Fix comment on REVOKED.

2004-01-12 Werner Koch <wk@gnupg.org>

* sign.c: Include util.h for prototype of _gpgme_parse_timestamp.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (_GPGME_D_CLASS): Revert this change.
(struct _gpgme_key_sig): For C++ compilers,
rename class
member to _obsolete_class. Add new member sig_class.
(struct _gpgme_new_signature): Same here.
* key.c (gpgme_key_sig_get_ulong_attr): Use CERTSIG->sig_class,
not CERTSIG->class.
* keylist.c (keylist_colon_handler): Likewise for KEYSIG, but keep
setting KEYSIG->class, too. Rename variable CLASS to SIG_CLASS.
* sign.c (parse_sig_created): Set SIG->sig_class.

2003-12-22 Werner Koch <wk@gnupg.org>

* gpgme.h (_GPGME_D_CLASS): Kludge for C++ compatibility without

changing the C API.

2003-11-19 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_parse_timestamp): New.
(atoi_1, atoi_2, atoi_4): New.
* keylist.c (parse_timestamp): Removed. Changed all callers to use
the new function.
* verify.c (parse_valid_sig): Ditto. Repalced the errno check.
* sign.c (parse_sig_created): Ditto.

2003-10-31 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Detect ISO 8601 timestamps and try
to convert them.

2003-10-10 Marcus Brinkmann <marcus@g10code.de>

*
genkey.c (get_key_parameter): Make a copy of the key parameters.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* data-compat.c: Include <sys/time.h> before <sys/stat.h> for
broken systems.

* engine-gpgsm.c (map_assuan_error): If ERR is -1, return sensible
error.

* io.h (_gpgme_io_subsystem_init): New prototype.
* posix-io.c (_gpgme_io_subsystem_init): Add function.
(_gpgme_io_spawn): Do not fixup signal handler here.
* version.c (do_subsystem_inits): Call _gpgme_io_subsystem_init.

* debug.c (debug_init): Drop const qualifier from E.

* ath.h (struct ath_ops): Make ADDR argument of CONNECT prototype
const.
(ath_connect): Make ADDR argument const.
* ath-pthread.c (ath_connect): Likewise.
* ath-pth.c (ath_connect): Likewise.
* ath-compat.c (ath_connect): Likewise.
* ath.c (ath_connect): Likewise.

* ath.h [HAVE_SYS_SELECT_H]: Include <sys/select.h> for fd_set.
[!HAVE_SYS_SELECT_H]: Include <sys/time.h>.

*
conversion.c (_gpgme_hextobyte): Drop "unsigned" from type of
SRC argument.
* util.h (_gpgme_hextobyte): Likewise for prototype.

* gpgme.h: Remove trailing comma in enum.

* rungpg.c: Do not include <time.h>, <sys/time.h>, <sys/types.h>,
<signal.h>, <fcntl.h>, or "unistd.h".

2003-10-02 Marcus Brinkmann <marcus@g10code.de>

* engine-backend.h (struct engine_ops): Add argument TYPE.
* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* rungpg.c (gpg_edit): Likewise. Use it.
* edit.c (edit_start): Likewise. Pass it on.
(gpgme_op_edit_start, gpgme_op_edit): Likewise.
(gpgme_op_card_edit_start, gpgme_op_card_edit): New functions.

2003-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpg_strerror_r): Change prototype to match
gpg_strerror_r change.
* error.c (gpg_strerror_r): Likewise, also update implementation.

* gpgme.c (gpgme_hash_algo_name): Change name of RMD160 to
RIPEMD160, name of TIGER to TIGER192, name of CRC32-RFC1510 to
CRC32RFC1510,
and name of CRC24-RFC2440 to CRC24RFC2440.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_set_locale.

* gpgme.h: Define macro _GPGME_INLINE depending on the compiler
characteristics and use that instead __inline__.

* context.h (struct gpgme_context): New members lc_ctype and
lc_messages.
* gpgme.c: Include <locale.h>.
(def_lc_lock, def_lc_ctype, def_lc_messages): New static
variables.
(gpgme_set_locale): New function.
* engine.c (_gpgme_engine_new): Add arguments lc_ctype and
lc_messages.
* engine.h (_gpgme_engine_new): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.

* rungpg.c (gpg_new): Likewise.
* engine-backend.h (struct engine_ops): Likewise to NEW.
* op-support.c (_gpgme_op_reset): Likewise to invocation of
_gpgme_engine_new.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_strerror_r): New prototype.
* error.c (gpgme_strerror_r): New function.

* get-env.c: New file.
* util.h (_gpgme_getenv):
Add prototype.
* Makefile.am (libgpgme_real_la_SOURCES): Add get-env.c.
* rungpg.c (build_argv): Use _gpgme_getenv.
* debug.c (debug_init): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.
(gpgsm_new): Use ttyname_r.
* w32-io.c (_gpgme_io_spawn): Disable debugging for now.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Use $libdir, not @libdir@, for the echo
command.

* gpgme-config.in: Rewritten.
* gpgme.m4: Rewritten.

2003-08-19 Marcus Brinkmann <marcus@g10code.de>

The ath files (ath.h, ath.c, ath-pth.c, ath-pthread.c,
ath-compat.c, ath-pth-compat.c and ath-pthread-compat.c) have been
updated to have better thread support, and the Makefile.am was
changed to reflect that.

* util.h [!HAVE_FOPENCOOKIE]: Remove fopencookie declaration.
* engine-gpgsm.c (gpgsm_assuan_simple_command): Set ERR to return
value of status_fnc.
* rungpg.c (start): Return SAVED_ERRNO, not errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (start):
Use saved_errno instead errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* funopen.c, putc_unlocked.c, isascii.c, memrchr.c: New files.

* fopencookie.c: File removed.

2003-08-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Put gpg-error related flags after gpgme's.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_new_signature): Rename member CLASS to
_OBSOLETE_CLASS, add member CLASS with type unsigned int.
* sign.c (parse_sig_created): Also set SIG->_unused_class for
backward compatibility.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix status parsing case.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_subkey): Add flag CAN_AUTHENTICATE.
Lower _UNUSED to 23 bits.
(struct _gpgme_key): Likewise.
* keylist.c (set_mainkey_capability): Support 'a' and 'A'.
(set_subkey_capability): Support 'a'.

* keylist.c (gpgme_get_key): Check if there is more than
one key
listed, and return GPG_ERR_AMBIGUOUS_NAME in that case.

* util.h (_gpgme_decode_c_string): Change type of LEN argument to
size_t.
(_gpgme_decode_percent_string): Likewise.
* conversion.c (_gpgme_decode_c_string): Likewise.
(_gpgme_decode_percent_string): Likewise.
(_gpgme_map_gnupg_error): Change type of I to unsigned int.
* signers.c (gpgme_signers_clear): Likewise.
(gpgme_signers_enum): New unsigned variable SEQNO, set to SEQ.
Use SEQNO instead SEQ.
* wait.c (fd_table_put): Change type of I and J to unsigned int.
* wait-global.c (_gpgme_wait_global_event_cb): Change type of IDX
to unsigned int.
(gpgme_wait): Change type of I and IDX to unsigned int.
* wait-private.c (_gpgme_wait_on_condition): Change type of IDX
and I to unsigned int.
* posix-io.c (_gpgme_io_close): Cast return value of macro DIM to
int to suppress gcc warning.
(_gpgme_io_set_close_notify): Likewise.
(_gpgme_io_select): Change type of I to unsigned int.

* engine.c (gpgme_get_engine_info):
Change type of PROTO to
unsigned int.
* wait-user.c (_gpgme_user_io_cb_handler): Change type of IDX and
I to unsigned int.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c (decrypt_verify_status_handler): Expand silly
and wrong expression.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* encrypt.c (encrypt_sym_status_handler): Likewise.
* sign.c (sign_status_handler): Likewise.
* verify.c (verify_status_handler): Likewise.
* decrypt.c (decrypt_status_handler): Likewise.

* engine.c (gpgme_get_engine_info): Initialize NULL.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (gpg_error_libs): Quote GPG_ERROR_CFLAGS and
GPG_ERROR_LIBS when setting the corresponding variables.
Reported by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (set_recipients): Move declaration of NEWLEN to
the beginning of the block.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (mem_write):
Copy original buffer content.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_user_ids_release, gpgme_user_ids_append): Remove
prototypes.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): Add @GPG_ERROR_CFLAGS@.
* gpgme-config.in (gpg_error_libs, gpg_error_cflags): New variables.
Print them.

* op-support.c (_gpgme_parse_inv_userid): Rename to
_gpgme_parse_inv_recp and change to new datatype.
* ops.h (_gpgme_parse_inv_key): Fix prototype.

* gpgme.h (struct _gpgme_invalid_user_id): Rename to
__gpgme_invalid_key. Rename field ID to KEY.
(gpgme_invalid_user_id_t): Rename to gpgme_invalid_key_t.
(struct _gpgme_op_encrypt_result): Here, too.
(struct _gpgme_op_sign_result): Likewise.
* encrypt.c (struct op_data): Likewise.
(release_op_data): Likewise.
* sign.c (struct op_data): Likewise.
(release_op_data): Likewise.

* posix-io.c (_gpgme_io_read): Save errno across debug calls.
(_gpgme_io_write): Likewise.
(_gpgme_io_pipe):
Likewise.
(_gpgme_io_select): Likewise.

* rungpg.c (struct engine_gpg): Remove arg_error.
(add_arg): Don't set arg_error.
(add_data): Likewise.
(start): Don't check arg_error.
(gpg_new): Check return value of add_arg.
* verify.c (parse_notation): Free allocated memory at error.

2003-06-05 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* Makefile.am (EXTRA_DIST): Remove mkerrors.
(BUILT_SOURCES): Remove errors.c.
(MOSTLYCLEANFILES): Likewise.
(libgpgme_la_SOURCES): Likewise. Add error.c.
(errors.c): Remove target.
* mkerrors: File removed.
* error.c: New file.

* gpgme.h (gpgme_error_t): Change to type gpg_error_t.
(gpgme_err_code_t, gpgme_err_source_t): New types.
(gpgme_err_code, gpgme_err_source, gpgme_error, gpgme_err_make):
New static inline functions.
(gpgme_strsource, gpgme_err_code_from_errno,
gpgme_err_code_to_errno, gpgme_err_make_from_errno,
gpgme_error_from_errno): New prototypes.

2003-05-29 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_export_start): Change second arg to const char *.
(gpgme_op_export): Likewise.

(gpgme_op_export_ext_start): New prototype.
(gpgme_op_export_ext): Likewise.
* engine.h: Likewise for _gpgme_engine_op_export and
_gpgme_engine_op_export_ext.
* engine-backend.h (struct engine_ops): Change second argument of
prototype of export to const char *, and add reserved int as
third argument. Add prototype for export_ext.
* engine.c (_gpgme_engine_op_export_ext): New function.
(_gpgme_engine_op_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
* rungpg.c (gpg_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpg_export_ext): New function.
(gpg_keylist_ext): Break loop at error.
(_gpgme_engine_ops_gpg): Add gpg_export_ext.
* engine-gpgsm.c (gpgsm_export): Change second argument of
prototype of export to const
char *, and add reserved int as
third argument.
(gpgsm_export_ext): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_export_ext.
* export.c (export_start): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpgme_op_export_start): Likewise.
(export_ext_start): New function.
(gpgme_op_export_ext_start): Likewise.
(gpgme_op_export_ext): Likewise.

* gpgme.h (gpgme_keylist_mode_t): New type for anonymous enum.
(gpgme_sigsum_t): New type for anonymous enum.

* encrypt-sign.c (encrypt_sign_start): Check for errors earlier,
and return an error if RECP is not set.

* Makefile.am (libgpgme_la_SOURCES): Remove user-id.c.
* user-id.c: Remove file.
* ops.h: Remove prototype for _gpgme_user_ids_all_valid.
* gpgme.h (gpgme_encrypt_flags_t): New type.
(gpgme_op_encrypt_start): Change second parameter to type
gpgme_key_t[], and add third parameter.
(gpgme_op_encrypt): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign):
Likewise.
* encrypt.c (encrypt_start): Likewise.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt): Likewise. Pass flags to engine.
* encrypt-sign.c (encrypt_sign_start): Likewise.

(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
* engine-backend.h (struct engine_ops): Likewise for prototypes of
encrypt and encrypt_sign.
* engine.h: Likewise for prototypes of _gpgme_engine_op_encrypt
and _gpgme_engine_op_encrypt_sign.
* engine.c (_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Check flags for always trust option.
* engine-gpgsm.c (gpgsm_encrypt): Likewise.
(set_recipients): Rewritten to use keys instead user IDs.
* rungpg.c (append_args_from_recipients): Rewritten to use keys
instead user IDs.
* encrypt.c (_gpgme_encrypt_status_handler): Change errors
returned to GPGME_Invalid_Key and GPGME_General_Error.

2003-05-28
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Rename GpgsmObject to engine_gpgsm_t.
(struct gpgsm_object_s): Rename to struct engine_gpgsm.
* rungpg.c: Rename GpgObject to engine_gpg_t.
(struct gpg_object_s): Rename to struct engine_gpg.

* context.h (struct gpgme_context): Change EngineObject to
engine_object_t.
(enum ctx_op_data_type): Rename to ctx_op_data_id_t.
(ctx_op_data_t): New type.
(struct gpgme_context): Use it.
* ops.h (_gpgme_op_data_lookup): Use new type name.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* engine.c: Rename EngineObject to engine_t in the file. Also
EngineStatusHandler to engine_status_handler_t,
EngineCommandHandler to engine_command_handler_t and
EngineColonLineHandler to engine_colon_line_handler.
* rungpg.c (start): Likewise.
* engine-gpgsm.c: Likewise.
* engine-backend.h (struct engine_ops): Likewise
* engine.h (struct engine_object_s): Rename to struct engine.
(EngineObject): Rename to
engine_t. Also everywhere else in the
file.
(EngineStatusHandler): Rename to engine_status_handler_t.
(EngineColonLineHandler): Rename to engine_colon_line_handler_t.
(EngineCommandHandler): Rename to engine_command_handler_t.

* engine-gpgsm.c (gpgsm_export): Fix bug in last change.

* Makefile.am (libgpgme_la_SOURCES): Remove recipient.c, add
user-id.c.
* gpgme.h (gpgme_recipients_t): Removed.
(gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name,
gpgme_recipients_add_name_with_validity, gpgme_recipients_count,
gpgme_recipients_enum_open, gpgme_recipients_enum_read,
gpgme_recipients_enum_close): Removed.
(gpgme_op_encrypt, gpgme_op_encrypt_start, gpgme_op_encrypt_sign,
gpgme_op_encrypt_sign_start, gpgme_op_export_start,
gpgme_op_export): Change second argument to gpgme_user_id_t.
(gpgme_user_ids_release): New prototype.
(gpgme_user_ids_append): Likewise.
* ops.h (_gpgme_recipients_all_valid): Remove.
(_gpgme_user_ids_all_valid): Add.
* context.h
(struct gpgme_recipients): Removed.
* user-id.c: New file.
* recipient.c: Removed file.
* rungpg.c (append_args_from_recipients): Change last arg to
gpgme_user_id_t. Reimplement.
(gpg_encrypt): Change second arg to gpgme_user_id_t.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise. Rewrite user ID list code.
* engine.c (_gpgme_engine_op_encrypt): Change second arg to
gpgme_user_id_t.
(_gpgme_engine_op_encrypt_sign): Likewise.
(_gpgme_engine_op_export): Likewise.
* engine.h (_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export): Likewise.
* engine-gpgsm.c (set_recipients): Likewise. Rewrite loop code.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
* engine-backend.h (struct engine_ops): Likewise for members
ENCRYPT, ENCRYPT_SIGN and EXPORT.
* export.c (export_start, gpgme_op_export_start, gpgme_op_export):
Likewise.
* encrypt.c (encrypt_start): Likewise. Don't check for count of
recipients.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt):
Likewise.
* encrypt-sign.c (encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_import_result): Add skipped_new_keys.
* import.c (parse_import_res): Add skipped_new_keys parser.

* op-support.c (_gpgme_parse_inv_userid): Add missing break
statements.
* encrypt.c (gpgme_op_encrypt): Use gpgme_error_t instead of int.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* encrypt.c (gpgme_op_encrypt_result): Use intermediate variable
HOOK to avoid compiler warning. Don't ask, you don't want to know.
(_gpgme_encrypt_status_handler): Likewise.
(_gpgme_op_encrypt_init_result): Likewise.
* decrypt.c (gpgme_op_decrypt_result): Likewise.
(_gpgme_decrypt_status_handler): Likewise.
(_gpgme_op_decrypt_init_result): Likewise.
* verify.c (gpgme_op_verify_result): Likewise.
(_gpgme_verify_status_handler): Likewise.
(_gpgme_op_verify_init_result):
Likewise.
* edit.c (edit_status_handler): Likewise.
(command_handler): Likewise.
(edit_start): Likewise.
* genkey.c (gpgme_op_genkey_result): Likewise.
(genkey_status_handler): Likewise.
(genkey_start): Likewise.
* import.c (gpgme_op_import_result): Likewise.
(import_status_handler): Likewise.
(_gpgme_op_import_start): Likewise.
* trustlist.c (gpgme_op_trustlist_next): Likewise.
(_gpgme_op_trustlist_event_cb): Likewise.
(gpgme_op_trustlist_start): Likewise.
* keylist.c (gpgme_op_keylist_result): Likewise.
(keylist_colon_handler): Likewise.
(keylist_status_handler): Likewise.
(_gpgme_op_keylist_event_cb): Likewise.
(gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): Likewise.
* sign.c (gpgme_op_sign_result): Likewise.
(_gpgme_sign_status_handler): Likewise.
(_gpgme_op_sign_init_result):
Likewise.

* passphrase.c (_gpgme_passphrase_command_handler_internal): Fix
access to pointer type.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* engine.h (EngineCommandHandler): Change last argument to int fd.
* gpgme.h (gpgme_passphrase_cb_t): Rewritten to take parts of the
description and fd.
(gpgme_edit_cb_t): Change last argument to int fd.
* ops.h (_gpgme_passphrase_command_handler_internal): New prototype.
* passphrase.c: Include <assert.h>.
(op_data_t): Rename userid_hint to uid_hint, remove last_pw_handle.
(release_op_data): Check values before calling free.
(_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): New function.
(_gpgme_passphrase_command_handler): Rewritten.
* edit.c (edit_status_handler): Pass -1 as fd argument.
(command_handler): Update prototype. New variable processed. Use
it to store return value of
_gpgme_passphrase_command_handler_internal which is now used
instead _gpgme_passphrase_command_handler.
 Use it also to check
if we should call the user's edit function. Pass fd to user's
edit function.
* rungpg.c (struct gpg_object_s): Change type of cmd.cb_data to
void *.
(gpg_release): Check value before calling free. Do not release
cmd.cb_data.
(command_cb): Function removed.
(command_handler): New function. Thus we don't use a data object
for command handler stuff anymore, but handle it directly. This
allows proper error reporting (cancel of passphrase requests, for
example). Also all callbacks work via direct writes to the file
descriptor (so that passphrases are not kept in insecure memory).
(gpg_set_command_handler): Rewritten to use even more ugly hacks.
(read_status): Check cmd.keyword before calling free. Install
command_handler as the I/O callback handler with GPG as private
data.

* rungpg.c (gpg_new): Add --enable-progress-filter to gpg
invocation.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Rename to
decrypt_verify_start.
(gpgme_op_decrypt_verify_start):
Call decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* verify.c (verify_status_handler): New function that also calls
progress status handler.

(_gpgme_op_verify_start): Set status handler to verify_status_handler.
Rename to (verify_start).
(gpgme_op_verify_start): Call verify_start.
(gpgme_op_verify): Likewise.
* encrypt.c (encrypt_status_handler): New function.
(_gpgme_encrypt_sym_status_handler): Call progress status handler.
Make static. Rename to encrypt_sym_status_handler.
(encrypt_start): Set status handler to encrypt_sym_status_handler
or encrypt_status_handler.
* sign.c (sign_status_handler): New function.
(sign_start): Set status handler to sign_status_handler.
* decrypt.c (decrypt_status_handler): New function that also calls
progress status handler.
(decrypt_start): Set status handler to decrypt_status_handler.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler):
Call
_gpgme_progress_status_handler.

* conversion.c (_gpgme_decode_c_string): Add missing break
statement.

* recipient.c (gpgme_recipients_add_name_with_validity): Add one
to buffer to allocate.

2003-05-19 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix ERRSIG case.
Submitted by Benjamin Lee <benjaminlee@users.sf.net>.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: The following types are renamed. The old name is kept
as a deprecated typedef.
(GpgmeCtx): Rename to gpgme_ctx_t.
(GpgmeData): Rename to gpgme_data_t.
(GpgmeRecipients): Rename to gpgme_recipients_t.
(GpgmeError): Rename to gpgme_error_t.
(GpgmeDataEncoding): Rename to gpgme_data_encoding_t.
(GpgmePubKeyAlgo): Rename to gpgme_pubkey_algo_t.
(GpgmeHashAlgo): Rename to gpgme_hash_algo_t.
(GpgmeSigStat): Rename to gpgme_sig_stat_t.
(GpgmeSigMode): Rename to gpgme_sig_mode_t.
(GpgmeAttr): Rename to gpgme_attr_t.
(GpgmeValidity): Rename to gpgme_validity_t.
(GpgmeProtocol):
Rename to gpgme_protocol_t.
(GpgmeStatusCode): Rename to gpgme_status_code_t.

(GpgmeEngineInfo): Rename to gpgme_engine_info_t.
(GpgmeSubkey): Rename to gpgme_subkey_t.
(GpgmeKeySig): Rename to gpgme_keysig_t.
(GpgmeUserID): Rename to gpgme_user_id_t.
(GpgmePassphraseCb): Rename to gpgme_passphrase_cb_t.
(GpgmeProgressCb): Rename to gpgme_progress_cb_t.
(GpgmeEditCb): Rename to gpgme_edit_cb_t.
(GpgmeIOCb): Rename to gpgme_io_cb_t.
(GpgmeRegisterIOCb): Rename to gpgme_register_io_cb_t.
(GpgmeRemoveIOCb): Rename to gpgme_remove_io_cb_t.
(GpgmeEventIO): Rename to gpgme_event_io_t.
(GpgmeEventIOCb): Rename to gpgme_event_io_cb_t.
(GpgmeIOCbs): Rename to gpgme_io_cbs.
(gpgme_io_cbs_t): New type.
(GpgmeDataReadCb): Rename to gpgme_data_read_cb_t.
(GpgmeDataWriteCb): Rename to gpgme_data_write_cb_t.
(GpgmeDataSeekCb): Rename to gpgme_data_seek_cb_t.
(GpgmeDataReleaseCb): Rename to gpgme_data_release_cb_t.
(GpgmeDataCbs): Rename to gpgme_data_cbs.
(gpgme_data_cbs_t):
New type.
(GpgmeInvalidUserID): Rename to gpgme_invalid_user_id_t.
(GpgmeEncryptResult): Rename to gpgme_encrypt_result_t.
(GpgmeDecryptResult): Rename to gpgme_decrypt_result_t.
(GpgmeNewSignature): Rename to gpgme_new_signature_t.
(GpgmeSignResult): Rename to gpgme_sign_result_t.
(GpgmeSigNotation): Rename to gpgme_sig_notation_t.
(GpgmeSignature): Rename to gpgme_signature_t.
(GpgmeVerifyResult): Rename to gpgme_verify_result_t.
(GpgmeImportStatus): Rename to gpgme_import_status_t.
(GpgmeImportResult): Rename to gpgme_import_result_t.
(GpgmeGenKeyResult): Rename to gpgme_genkey_result_t.
(GpgmeKeyListResult): Rename to gpgme_keylist_result_t.
(GpgmeTrustItem): Rename to gpgme_trust_item_t.
* gpgme.h (gpgme_deprecated_error_t): New type, swallowing macros
GPGME_No_Recipients, GPGME_Invalid_Recipient and
GPGME_No_Passphrase.
* data.h (struct gpgme_data_s): Rename to struct gpgme_data.
* context.h (struct gpgme_context_s): Rename to struct
gpgme_context.
(struct
gpgme_recipients_s): Rename to gpgme_recipients.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (finish_key): Clear OPD->tmp_uid.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Return GPGME_No_Data
for NODATA status without signatures.

2003-05-05 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Use decoded string to parse user id.
(_gpgme_key_add_sig): Likewise.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): Remove member op_info.

* key.c (_gpgme_key_add_sig): Initialize SIG->uid.

* gpgme.h (GpgmeError): Add deprecated values for
GPGME_Invalid_Type and GPGME_Invalid_Mode.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_op_info): Remove prototype.
* ops.h (_gpgme_set_op_info,
_gpgme_data_release_and_return_string, _gpgme_data_get_as_string,
_gpgme_data_append, _gpgme_data_append_string,
_gpgme_data_append_string_for_xml,
_gpgme_data_append_for_xml,
_gpgme_data_append_percentstring_for_xml): Likewise.
(_gpgme_progress_status_handler): Change first arg to void *.
* progress.c (_gpgme_progress_status_handler): Likewise.
* conversion.c: Do not include <string.h>, <errno.h>, <ctype.h>,
and <sys/types.h>, but <string.h>.
(_gpgme_data_append): Remove function.
(_gpgme_data_append_string): Likewise.
(_gpgme_data_append_for_xml): Likewise.
(_gpgme_data_append_string_for_xml): Likewise.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data-mem.c (_gpgme_data_get_as_string): Likewise.
(_gpgme_data_release_and_return_string): Likewise.
* gpgme.c (gpgme_get_op_info): Likewise.
(_gpgme_set_op_info): Likewise.

* gpgme.h (struct _gpgme_key): New structure.
(GpgmeKey): Define using _gpgme_key.
(struct _gpgme_subkey): New structure.
(GpgmeSubKey): New type.
(struct _gpgme_key_sig): New structure.
(GpgmeKeySig): New type.
(struct _gpgme_user_id): New structure.

(GpgmeUserID):
New type.
(struct _gpgme_op_keylist_result): New structure.
(GpgmeKeyListResult): New type.
(gpgme_op_keylist_result): New function.
(gpgme_key_get_as_xml): Remove prototype.
* context.h (struct gpgme_context_s): Remove members tmp_key,
tmp_uid, key_cond and key_queue.
(struct key_queue_item_s): Remove structure.
(struct user_id_s): Remove structure.
(struct gpgme_recipients_s): Replace with simple
GpgmeUserID list.
* gpgme.c (gpgme_release): Do not release CTX->tmp_key.
* ops.h (_gpgme_key_add_subkey, _gpgme_key_append_name,
_gpgme_key_add_sig, _gpgme_trust_item_new): New prototypes.
* rungpg.c (command_cb): Return GpgmeError instead int.
New variable ERR. Use it to hold return value of cmd handler.
(gpg_delete): Access fingerprint of key directly.
(append_args_from_signers): Likewise.
(gpg_edit): Likewise.
(append_args_from_recipients): Use GpgmeUserID for recipient list.
* engine-gpgsm.c: Do not include "key.h".
(gpgsm_delete): Access fingerprint of key
directly.
(gpgsm_sign): Likewise.
(set_recipients): Use GpgmeUserID for recipients. Invert invalid
user ID flag.
* key.h: File removed.
* key.c: Completely reworked to use exposed GpgmeKey data types.
* keylist.c: Likewise.
* recipient.c: Completely reworked to use GpgmeUserID.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_key): Remove force_update argument.
* key-cache.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove key-cache.c.
* ops.h (_gpgme_key_cache_add, _gpgme_key_cache_get): Remove
prototypes.
* keylist.c (_gpgme_op_keylist_event_cb): Don't call
_gpgme_key_cache_add.
(gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Remove last argument to
gpgme_get_key invocation.

* gpgme.h (struct _gpgme_trust_item): New structure.
(GpgmeTrustItem): New type.
(gpgme_trust_item_ref, gpgme_trust_item_unref): New prototypes.

* context.h (struct trust_queue_item_s): Remove structure.
(struct gpgme_context_s): Remove trust_queue
member.
* Makefile.am (libgpgme_la_SOURCES): Add trust-item.c.
* trust-item.c: New file.
* trustlist.c: Do not include <stdio.h> or <time.h>, but
"gpgme.h".
(struct trust_queue_item_s): Change to new type op_data_t.
(trust_status_handler): Change first argument to void *.
(trust_colon_handler): Likewise.
(_gpgme_op_trustlist_event_cb): Use op_data_t type.
(gpgme_op_trustlist_start): Use op_data_t and rework error
handling.
(gpgme_op_trustlist_next): Use op_data_t.
(gpgme_trust_item_release): Remove function.
(gpgme_trust_item_get_string_attr): Likewise.
(gpgme_trust_item_get_int_attr): Likewise.

* verify.c (calc_sig_summary): Do not set GPGME_SIGSUM_SYS_ERROR
for bad signatures.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* context.h: Remove OPDATA_VERIFY_COLLECTING.
(struct gpgme_context_s): Remove member notation.
* gpgme.h: Make enum for GPGME_KEYLIST_MODE_* values.

* gpgme.h (struct _gpgme_sig_notation): New structure.
(GpgmeSigNotation): New
type.
(struct _gpgme_signature): New structure.
(GpgmeSignature): New type.
(struct _gpgme_op_verify_result): New structure.
(GpgmeVerifyResult): New type.
(gpgme_op_verify_result): New prototype.
(gpgme_get_notation): Remove prototype.
* ops.h (_gpgme_op_verify_init_result): New prototype.
(_gpgme_verify_status_handler): Change first argument to void *.
* util.h (_gpgme_decode_percent_string, _gpgme_map_gnupg_error):
New prototypes.
* conversion.c (_gpgme_decode_percent_string): New function.
(gnupg_errors): New static global.
(_gpgme_map_gnupg_error): New function.
* gpgme.c (gpgme_release): Don't release CTX->notation.
(gpgme_get_notation): Remove function.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Call
_gpgme_op_verify_init_result.
* verify.c: Do not include <stdio.h>, <assert.h> and "key.h", but

do include "gpgme.h".
(struct verify_result): Replace with ...
(op_data_t): ... this type.
(release_verify_result): Remove function.
(release_op_data):
New function.
(is_token): Remove function.
(skip_token): Remove function.
(copy_token): Remove function.
(gpgme_op_verify_result): New function.
(calc_sig_summary): Rewritten.
(finish_sig): Remove function.
(parse_new_sig): New function.
(parse_valid_sig): New function.
(parse_notation): New function.
(parse_trust): New function.
(parse_error): New function.
(_gpgme_verify_status_handler): Rewritten. Change first argument
to void *.
(_gpgme_op_verify_start): Rework error handling. Call
_gpgme_op_verify_init_result.
(gpgme_op_verify): Do not release or clear CTX->notation.
(gpgme_get_sig_status): Rewritten.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.
(gpgme_get_sig_key): Likewise.

* gpgme.h (struct _gpgme_op_decrypt_result): New structure.
(GpgmeDecryptResult): New type.
(gpgme_op_decrypt_result): New prototype.
* ops.h (_gpgme_op_decrypt_init_result): New prototype.
(_gpgme_decrypt_status_handler): Fix prototype.
(_gpgme_decrypt_start):
Remove prototype.
* decrypt-verify.c: Do not include <stdio.h>, <stdlib.h>,
<string.h> and <assert.h>, "util.h" and "context.h", but
"gpgme.h".
(decrypt_verify_status_handler): Change first argument to void *,
and rework error handling.
(_gpgme_op_decrypt_verify_start): New function.
(gpgme_op_decrypt_verify_start): Rewrite using
_gpgme_op_decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* decrypt.c: Include <string.h>, "gpgme.h" and "util.h".
(struct decrypt_result): Change to typedef op_data_t, rewritten.
(is_token): Remove function.
(release_op_data): New function.
(skip_token): Remove function.

(gpgme_op_decrypt_result): New function.
(_gpgme_decrypt_status_handler): Change first argument to void *.
Rework error handling.
(_gpgme_decrypt_start): Rename to ...
(decrypt_start): ... this. Call _gpgme_op_decrypt_init_result.
(_gpgme_op_decrypt_init_result): New function.
(gpgme_op_decrypt_start): Use decrypt_start.
(gpgme_op_decrypt): Likewise.

2003-04-27
Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c: Do not include <stddef.h>, <stdio.h>,
<stdlib.h>, <string.h>, <assert.h> and "util.h", but "gpgme.h".
(_gpgme_op_encrypt_sign_start): Rename to ...
(encrypt_sign_start): ... this.
(gpgme_op_encrypt_sign_start): Use encrypt_sign_start, not
_gpgme_op_encrypt_sign_start.
(gpgme_op_encrypt_sign): Likewise.

* gpgme.h (GpgmeEncryptResult): New data type.
(gpgme_op_encrypt_result): New prototype.
* ops.h (_gpgme_op_encrypt_init_result): New prototype.
(_gpgme_op_encrypt_status_handler): Fix prototype.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call
_gpgme_op_encrypt_init_result.
* encrypt.c: Do not include <stdio.h>, <assert.h>, "util.h" and
"wait.h". Include <errno.h> and "gpgme.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct encrypt_result): Rename to ...
(op_data_t): ... new data type. Rewrite for user result data.
(append_xml_encinfo): Remove function.
(release_op_data): New function.
(gpgme_op_encrypt_result):
New function.
(_gpgme_op_encrypt_status_handler): Change first argument to void *.
Rewrite result parsing.
(_gpgme_op_encrypt_sym_status_handler): Change first argument to
void *.
(_gpgme_op_encrypt_init_result): New function.
(_gpgme_op_encrypt_start): Rename to ...
(encrypt_start): ... this.
(gpgme_op_encrypt_start): Use encrypt_start, not
gpgme_op_encrypt_start.
(gpgme_op_encrypt): Likewise.

* gpgme.h (GpgmePubKeyAlgo, GpgmeHashAlgo, GpgmeInvalidUserID,
GpgmeNewSignature, GpgmeSignResult): New data types.

(gpgme_op_sign_result, gpgme_pubkey_algo_name,
gpgme_hash_algo_name): New prototypes.
* gpgme.c (gpgme_pubkey_algo_name): New function.
(gpgme_hash_algo_name): Likewise.
* ops.h (_gpgme_parse_inv_userid, _gpgme_op_sign_init_result): New
prototype.
(_gpgme_op_sign_status_handler): Fix prototype.
* op-support.c: Include <errno.h> and <string.h>.
(_gpgme_parse_inv_userid): New function.
* sign.c: Include <errno.h> and "gpgme.h", but
not <stdio.h>,
<assert.h> and "util.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct sign_result): Change to op_data_t type and rework it.
(release_sign_result): Rename to ...
(release_op_data): ... this and rewrite it.
(append_xml_info): Remove function.
(gpgme_op_sign_result): New function.
(parse_sig_created): New function.
(_gpgme_sign_status_handler): Change first argument to void *.
Rewrite the function to use the new result structure and functions.
(_gpgme_op_sign_init_result): New function.
(_gpgme_op_sign_start): Rename to ...
(sign_start): ... this. Call _gpgme_op_sign_init_result.
(gpgme_op_sign_start): Use sign_start instead _gpgme_op_sign_start.
(gpgme_op_sign): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call
_gpgme_op_sign_init_result.

* delete.c: Include <errno.h> and "gpgme.h", but not "util.h" or
"key.h".
(enum delete_problem): Move into function delete_status_handler.
(delete_status_handler): Change first argument to void *. Parse
delete
problem with strtol instead atoi. Return better error
values.
(_gpgme_op_delete_start): Rename to ...
(delete_start): ... this. Rework error handling.
(gpgme_op_delete_start): Use delete_start instead
_gpgme_op_delete_start.
(gpgme_op_delete): Likewise.
* gpgme.h (GpgmeDataType): Removed.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Change GPGME_IMPORT_PRIVATE to GPGME_IMPORT_SECRET.
* import.c (parse_import_res): Parse unchanged field.

* gpgme.h: New enum for GPGME_IMPORT_NEW, GPGME_IMPORT_UID,
GPGME_IMPORT_SIG, GPGME_IMPORT_SUBKEY, GPGME_IMPORT_PRIVATE.
(GpgmeError): GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key added
as new error codes.
(struct _gpgme_import_status): New structure.
(GpgmeImportStatus): New type.
(struct _gpgme_op_import_result): New structure.
(GpgmeImportResult): New type.
(gpgme_op_import_result): New function.
* import.c: Include <errno.h> and "gpgme.h", but not "util.h".
(struct import_result): Change to type op_data_t.
(release_import_result): Rename to ...
(release_op_data): ... this.
(append_xml_impinfo): Function removed.
(gpgme_op_import_result): New function.
(parse_import): New function.
(parse_import_res): Likewise.
(import_status_handler): Change first argument to void *. Rewrite
to use new functions.
(_gpgme_op_import_start): Rework error handling.

* edit.c: Do not include <assert.h>, "util.h", but "gpgme.h".
(edit_resut): Change to typedef for op_data_t.
(edit_status_handler): Change first argument to void *.
Rework error handling.
(command_handler): Rework error handling.
(_gpgme_op_edit_start): Rename to ...
(edit_start): ... this. Rework
error handling.
(gpgme_op_edit_start): Rewrite using edit_start.
(gpgme_op_edit): Likewise.

* ops.h (_gpgme_passphrase_start): Remove prototype.
* passphrase.c: Do not include <assert.h>, "util.h" or
"debug.h", but "gpgme.h".
(struct passphrase_result): Change to typedef for op_data_t.
(release_passphrase_result): Rename to release_op_data.
(_gpgme_passphrase_status_handler): Change first argument to void *.
Use new op_data_t type.
(_gpgme_passphrase_command_handler): Use new op_data_t type.
(_gpgme_passphrase_start): Remove function.
* decrypt.c (_gpgme_decrypt_start): Rewrite error handling. Do

not call _gpgme_passphrase_start, but install command handler.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.

* context.h (struct gpgme_context_s): Remove member initialized,
use_cms and help_data_1. Add member protocol. Make use_armor and
use_textmode bit flags.
 Make keylist_mode, include_certs,
signers_len and signers_size unsigned.
* gpgme.c (gpgme_new): Initialize CTX->protocol.
(gpgme_set_protocol): Do not check CTX. Use CTX->protocol.
(gpgme_get_protocol): Likewise.
(gpgme_release): Do not release CTX->help_data_1.
* op-support.c (_gpgme_op_reset): Use CTX->protocol.

* wait-private.c (_gpgme_wait_private_event_cb): Remove variable CTX.

* data.c: Do not include <assert.h>, but "gpgme.h".
(_gpgme_data_inbound_handler): Expand _gpgme_data_append, because
it will go. Do not assert DH.
(_gpgme_data_outbound_handler): Do not assert DH.

* export.c: Do not include <stdlib.h>, "debug.h" and "util.h", but
"gpgme.h".
(export_status_handler): Change type of first argument to void *.
(_gpgme_op_export_start): Rename to ...
(export_start): ... this. Rework error handling.
(gpgme_op_export_start): Rewritten to use export_start instead
_gpgme_op_export_start.
(gpgme_op_export): Likewise.

* gpgme.h (GpgmeError): Add GPGME_Busy,
GPGME_No_Request.
(GPGME_No_Recipients, GPGME_Invalid_Recipient,
GPGME_No_Passphrase): New macros.

* key.c (gpgme_key_get_string_attr): Fix validity attribute.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_genkey_result): New structure.
(GpgmeGenKeyResult): New type.
(gpgme_op_genkey): Drop last argument.
(gpgme_op_genkey_result): New function.
* genkey.c: Do not include "util.h", but "gpgme.h".
(struct genkey_result): Replace with ...
(op_data_t): ... this new type.

(release_genkey_result): Replace with ...
(release_op_data): ... this new function.
(gpgme_op_genkey_result): New function.
(genkey_status_handler): Rewritten using new op_data_t type.
(get_key_parameter): New function.
(_gpgme_op_genkey_start): Renamed to
(genkey_start): ... this and rewritten.
(gpgme_op_genkey_start): Use genkey_start instead
_gpgme_op_genkey_start.
(gpgme_op_genkey): Rewritten. Remove FPR argument.

* context.h (struct gpgme_context_s): Remove member
verbosity.
* gpgme.c (gpgme_new): Do not set member verbosity.
* engine.h (_gpgme_engine_set_verbosity): Remove prototype.
* engine.c (_gpgme_engine_set_verbosity): Remove function.
* engine-backend.h (struct engine_ops): Remove set_verbosity.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Remove set_verbosity member.
* rungpg.c (_gpgme_engine_ops_gpg): Likewise.
(gpg_set_verbosity): Remove function.
* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_set_verbosity.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start):
Likewise.

* Makefile.am (libgpgme_la_SOURCES): Add key-cache.c.
* key.c (key_cache_initialized, key_cache_size,
key_cache_max_chain_length,): Removed.
(struct key_cache_item_s, key_cache_lock, key_cache,
key_cache_unused_items, hash_key, _gpgme_key_cache_add,
_gpgme_key_cache_get, gpgme_get_key): Moved to ...
* key-cache.c: ... here. New file.
* key.h (_gpgme_key_cache_init): Remove prototypes.
(_gpgme_key_cache_add,_gpgme_key_cache_get): Move to ...
* ops.h: ... here.
* version.c: Do not include "key.h".
(do_subsystem_inits): Do not call _gpgme_key_cache_init.

* mkstatus: Strip trailing comma.
* gpgme.h (GpgmeStatus): Pretty print.

* gpgme.h (GpgmeError): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* passphrase.c (_gpgme_passphrase_status_handler): Use
GPGME_Bad_Passphrase instead GPGME_No_Passphrase.

* gpgme.h (GpgmeError): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
* encrypt.c (_gpgme_encrypt_status_handler):
Use GPGME_No_UserID
instead GPGME_No_Recipients and GPGME_Invalid_UserID instead
GPGME_Invalid_Recipient.
(_gpgme_op_encrypt_start): Likewise.

* gpgme.h (GpgmeError): Remove GPGME_Busy and GPGME_No_Request.
* wait-user.c (_gpgme_wait_user_event_cb): Don't clear CTX->pending.
* wait-private.c (_gpgme_wait_private_event_cb): Likewise.
* wait-global.c (gpgme_wait): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_get_sig_status): Don't check pending flag.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.
(gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_reset): Likewise.
* trustlist.c (gpgme_op_trustlist_start): Don't clear pending flag.
(gpgme_op_trustlist_next): Don't check or clear pending flag.
(gpgme_op_trustlist_end): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* context.h (struct gpgme_context_s): Remove member PENDING.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* delete.c (_gpgme_op_delete_start):
Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* key.c (gpgme_get_key): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
(gpgme_op_keylist_end): Likewise.
* data-compat.c (gpgme_error_to_errno): Don't convert EBUSY.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type to return GpgmeError,
and add argument for returning the result string.
(gpgme_cancel): Remove prototype.
* gpgme.c (gpgme_cancel): Remove function.
* context.h (struct gpgme_context_s): Remove member cancel.
* passphrase.c (_gpgme_passphrase_command_handler): Call the
passphrase callback in the new way.

2003-01-30
Marcus Brinkmann <marcus@g10code.de>

* edit.c (_gpgme_edit_status_handler): Call the progress status
handler.

2003-02-05 Marcus Brinkmann <marcus@g10code.de>

* wait-user.c (_gpgme_wait_user_remove_io_cb): Move check for no
I/O handlers left to ...
(_gpgme_user_io_cb_handler): ... here.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (trustlist_colon_handler): Release ITEM if name
could not be allocated.
(gpgme_trust_item_release): Only release name if it is allocated.
Reported by Marc Mutz <Marc.Mutz@uni-bielefeld.de>.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): If he status handler returns an error,
return it.
(status_handler): If read_status fails, just return the error.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (start): Handle all errors, not only most of
them.
(xtoi_1, xtoi_2): Remove macro.
(status_handler): Replace use of xtoi_2 with _gpgme_hextobyte.

2003-02-01 Marcus
Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Replace
ASSUAN_Bad_Certificate_Path with ASSUAN_Bad_Certificate_Chain.
(gpgsm_new): Use assuan_pipe_connect instead assuan_pipe_connect2.

* util.h (DIMof): Remove macro.

* ops.h (_gpgme_op_event_cb, _gpgme_op_event_cb_user,
_gpgme_data_unread): Prototypes removed.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove types.h.
* io.h (struct spawn_fd_item_s): Do not include "types.h".
* key.h: Likewise.
* context.h: Likewise.
* cengine-gpgsm.h: Likewise.
* engine.h: Include "gpgme.h" instead "types.h". Add prototypes
for EngineStatusHandler, EngineColonLineHandler and
EngineCommandHandler.
(_gpgme_engine_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler):
Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* engine-backend.h: Include "engine.h" instead "types.h".
(struct engine_ops): Change Gpgme*Handler parameters in members
set_command_handler, set_colon_line_handler and set_status_handler
to Engine*Handler.
* engine.c (_gpgme_engine_set_status_handler): Change parameter
type from GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler): Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* rungpg.c (struct gpg_object_s): Change type of member status.fnc
from GpgmeStatusHandler to EngineStatusHandler. Change type of
member colon.fnc from GpgmeColonLineHandler to
EngineColonLineHandler. Change type of member cmd.fnc from
GpgmeCommandHandler to EngineCommandHandler.
* engine-gpgsm.c (struct gpgsm_object_s): Likewise.
* rungpg.c
(gpg_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
* engine-gpgsm.c (gpgsm_set_status_handler): Likewise.
(assuan_simple_command): Likewise.
* rungpg.c (gpg_set_colon_line_handler): Change parameter type
from GpgmeColonLineHandler to EngineColonLineHandler.
* engine-gpgsm.c (gpgsm_set_colon_line_handler): Likewise.

* rungpg.c (gpg_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.

* engine-gpgsm.c (status_handler): Do not close status fd at end
of function.

* ops.h (_gpgme_op_data_lookup): Add prototype.
* op-support.c: Include <stdlib.h>.
(_gpgme_op_data_lookup): New function.
* decrypt.c (_gpgme_release_decrypt_result): Function removed.
(struct decrypt_result_s): Rename to ...
(struct decrypt_resul): ... this.
(DecryptResult): New type.
(_gpgme_decrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* sign.c
(_gpgme_release_sign_result): Function removed.
(release_sign_result): New function.
(struct sign_result_s): Rename to ...
(struct sign_result): ... this.
(SignResult): New type.
(_gpgme_sign_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* encrypt.c (struct encrypt_result_s): Rename to ...
(struct encrypt_result): ... this.
(_gpgme_release_encrypt_result): Function removed.
(release_encrypt_result): New function.
(_gpgme_encrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* verify.c (struct verify_result_s): Rename to ...
(struct verify_result): ... this. Remove member next.
(VerifyResult): New type.
(_gpgme_release_verify_result): Function removed.
(release_verify_result): New function.
(finish_sig): Change first argument to type VerifyResult. Diddle
the type of the op_data structure.
(add_notation): Change first argument
to type VerifyResult.
(_gpgme_verify_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* passphrase.c (struct passphrase_result_s): Rename to ...
(struct passphrase_result): ... this. Remove member next.
(PassphraseResult): New type.
(_gpgme_release_passphrase_result): Function removed.

(release_passphrase_result): New function.
(_gpgme_passphrase_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(_gpgme_passphrase_command_handler): Likewise.
* keylist.c (struct keylist_result_s): Rename to ...
(struct keylist_result): ... this. Remove member next.
(KeylistResult): New type.
(_gpgme_release_keylist_result): Function removed.
(release_keylist_result): New function.
(keylist_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* edit.c (struct edit_result_s): Rename to ...
(struct
edit_result): ... this. Remove member next.
(EditResult): New type.
(_gpgme_release_edit_result): Function removed.
(release_edit_result): New function.
(edit_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(command_handler): Likewise.
* types.h (DecryptResult, SignResult, EncryptResult,
PassphraseResult, ImportResult, DeleteResult, GenKeyResult,
KeylistResult, EditResult): Types removed.
* ops.h: Don't include "types.h", but "gpgme.h" and "context.h".
(test_and_allocate_result): Remove macro.
(_gpgme_release_decrypt_result): Remove prototype.
(_gpgme_decrypt_result): Remove prototype.
(_gpgme_release_sign_result): Remove prototype.
(_gpgme_release_encrypt_result): Remove prototype.
(_gpgme_release_passphrase_result): Remove prototype.
(_gpgme_release_import_result): Remove prototype.
(_gpgme_release_delete_result): Remove prototype.
(_gpgme_release_genkey_result): Remove prototype.
(_gpgme_release_keylist_result):
Remove prototype.
(_gpgme_release_edit_result): Remove prototype.
(_gpgme_release_verify_result): Remove prototype.
* gpgme.c (_gpgme_release_result): Rewritten.
* context.h (enum ctx_op_data_type): New enum.
(struct ctx_op_data): New structure.
(struct gpgme_context_s): Replace the member result with a member
op_data.
(fail_on_pending_request): Remove macro.
* op-support.c (_gpgme_op_reset): Expand macro
fail_on_pending_request.

* util.h: Don't include "types.h" or "debug.h", but include "gpgme.h".

2003-01-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_engine_ops_gpg): Remove gpg_start.
(gpg_start): Rename to ...
(start): ... this function. Change arguments to GpgObject.
(gpg_decrypt): Call start.
(gpg_edit): Likewise.
(gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise.
(gpg_import): Likewise.
(gpg_keylist): Likewise.
(gpg_keylist_ext): Likewise.
(gpg_trustlist): Likewise.
(gpg_verify): Likewise.

*
engine-gpgsm.c (_gpgme_engine_ops_encrypt): Remove gpgsm_start.
(gpgsm_start): Rename to ...
(struct gpgsm_object_s): Remove member command.
(gpgsm_release): Don't free command.
(start): ... this function. Change arguments to GpgsmObject and
const char *.
(gpgsm_decrypt): Call start.
(gpgsm_delete): Likewise.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
(gpgsm_genkey): Likewise.
(gpgsm_import): Likewise.
(gpgsm_keylist): Likewise.
(gpgsm_keylist_ext): Likewise.
(gpgsm_verify): Likewise.

* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_start.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start):
* encrypt-sign.c (_gpgme_op_encrypt_sign_start):
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_start):
Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.

* trustlist.c (gpgme_op_trustlist_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* engine-backend.h (struct engine_ops): Remove member start.

* engine.h (_gpgme_engine_start): Remove prototype.
* engine.c (_gpgme_engine_start): Remove function.

2003-01-19 Miguel Coca <mcoca@gnu.org>

* w32-io.c (_gpgme_io_select): Add missing argument in calls to
DEBUG_BEGIN.
* w32-util.c: Include "sema.h".
(find_program_in_registry): Change DEBUG1 to DEBUG2, fixes compilation
error.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* types.h: Remove byte and ulong types.
* util.h (_gpgme_hextobyte): Change prototype to unsigned char
instead byte.
* conversion.c (_gpgme_hextobyte): Change argument to unsigned
char instead byte.
(_gpgme_decode_c_string): Likewise, and beautify. Also support a
few more escaped characters. Be more strict about buffer size.
(_gpgme_data_append_percentstring_for_xml): Change
type of SRC,
BUF and DST to unsigned char instead byte.
* progress.c (_gpgme_progress_status_handler): Use unsigned char
instead byte.
* debug.c (trim_spaces): Likewise.

* util.h (mk_error): Remove macro.
* conversion.c, data.c, data-compat.c, decrypt.c, delete.c,
edit.c, encrypt.c, encrypt-sign.c, engine.c, engine-gpgsm.c,
export.c, genkey.c, gpgme.c, import.c, key.c, keylist.c,
passphrase.c, progress.c, recipient.c, rungpg.c, sign.c,
signers.c, trustlist.c, verify.c, wait.c, wait-global.c,
wait-private (literally everywhere): Expand the mk_error macro.

* context.h (wait_on_request_or_fail): Remove macro.

* context.h (gpgme_context_s): Remove member ERROR.
* types.h (GpgmeStatusHandler): Change return type to GpgmeError.
(GpgmeCommandHandler): Change return type to GpgmeError and add
new argument RESULT.
* gpgme.h (GpgmeIOCb): Change return type to GpgmeError.
(GpgmeEventIO): New event GPGME_EVENT_START.

(GpgmeIdleFunc): Remove type.
(gpgme_register_idle): Remove
prototype.
* data.c: Include <assert.h>.
(_gpgme_data_inbound_handler): Change return type to GpgmeError.
Return any error instead ignoring it, don't close file descriptor
on error.
(_gpgme_data_outbound_handler): Likewise.
* decrypt.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(_gpgme_decrypt_status_handler): Change return type to GpgmeError.
Return error instead setting ctx->error. Return success at end of
function.
(gpgme_op_decrypt): Don't work around the old kludge anymore.
* decrypt-verify.c (decrypt_verify_status_handler): Change return
type to GpgmeError. Return possible errors.
* delete.c: Do not include <stdio.h>, <string.h>, <time.h> and
<assert.h>.
(delete_status_handler): Change return type to GpgmeError. Return
error instead setting ctx->error. Return success at end of
function.
* edit.c: Do not include <stdio.h> and <string.h>.
(_gpgme_edit_status_handler): Change type to GpgmeError,
make static and rename to ...
(edit_status_handler):
... this. Return error directly.
(command_handler): Change return type to GpgmeError, add result
argument. Return error directly.
* encrypt.c (status_handler_finish): Remove function.
(_gpgme_encrypt_status_handler): Change return type to GpgmeError.
Return error directly.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (close_notify_handler): Do not signal done event
anymore.
(status_handler): Change return type to GpgmeError. Diddle things
around a bit to return errors directly.
(start): Send start event.
* export.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(export_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* genkey.c: Do not include <stdio.h> and <assert.h>.
(genkey_status_handler): Change return type to GpgmeError. Don't
check ctx->error. Return errors directly.
* gpgme.c (_gpgme_release_result): Do not initialize ctx->error.
(_gpgme_op_event_cb):
Function removed.
(_gpgme_op_event_cb_user): Likewise.
* import.c: Do not include <stdio.h>, <string.h> and <assert.h>.

(import_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* keylist.c (keylist_colon_handler, keylist_status_handler, finish_key):
Change return type to GpgmeError, return error directly.
* Makefile (libgpgme_la_SOURCES): Add wait-global.c,
wait-private.c and wait-user.c
* ops.h (test_and_allocate_result): Return error instead setting
ctx->error.
(_gpgme_data_inbound_handler, _gpgme_data_outbound_handler,
_gpgme_verify_status_handler, _gpgme_decrypt_status_handler,
_gpgme_sign_status_handler, _gpgme_encrypt_staus_handler,
_gpgme_passphrase_status_handler, _gpgme_progress_status_handler):
Change return type to GpgmeError.
(_gpgme_passphease_command_handler): Change return type to
GpgmeError and add new argument RESULT.
* op-support.c: Use new callback functions, and change private
data to ctx everywhere.
* passphrase.c
(_gpgme_passphrase_status_handler): Change return
type to GpgmeError, return error directly.
(_gpgme_passphrase_command_handler): Change return type to
GpgmeError, add result argument. Return results accordingly.
* progress.c (_gpgme_progress_status_handler): Change return type
to GpgmeError, return errors directly.
* rungpg.c (status_handler): Change return type to GpgmeError.
Return error directly.
(close_notify_handler): Don't send done event.
(colon_line_handler): Change return type to GpgmeError, return
errors directly.
* rungpg.c (start): Send start event.
* sign.c (_gpgme_sign_status_handler): Change return type to
GpgmeError, return errors directly.
* trustlist.c (trustlist_status_handler): Change return type to
GpgmeError. Return 0.
(trustlist_colon_handler): Change return type GpgmeError. Return
errors directly.
* verify.c (add_notation): Change return type to GpgmeError,
return errors directly.
(_gpgme_verify_status_handler): Likewise.
* wait.h
(struct fd_table): Remove lock member.
(struct wait_item_s): Moved here from wait.c.
(struct tag): New structure.
(_gpgme_wait_event_cb): Remove prototype.
(_gpgme_wait_private_event_cb, _gpgme_wait_global_event_cb,
_gpgme_wait_user_add_io_cb, _gpgme_wait_user_remove_io_cb,
_gpgme_wait_user_event_io_cb): New prototypes.
* wait.c: Don't include <stdio.h>.

(ftd_global, ctx_done_list, ctx_done_list_size,
ctx_done_list_length, ctx_done_list_lock, idle_function): Remove
global variable.
(gpgme_register_idle, do_select, _gpgme_wait_event_cb): Remove
function.
(gpgme_wait): Move to file wait-global.c.
(_gpgme_add_io_cb): Take ctx as private argument, initialize ctx
member in wait item and tag.
(_gpgme_remove_io_cb): Take ctx from tag. Don't use FDT lock.
(_gpgme_wait_one, _gpgme_wait_on_condition): Move to
wait-private.c.
(gpgme_fd_table_init): Don't initialize FDT->lock.
(gpgme_fd_table_deinit): Don't destroy FDT->lock.
(_gpgme_fd_table_put): Make static and rename to
...
(fd_table_put): ... this function. Don't use FDT->lock.
(struct wait_item_s): Move to wait.h.
* wait-global.c: New file.
* wait-private.c: New file.
* wait-user.c: New file.

* key.c (gpgme_key_sig_get_string_attr): Use validity_to_string
instead otrust_to_string to calculate validity.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h (EngineObject): Move typedef to ...
* engine.h: ... here.
* types.h (GpgObject): Move typedef to ...
* rungpg.c: ... here.
* types.h (GpgsmObject): Move typedef to ...
* engine-gpgsm.c: ... here.

* util.h (return_if_fail, return_null_if_fail,
return_val_if_fail): Remove macro.
* gpgme.c (gpgme_cancel): Don't use return_if_fail.
* key.c (gpgme_key_ref): Likewise.
* signers.c (gpgme_signers_enum): Likewise.
(gpgme_signers_clear): Likewise.

* engine-backend.h (struct engine_ops): Rename get_path to
get_file_name.
* gpgme.h (struct _gpgme_engine_info): Rename member path to
file_name.
* version.c: Do not include <stdio.h>,
<stdlib.h>, context.h and
util.h. Other clean ups.
(parse_version_number): Protect more seriously against

overflow.
(gpgme_get_engine_info): Move to ...
* engine.c (gpgme_get_engine_info): ... here.
(_gpgme_engine_get_info): Function removed.
(_gpgme_engine_get_path): Make static and rename to ...
(engine_get_file_name): .. this.
(_gpgme_engine_get_version): Make static and rename to ...
(engine_get_version): ... this.
(_gpgme_engine_get_req_version): Make static and rename to ...
(engine_get_req_version): ... this.
* engine.h (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_req_version, _gpgme_engine_get_info.): Remove
prototypes.

* gpgme.h (enum GpgmeProtocol): Remove GPGME_PROTOCOL_AUTO.
* gpgme.c (gpgme_set_protocol): Don't handle GPGME_PROTOCOL_AUTO.
(gpgme_get_protocol_name): New function.

* engine-backend.h (struct engine_ops): New member
get_req_version, remove member check_version.
* engine.h (_gpgme_Engine_get_version): New prototype.
*
rungpg.c (gpg_get_req_version): New function.
(gpg_check_version): Function removed.
(_gpgme_engine_ops_gpg): Add gpg_get_req_version, remove
gpg_check_version.
* engine-gpgsm.c (gpgsm_get_req_version): New function.
(gpgsm_check_version): Function removed.
(_gpgme_engine_ops_gpgsm): Add gpgsm_get_req_version, remove
gpgsm_check_version.
* engine.c: Include ops.h.
(_gpgme_engine_get_req_version): New function.
(gpgme_engine_check_version): Rewritten.
* version.c (gpgme_get_engine_info): Rewritten.
* gpgme.h (gpgme_engine_info): New structure.
(GpgmeEngineInfo): New type.

2003-01-06 Werner Koch <wk@gnupg.org>

* keylist.c (set_mainkey_capability): Handle 'd' and 'D' used
since gpg 1.3 to denote disabled keys.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c: Include <string.h>.
* engine.c: Likewise.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_DEPENDENCIES): Correct bug in last change.

2002-12-24 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_verify, gpgme_op_decrypt_verify): Drop R_STAT
argument.
* decrypt-verify.c (gpgme_op_decrypt_verify): Drop R_STAT
argument.
* verify.c (gpgme_op_verify): Drop R_STAT argument.
(_gpgme_intersect_stati): Function removed.
* ops.h (_gpgme_intersect_stati): Remove prototype.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: New file.
* Makefile.am (EXTRA_DIST): Add libgpgme.vers.
(libgpgme_version_script_cmd): New variable.
(libgpgme_la_LDFLAGS): Add libgpgme_version_script_cmd here.
(libgpgme_la_DEPENDENCIES): New variable.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (gpgme_key_get_string_attr): Don't accept GPGME_ATTR_IS_SECRET.
(otrust_to_string): New function.
(gpgme_key_get_as_xml): Use it.
(validity_to_string): New function.
(gpgme_key_get_string_attr): Beautify using above functions.
(gpgme_key_get_ulong_attr): Likewise.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c
(mem_release): Fix gcc warning.
* data-user.c (user_release): Likewise.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* data.h (gpgme_data_release_cb): Change return type to void.
(gpgme_data_read_cb): Change return type to ssize_t.
* data.c (gpgme_data_read): Likewise.
* data-stream.c (stream_read): Likewise.
* data-fd.c (fd_read): Likewise.
* data-mem.c (mem_read): Likewise.
(mem_release): Change return type to void.
* data-user.c (user_read): Change return type to ssize_t.
(user_release): Change return type to void.

* data-compat.c (old_user_read): Change return type to ssize_t.
* gpgme.h (GpgmeDataReadCb): Likewise.
(gpgme_data_read): Likewise.
(GpgmeDataSeekCb): Change return type to off_t.

2002-12-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_get_key.
* key.c (gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Rewrite using gpgme_get_key.

* gpgme.h: Add prototypes for new interfaces
gpgme_key_sig_get_string_attr
and gpgme_key_get_ulong_attr.
(enum GpgmeAttr): New attribute GPGME_ATTR_SIG_CLASS.
* gpgme.c (gpgme_set_keylist_mode): Allow GPGME_KEYLIST_MODE_SIGS.
* key.h (struct certsig_s): New members ALGO, NAME_PART,
EMAIL_PART, COMMENT_PART, NAME, SIG_STAT and SIG_CLASS.

* conversion.c (_gpgme_decode_c_string): Add new parameter LEN.
Use that to determine if allocation is desired or not.
* util.h: Adjust prototype of _gpgme_decode_c_string.
* keylist.c (keylist_colon_handler): Adjust caller of
_gpgme_decode_c_string.

* key.h (struct gpgme_key_s): New member last_uid.
* key.c (_gpgme_key_append_name): Rewritten using
_gpgme_decode_c_string and the last_uid pointer.
(my_isdigit): Macro removed.
(ALLOC_CHUNK): Likewise.
* keylist.c (set_userid_flags): Use last_uid member of KEY.

* context.h (struct user_id_s): New member last_certsig.
* key.h: Add prototype for _gpgme_key_add_certsig.
* key.c (_gpgme_key_add_certsig): New function.
(set_user_id_part): Move function
before _gpgme_key_add_certsig.
(parse_user_id): Change first argument to SRC, add new arguments
NAME, EMAIL and COMMENT. Change code to use these arguments
instead going through UID. Move function before
_gpgme_add_certsig.
(parse_x509_user_id): Likewise.
(_gpgme_key_append_name): Adjust arguments to parse_x509_user_id
and parse_user_id invocation.
(one_certsig_as_xml): New function.
(one_uid_as_xml): Print signatures.
* context.h (struct gpgme_context_s): New member TMP_UID.
* keylist.c (keylist_colon_handler): Rewritten, implement "sig"

record entries.

* key.c (get_certsig): New function.
(gpgme_key_sig_get_string_attr): Likewise.
(gpgme_key_sig_get_ulong_attr): Likewise.

* keylist.c: Include <ctype.h>.
(my_isdigit): Macro removed.
(set_mainkey_trust_info): Use isdigit, not my_isdigit.
(set_userid_flags): Likewise.
(set_subkey_trust_info): Likewise.
(set_ownertrust): Likewise.
(finish_key): Move function up a bit and remove prototype.

* rungpg.c (gpg_keylist_ext):
Correct precedence of signature
listing mode.
(gpg_keylist_ext): Implement signature listing mode.

2002-11-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not set parent fds to -1.
* posix-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead close
for parent fds.
* w32-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead
CloseHandle for parent fds.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h [_MSC_VER]: Define ssize_t as long.

2002-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Save the result of a first
setlocale before doing another setlocale.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c: Some beautyfication.

* verify.c (_gpgme_verify_status_handler): Treat
GPGME_STATUS_UNEXPECTED like GPGME_STATUS_NODATA.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* genkey.c: Only include <config.h> if [HAVE_CONFIG_H].
(struct

genkey_result_s): Add new member FPR.
(_gpgme_release_genkey_result): Free RESULT->fpr if set.
(genkey_status_handler): Extract the fingerprint from the status
line.
(gpgme_op_genkey): Add new argument FPR and return the fingerprint
in it.
* gpgme.h: Adjust prototype of gpgme_op_genkey.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist): Add --with-fingerprint to gpg invocation
twice, to get fingerprints on subkeys. Suggested by Timo Schulz
<twoaday@freakmail.de>.
(gpg_keylist_ext): Likewise.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* import.c (append_xml_impinfo): Use
_gpgme_data_append_string_for_xml rather than
_gpgme_data_append_string for the field content.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h, engine-gpgsm.h: File removed.
* engine-backend.h: New file.
* Makefile.am (gpgsm_components): New variable, set depending on
automake conditional HAVE_GPGSM.
(libgpgme_la_SOURCES):
Add engine-backend.h, remove rungpg.h and
engine-gpgsm.h. Replace engine-gpgsm.c with ${gpgsm_components}.
(status-table.h): Depend on gpgme.h, not rungpg.h.
* conversion.c: Include <stdlib.h>.
* engine-gpgsm.c: Do not set ENABLE_GPGSM here. Include
"engine-backend.h" instead "engine-gpgsm.h". Reorder some
functions and remove all function prototypes.
(_gpgme_gpgsm_get_version): Make static and rename to ...
(gpgsm_get_version): ... this.
(_gpgme_gpgsm_check_version): Make static and rename to ...
(gpgsm_check_version): ... this.
(_gpgme_gpgsm_new): Make static. Change argument type from
GpgsmObject * to void **. Call gpgsm_release instead
_gpgme_gpgsm_release.
(_gpgme_gpgsm_op_decrypt): Make static and rename to ...
(gpgsm_check_decrypt): ... this.
(_gpgme_gpgsm_op_delete): Make static and rename to ...
(gpgsm_check_delete): ... this.
(_gpgme_gpgsm_set_recipients): Make static and rename to ...

(gpgsm_check_set_recipients): ... this.
(_gpgme_gpgsm_op_encrypt):
Make static and rename to ...
(gpgsm_encrypt): ... this.
(_gpgme_gpgsm_op_export): Make static and rename to ...
(gpgsm_export): ... this.
(_gpgme_gpgsm_op_genkey): Make static and rename to ...
(gpgsm_genkey): ... this.
(_gpgme_gpgsm_op_import): Make static and rename to ...
(gpgsm_import): ... this.
(_gpgme_gpgsm_op_keylist): Make static and rename to ...
(gpgsm_keylist): ... this.
(_gpgme_gpgsm_op_keylist_ext): Make static and rename to ...
(gpgsm_keylist_ext): ... this.
(_gpgme_gpgsm_op_sign): Make static and rename to ...
(gpgsm_sign): ... this.
(_gpgme_gpgsm_op_trustlist): Make static and rename to ...
(gpgsm_trustlist): ... this.
(_gpgme_gpgsm_op_verify): Make static and rename to ...
(gpgsm_verify): ... this.
(gpgsm_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpgsm_set_status_handler): Make static and rename to ...
(gpgsm_set_status_handler): ... this.
(_gpgme_gpgsm_set_colon_line_handler): Make static
and rename to ...
(gpgsm_set_colon_line_handler): ... this.
(_gpgme_gpgsm_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpgsm_start): Make static and rename to ...
(gpgsm_start): ... this.
(_gpgme_gpgsm_set_io_cb): Make static and rename to ...
(gpgsm_set_io_cb): ... this.
(_gpgme_gpgsm_io_event): Make static and rename to ...
(gpgsm_io_event): ... this.
(struct _gpgme_engine_ops_gpgsm): New variable.
[!ENABLE_GPGSM]: Removed.
* engine.c: Do not include <time.h>, <sys/types.h>, <string.h>,
<assert.h>, "io.h", "rungpg.h" and "engine-gpgsm.h". Include
<stdlib.h> and "engine-backend.h".
(struct engine_object_s): Rewritten.
(engine_ops): New variable.
* engine.c (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_check_version, _gpgme_engine_new,
_gpgme_engine_release, _gpgme_engine_set_verbosity,
_gpgme_engine_set_status_handler,
_gpgme_engine_set_command_handler,
_gpgme_engine_set_colon_line_handler, _gpgme_engine_op_decrypt,

_gpgme_engine_op_delete,
_gpgme_engine_op_edit,
_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export, _gpgme_engine_op_genkey,
_gpgme_engine_op_import, _gpgme_engine_op_keylist,
_gpgme_engine_op_keylist_ext, _gpgme_engine_op_sign,
_gpgme_engine_op_trustlist, _gpgme_engine_op_verify,
_gpgme_engine_start, _gpgme_engine_set_io_cbs,
_gpgme_engine_io_event): Reimplement.
* engine.h: Fix a few comments and a variable name in a prototype.
* ops.h: Do not include "rungpg.h".
* passphrase.c: Include config.h only if [HAVE_CONFIG_H]. Do not
include "rungpg.h".
* recipient.c: Likewise.
* signers.c: Likewise.
* version.c: Likewise.
* rungpg.c: Likewise. Include "engine-backend.h". Reorder
functions and remove prototypes.
(_gpgme_gpg_get_version): Make static and rename to ...
(gpg_get_version): ... this.
(_gpgme_gpg_check_version): Make static and rename to ...
(gpg_check_version): ... this.
(_gpgme_gpg_new): Make static. Change argument type from
GpgObject
* to void **. Call gpg_release instead
_gpgme_gpg_release.
(_gpgme_gpg_op_decrypt): Make static and rename to ...
(gpg_check_decrypt): ... this.
(_gpgme_gpg_op_delete): Make static and rename to ...
(gpg_check_delete): ... this.
(_gpgme_gpg_set_recipients): Make static and rename to ...
(gpg_check_set_recipients): ... this.
(_gpgme_gpg_op_encrypt): Make static and rename to ...
(gpg_encrypt): ... this.
(_gpgme_gpg_op_export): Make static and rename to ...
(gpg_export): ... this.
(_gpgme_gpg_op_genkey): Make static and rename to ...
(gpg_genkey): ... this.
(_gpgme_gpg_op_import): Make static and rename to ...
(gpg_import): ... this.
(_gpgme_gpg_op_keylist): Make static and rename to ...
(gpg_keylist): ... this.
(_gpgme_gpg_op_keylist_ext): Make static and rename to ...
(gpg_keylist_ext): ... this.
(_gpgme_gpg_op_sign): Make static and rename to ...
(gpg_sign): ... this.
(_gpgme_gpg_op_trustlist): Make static and rename to ...
(gpg_trustlist): ... this.

(_gpgme_gpg_op_verify):
Make static and rename to ...
(gpg_verify): ... this.
(gpg_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpg_set_status_handler): Make static and rename to ...
(gpg_set_status_handler): ... this.
(_gpgme_gpg_set_colon_line_handler): Make static and rename to ...
(gpg_set_colon_line_handler): ... this.
(gpgme_gpg_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpg_start): Make static and rename to ...
(gpg_start): ... this.
(_gpgme_gpg_set_io_cb): Make static and rename to ...
(gpg_set_io_cb): ... this.
(_gpgme_gpg_io_event): Make static and rename to ...
(gpg_io_event): ... this.
(struct _gpgme_engine_ops_gpg): New variable.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify) [!ENABLE_GPGSM]: Add
missing argument.

2002-10-09 Marcus Brinkmann <marcus@g10code.de>

* data.h, data-user.c, data-stream.c, data-mem.c, data-fd.c,
data-compat.c: New file. Really check them in this time,
completes
2002-10-08 change.

* rungpg.h (GpgStatusHandler): Rename type to GpgmeStatusHandler
and move to ...
* types.h (GpgmeStatusHandler): ... here.
* rungpg.h (GpgColonLineHandler): Rename type to GpgmeColonLineHandler.
and move to ...
* types.h (GpgmeColonLineHandler): ... here.
* rungpg.h (GpgCommandHandler): Rename type to GpgmeCommandHandler.
and move to ...
* types.h (GpgmeCommandHandler): ... here.
* engine.h: Don't include "rungpg.h".
(_gpgme_engine_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* engine-gpgsm.h: Don't include "rungpg.h".

(_gpgme_gpgsm_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_colon_line_handler): Change type
of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
* engine-gpgsm.c: Do not include "rungpg.h".
(struct gpgsm_object_s): Change type of
status.fnc to GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler.
(gpgsm_assuan_simple_command): Change type of argument from
GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_status_handler): Likewise.
(_gpgme_gpgsm_set_colon_line_handler): Change type of argument from
GpgColonLineHandler to GpgmeColonLineHandler.
* rungpg.h (_gpgme_gpg_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* rungpg.c (struct gpg_object_s): Change type of status.fnc to
GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler. Change type of cmd.fnc
to
GpgmeCommandLineHandler.
(_gpgme_gpg_set_status_handler): Change type of argument FNC to
GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.
* engine.c (_gpgme_engine_set_status_handler): Change type of
argument FNC to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.

* rungpg.h (_gpgme_gpg_enable_pipemode): Remove prototype.
* rungpg.c (struct gpg_object_s): Remove PM.
(pipemode_cb): Prototype removed.
(add_pm_data): Function removed.
(_gpgme_gpg_enable_pipemode): Likewise.
(pipemode_copy): Likewise.
(pipemode_cb): Likewise.
(add_arg): Don't check for pipemode.
(add_data): Likewise.
(_gpgme_gpg_set_status_handler): Likewise.

(_gpgme_gpg_set_colon_line_handler):
Likewise.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_spawn): Likewise.
(_gpgme_gpg_spawn): Don't set PM.active.
(_gpgme_gpg_op_verify): Remove pipemode case.
* verify.c (_gpgme_op_verify_start): Remove pipemode case.

* rungpg.h (_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_add_pm_data, _gpgme_gpg_housecleaning,
_gpgme_gpg_set_simple_line_handler): Prototype removed.
(_gpgme_gpg_set_verbosity): New prototype.
* rungpg.c (_gpgme_gpg_add_data): Make static and rename to ...
(add_data): ... this.
(_gpgme_gpg_add_pm_data): Call add_data, not _gpgme_gpg_add_data.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,
_gpgme_gpg_op_verify): Likewise.
(_gpgme_gpg_add_pm_data): Rename to ...
(add_pm_data): ... this.
(_gpgme_gpg_op_verify): Call add_pm_data, not
_gpgme_gpg_add_pm_data.
(_gpgme_gpg_add_arg):
Make static and rename to ...
(add_arg): ... this.
(_gpgme_gpg_set_command_handler, _gpgme_gpg_new,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_delete,
_gpgme_append_gpg_args_from_signers, _gpgme_gpg_op_edit,
_gpgme_append_gpg_args_from_recipients, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_keylist,
_gpgme_gpg_op_keylist_ext, _gpgme_gpg_op_trustlist,
_gpgme_gpg_op_sign, _gpgme_gpg_op_verify): Use add_arg, not
_gpgme_gpg_add_arg.
(_gpgme_gpg_set_verbosity): New function.
(struct gpg_object_s): Remove member simple from colon.
(_gpgme_gpg_set_colon_line_handler): Don't initialize simple.
(_gpgme_gpg_set_simple_line_handler): Removed function.
(read_colon_line): Don't check the GPG->colon.simple.
* engine.c (_gpgme_engine_set_verbosity): Call
_gpgme_gpg_set_verbosity instead _gpgme_gpg_add_arg.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_malloc,

_gpgme_realloc, _gpgme_calloc,
_gpgme_strdup, _gpgme_free): Remove prototypes.
(xtrymalloc, xtrycalloc, xtryrealloc, xtrystrdup, xfree): Remove
macros.
* util.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove util.h.
* conversion.c (_gpgme_decode_c_string): Use malloc instead of
xtrymalloc, realloc instead of xtryrealloc, calloc instead of
xtrycalloc, free instead of xfree.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data.c (_gpgme_data_new, _gpgme_data_release): Likewise.
* data-compat.c (gpgme_data_new_from_filepart): Likewise.
* data-mem.c (mem_write, mem_release, gpgme_data_new_from_mem,
_gpgme_data_get_as_string): Likewise.
* debug.c (debug_init): Likewise.
* decrypt.c (_gpgme_release_decrypt_result): Likewise.
* delete.c (_gpgme_release_delete_result): Likewise.
* edit.c (_gpgme_release_edit_result, _gpgme_op_edit_start):
Likewise.
* encrypt.c (_gpgme_release_encrypt_result): Likewise.
* engine.c (_gpgme_engine_get_info, _gpgme_engine_new,
_gpgme_engine_release):
Likewise.
* engine-gpgsm.c (_gpgme_gpgsm_new, _gpgme_gpgsm_release,
_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,
gpgsm_set_recipients, _gpgme_gpgsm_op_encrypt,
_gpgme_gpgsm_op_export, _gpgme_gpgsm_op_genkey,
_gpgme_gpgsm_op_import, _gpgme_gpgsm_op_keylist,
_gpgme_gpgsm_op_keylist_ext, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_verify, gpgsm_status_handler): Likewise.
* genkey.c (_gpgme_release_genkey_result): Likewise.
* gpgme.c (gpgme_new, gpgme_release): Likewise.
* import.c (_gpgme_release_import_result): Likewise.
* key.c (_gpgme_key_cache_init, _gpgme_key_cache_add, key_new,
add_subkey, gpgme_key_release, _gpgme_key_append_name): Likewise.
* keylist.c (_gpgme_release_keylist_result, keylist_colon_handler,
_gpgme_op_keylist_event_cb, gpgme_op_keylist_next): Likewise.
* ops.h (test_and_allocate_result): Likewise.
* passphrase.c (_gpgme_release_passphrase_result,
_gpgme_passphrase_status_handler,
_gpgme_passphrase_command_handler): Likewise.
*
progress.c (_gpgme_progress_status_handler): Likewise.
* recipient.c (gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name_with_validity): Likewise.
* rungpg.c (_gpgme_gpg_new, _gpgme_gpg_release,
_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_set_colon_line_handler, free_argv, free_fd_data_map,

build_argv, _gpgme_gpg_spawn, read_status, read_colon_line):
Likewise.
* sign.c (_gpgme_release_sign_result): Likewise.
* signers.c (_gpgme_signers_add): Likewise.
* trustlist.c (trust_item_new, trustlist_colon_handler,
_gpgme_op_trustlist_event_cb, gpgme_op_trustlist_next,
gpgme_trustitem_release): Likewise.
* verify.c (_gpgme_release_verify_result, finish_sig): Likewise.
* version.c (gpgme_get_engine_info, _gpgme_get_program_version):
Likewise.
* w32-io.c (create_reader, create_writer, destroy_reader,
destroy_writer, build_commandline, _gpgme_io_spawn): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_destroy): Likewise.
* w32-util.c (read_w32_registry_string):
Likewise.
* wait.c (_gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_wait_event_cb, _gpgme_add_io_cb, _gpgme_remove_io_cb)
* data-compat.c: Include <stdlib.h>.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

New data object component:

* gpgme.h (GpgmeDataReadCb, GpgmeDataWriteCb, GpgmeDataSeekCb,
GpgmeDataReleaseCb): New types.
(struct GpgmeDataCbs): New structure.
(gpgme_data_read): Changed prototype to match that of read() closely.
(gpgme_data_write): Similar for write().
(gpgme_data_seek, gpgme_data_new_from_cbs, gpgme_data_new_from_fd,
gpgme_data_new_from_stream): New prototypes.
(gpgme_data_get_type, gpgme_check_engine): Prototype removed.

* Makefile.am (libgpgme_la_SOURCES): Add data.h, data-fd.c,
data-stream.c, data-mem.c, data-user.c and data-compat.c.
* data.c: Reimplemented from scratch.
* (data-compat.c, data-fd.c, data.h, data-mem.c, data-stream.c,
data-user.c): New file.
* context.h (struct gpgme_data_s): Removed.
* conversion.c:
Include <errno.h> and <sys/types.h>.
(_gpgme_data_append): New function.
* data.c (_gpgme_data_append_string): Move to ...
* conversion.c (_gpgme_data_append_string): ... here.
* data.c (_gpgme_data_append_for_xml): Move to ...
* conversion.c (_gpgme_data_append_for_xml): ... here.
* data.c (_gpgme_data_append_string_for_xml): Move to ...
* conversion.c (_gpgme_data_append_string_for_xml): ... here.
* data.c (_gpgme_data_append_percentstring_for_xml): Move to ...

* conversion.c (_gpgme_data_append_percentstring_for_xml): ... here.

* ops.h (_gpgme_data_get_mode, _gpgme_data_set_mode): Prototype
removed.
* types.h (GpgmeDataMode): Type removed.

* decrypt.c (_gpgme_decrypt_start): Don't check data type or mode.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
*
genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* encrypt.c (gpgme_op_encrypt): Remove hack that returns invalid
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.

* engine.c (_gpgme_engine_op_verify): Add new argument to
differentiate detached from normal signatures.
* engine.h (_gpgme_engine_op_verify): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise. Don't check
mode of data argument.
* engine-gpgsm.h (_gpgme_gpgsm_op_verify): Likewise for prototype.
* gpgme.h (gpgme_op_verify_start): Likewise for prototype.
(gpgme_op_verify): Likewise for prototype.
* rungpg.c (_gpgme_gpg_op_verify): Likewise.
* rungpg.h
(_gpgme_gpg_op_verify): Likewise for prototype.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_op_verify_start): Likewise.
(gpgme_op_verify): Likewise.

* rungpg.c (struct arg_and_data_s): New member INBOUND to hold
direction of data object.
(_gpgme_gpg_add_data): Add new argument INBOUND. Use it to
determine direction of data object.
(_gpgme_gpg_add_pm_data, _gpgme_gpg_set_command_handler,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,

_gpgme_gpg_op_verify): Add new argument to _gpgme_gpg_add_data
invocation.
(build_argv): Use new member INBOUND to determine direction of
file descriptor. Don't check the data type.
* rungpg.h (_gpgme_gpg_add_data): Add new argument to prototype.

* gpgme.c (gpgme_get_op_info): Don't call
_gpgme_data_get_as_string if CTX->op_info is NULL.

* version.c (gpgme_check_engine): Function removed.

2002-09-30
Werner Koch <wk@gnupg.org>

* keylist.c (keylist_colon_handler): Take care when printing a
NULL with the DEBUG.

* engine-gpgsm.c (struct gpgsm_object_s): New member ANY.
(gpgsm_status_handler): Run the colon function to indicate EOF.
(_gpgme_gpgsm_set_colon_line_handler): Better reset ANY here.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_hextobyte): Prevent superfluous
multiplication with base. Reported by Stphane Corthsy.

* keylist.c (gpgme_op_keylist_ext_start): Use private asynchronous
operation type in invocation of _gpgme_op_reset.

2002-09-20 Werner Koch <wk@gnupg.org>

* ath.c: Include sys/time.h if sys/select.h is not available.

2002-09-13 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_status_handler): Do not call finish_key() here.
(gpgme_op_keylist_ext_start): Set CTX->tmp_key to NULL.

2002-09-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Remove @LTLIBOBJS@ as we link
them
into gpgme unconditionally.
(libgpgme_la_LIBADD): Change @LIBOBJS@ into @LTLIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Use @LTLIBOBJS@ instead @LIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* debug.c (_gpgme_debug_add): Test *LINE, not LINE.
(_gpgme_debug_end): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_select): Don't use a non-constant struct
initializer.
* version.c (_gpgme_get_program_version): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_decode_c_string): Set DESTP before
modifying DEST.

* conversion.c (_gpgme_decode_c_string): Fix off by one error in
last change.
* rungpg.c (_gpgme_append_gpg_args_from_signers): Move before
_gpgme_op_edit so its prototype is known early on.

* conversion.c: New
file.
* util.h: Add prototypes for _gpgme_decode_c_string and
_gpgme_hextobyte.
* keylist.c (keylist_colon_handler): Call _gpgme_decode_c_string
on issuer name.
* Makefile.am (libgpgme_la_SOURCES): Add conversion.c
* key.c (_gpgme_key_append_name): Replace calls to hextobyte by
calls to _gpgme_hextobyte.
(hash_key): Likewise.

2002-09-01 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset): Set CTX->pending after calling
_gpgme_engine_release, as this will reset pending to zero in the
event done callback on cancelled operations.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Add args from signers.
Suggested by Miguel Coca <e970095@zipi.fi.upm.es>.

* rungpg.c (_gpgme_gpg_op_edit): Add bogus ctx argument.
* rungpg.h: Also to prototype.

* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.

2002-08-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign):
Implement signer
selection.
* vasprintf.c (va_copy): Define macro if not yet defined.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Reset
CTX->result.passphrase->no_passphrase if passphrase is given (good
or bad). Submitted by Jean DIRAISON <jean.diraison@free.fr>.

2002-08-28 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_spawn): Use a double-fork approach.
Return 0 on success, -1 on error.
* version.c (_gpgme_get_program_version): Don't wait for the child.
* engine.c (_gpgme_engine_housecleaning): Function removed.
(do_reaping): Likewise.
(_gpgme_engine_add_child_to_reap_list): Likewise.
(struct reap_s): Removed.
(reap_list): Likewise.
(reap_list_lock): Likewise.
* engine.h (_gpgme_engine_io_event): Remove prototypes for
_gpgme_engine_housecleaning and
_gpgme_engine_add_child_to_reap_list.
* rungpg.c (_gpgme_gpg_release): Don't add child to reap list.
(struct gpg_object_s): Remove
PID member.
(_gpgme_gpg_new): Don't initialize GPG->pid.
(_gpgme_gpg_spawn): Don't set GPG->pid.
* wait.c (run_idle): Removed.
(gpgme_wait): Run idle_function directly.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c (encrypt_sign_status_handler): Remove dead
variables encrypt_info and encrypt_info_len.
* trustlist.c (gpgme_op_trustlist_start): Set colon line handler.
* posix-sema.c (sema_fatal): Remove function.
All these reported by Stphane Corthsy.

2002-08-23 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Made --prefix work for --libs.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Update list of symbols that get a prefix: Rename the
ath_mutex_*_available symbols to ath_*_available.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* stpcpy.c: New file from gnulib.
* Makefile.am (assuan_libobjs): Remove jnlib.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_op_import_ext.
* import.c
(struct import_result_s): New member `nr_considered'.
Rename `any_imported' to `nr_imported'.
(import_status_handler): Increment nr_imported. Set nr_considered
if appropriate.
(gpgme_op_import_ext): New function.
(gpgme_op_import): Implement in terms of gpgme_op_import_ext.

2002-08-20 Werner Koch <wk@gnupg.org>

* gpgme.m4: Replaced with a new and faster version. This does not
anymore try to build test programs. If we really need test
programs, we should add an option to gpgme-config to do so.

* vasprintf.c (int_vasprintf): Hack to handle NULL passed for %s.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_set_op_info): Append data on subsequent calls.
* encrypt-sign.c (encrypt_sign_status_handler): Remove op_info
handling.

2002-08-19 Werner Koch <wk@gnupg.org>

* decrypt.c (is_token,skip_token): Duplicated from verify.c
(gpgme_op_decrypt): Hack to properly return Decryption_Failed..
(_gpgme_decrypt_status_handler): Create an operation info.

2002-08-14
 Werner Koch <wk@gnupg.org>

* key.h (struct certsig_s): New. Use it in gpgme_key_s.

* key.c (gpgme_key_release): Release it. We need to add more code
of course.
(_gpgme_key_append_name): Use memset to initialize the struct.
* gpgme.h (GPGME_KEYLIST_MODE_SIGS): New.
* rungpg.c (_gpgme_gpg_op_keylist): Include sigs in listing depending
non the list mode.

* key.c (gpgme_key_get_string_attr): Use GPGME_ATTR_TYPE to return
information about the key type (PGP or X.509).
(gpgme_key_get_ulong_attr): Likewise.

* keylist.c (keylist_colon_handler): Include 1 in the check for
valid algorithms so that RSA is usable. Store the issuer name and
serial number also for "crs" records. Parse the expire date for
subkeys.
(set_userid_flags): Put them onto the last appended key.

2002-07-29 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Use --with-colons.

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read): For GPGME_DATA_TYPE_NONE,
return EOF
instead an error.

The following changes make it possible to flush an inbound data
pipe before invoking a command handler:

* posix-io.c (_gpgme_io_select): Accept new argument NONBLOCK to
_gpgme_io_select. Set timeout of 0 if this is set.
* w32-io.c (_gpgme_io_select): Likewise.
* io.h: Add new argument NONBLOCK to _gpgme_io_select prototype.
* wait.c (do_select): Add new argument to _gpgme_io_select
invocation.
* rungpg.h (_gpgme_gpg_set_command_handler): Add new argument
linked_data to prototype.
* engine.h (_gpgme_engine_set_command_handler): Likewise.
* engine.c (_gpgme_engine_set_command_handler): Likewise.
* passphrase.c (_gpgme_passphrase_start): Pass NULL as linked_data
argument to _gpgme_engine_set_command_handler.
* rungpg.c (struct gpg_object_s): New members linked_data and
linked_idx in CMD.
(_gpgme_gpg_new): Initialize those new members.
(_gpgme_gpg_set_command_handler): Accept new argument linked_data.
(build_argv): Handle linked_data

in the same hack as cb_data.
(read_status): If linked_data is in use, flush the pipe before
activating the command handler.
* gpgme.h: Add prototypes for gpgme_op_edit_start and
gpgme_op_edit.

The next changes export the status codes to the user:

* decrypt.c (_gpgme_decrypt_status_handler): Likewise, also prefix
all STATUS_ with GPGME_.
* delete.c (delete_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler): Likewise.
* encrypt.c (_gpgme_encrypt_status_handler): Likewise.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (parse_status): Likewise.
(gpgsm_status_handler): Likewise.
(gpgsm_set_recipients): Likewise.
* export.c (export_status_handler): Likewise.
* genkey.c (genkey_status_handler): Likewise.
* import.c (append_xml_impinfo): Likewise.
(import_status_handler): Likewise.
* keylist.c (keylist_status_handler): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler):
Likewise.
(command_handler): Likewise.
* progress.c (_gpgme_progress_status_handler): Likewise.
* sign.c (_gpgme_sign_status_handler): Likewise.
* trustlist.c (trustlist_status_handler): Likewise.
* verify.c (_gpgme_verify_status_handler): Likewise.
* gpgme.h (GpgmeEditCb): New type.
* rungpg.h (GpgStatusCode): Rename and move to ...
* gpgme.h (GpgmeStatusCode): ... this and here.
* Makefile.am (status-table.h): Run mkstatus on gpgme.h, not rungpg.h.
* mkstatus: Prefix STATUS with GPGME_.
* rungpg.h (GpgStatusHandler, GpgCommandHandler): Change type
accordingly.
* ops.h (_gpgme_verify_status_handler,
_gpgme_decrypt_status_handler, _gpgme_sign_status_handler,
_gpgme_encrypt_status_handler, _gpgme_passphrase_status_handler,
_gpgme_progress_status_handler): Likewise.
* rungpg.c (struct gpg_object_s): Likewise for CMD.code.

These changes add an edit operation to GPGME:

* context.h (struct gpgme_context_s): New member RESULT.edit. *
ops.h: Add prototype

for _gpgme_release_edit_result and
_gpgme_passphrase_command_handler.
* passphrase.c (command_handler): Make non-static and rename to ...
(_gpgme_passphrase_command_handler): ... this.
(_gpgme_passphrase_start): Use new name for command handler.
* types.h: Add EditResult type.
* gpgme.c (_gpgme_release_result): Release EDIT result.
* edit.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add edit.c.
(libgpgme_la_LDADD): Rename to libgpgme_la_LIBADD, and include
assuan_libobjs.
(assuan_libobjs): New variable, set this instead
libgpgme_la_LIBADD.
* engine.h (_gpgme_engine_op_edit): New prototype.
* engine.c (_gpgme_engine_op_edit): New function.
* rungpg.h (_gpgme_gpg_op_edit): New prototype.
* rungpg.c (_gpgme_gpg_op_edit): New function.

2002-07-27 Marcus Brinkmann <marcus@g10code.de>

* delete.c (delete_problem): New case ambiguous specification.
(delete_status_handler): Handle new case (poorly).

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c
(_gpgme_gpgsm_op_delete): Implement this.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_LDADD): Add @LIBOBJS@ for vasprintf and
fopencookie.
* vasprintf.c: Update to more recent libiberty version.
* debug.h: Replace #elsif with #elif.

Submitted by Stphane Corthsy:
* util.h (vasprintf): Correct prototype.
* encrypt-sign.c: Include <stddef.h>.
(encrypt_sign_status_handler): Change type of ENCRYPT_INFO_LEN to
size_t.
* ath-pthread.c: Include <stdlib.h>, not <malloc.h>.
* ath-pth.c: Likewise.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* wait.c (fdt_global): Make static. Reported by Stphane
Corthsy.

* rungpg.c (_gpgme_gpg_op_keylist_ext): Skip empty string
patterns. Reported by Stphane Corthsy.

* key.c (gpgme_key_get_as_xml): Add OTRUST attribute. Requested
by Stphane Corthsy.
(gpgme_key_get_string_attr): Add GPGME_ATTR_SIG_SUMMARY case to
silence gcc warning.

* rungpg.c (_gpgme_gpg_new): Always set utf8 as charset.

2002-07-03
 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_io_cbs): Deal with CTX being NULL.

* gpgme.c (_gpgme_op_event_cb_user): New function.
* op-support.c (_gpgme_op_reset): Support a new mode of operation
for private or user event loop. Use new user event callback
wrapper.
* trustlist.c (gpgme_op_trustlist_start): Use this new mode.
* keylist.c (gpgme_op_keylist_start): Likewise.

* rungpg.c (_gpgme_gpg_io_event): New function.
* rungpg.h (_gpgme_gpg_io_event): New prototype.
* engine-gpgsm.c (_gpgme_gpg_io_event): New function.
* engine-gpgsm.h (_gpgme_gpgsm_io_event): New prototype.
* engine.c (_gpgme_engine_io_event): New function.
* engine.h (_gpgme_engine_io_event): New prototype.
* keylist.c (finish_key): Call _gpgme_engine_io_event, and move
the real work for the default IO callback routines to ...
(_gpgme_op_keylist_event_cb): ... here. New function.
* trustlist.c (trustlist_colon_handler): Signal
GPGME_EVENT_NEXT_TRUSTITEM. Move queue
manipulation to ...
(_gpgme_op_trustlist_event_cb): ... here. New function.
* gpgme.c (_gpgme_op_event_cb): Call _gpgme_op_keylist_event_cb
and _gpgme_op_trustlist_event_cb when appropriate.
* ops.h (_gpgme_op_keylist_event_cb): New prototype.
(_gpgme_op_trustlist_event_cb): Likewise.
* op-support.c (_gpgme_op_reset): Add comment why we don't use the
user provided event handler directly.
* gpgme.h (GpgmeRegisterIOCb): Return GpgmeError value, and TAG in
a pointer argument.
* wait.c (_gpgme_add_io_cb): Likewise.
* wait.h (_gpgme_add_io_cb): Likewise for prototype.
* rungpg.c (_gpgme_gpg_add_io_cb): Call IO_CBS->add with new
argument. Fix up error handling.
* engine-gpgsm.c (_gpgme_gpgsm_add_io_cb): Call IO_CBS->add with

new argument, fix up error handling.

2002-07-03 Werner Koch <wk@gnupg.org>

* encrypt.c (status_handler_finish): New.
(_gpgme_encrypt_status_handler): Moved some code out to the new
function and call this function also in case we get into the
status
handler with an error which might happen due to a kludge in
engine-gpgsm.c

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg use synchronous mode).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Fix documentation of key attribute retrieval functions.

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* ops.h (_gpgme_wait_on_condition): Remove HANG argument from
prototype and change return type to GpgmeError.
(_gpgme_wait_one): New prototype.
* wait.c (gpgme_wait): Replace with the meat from
_gpgme_wait_on_condition here, and remove the support for
conditions.
(_gpgme_wait_on_condition): Remove HANG argument from prototype
and change return type to GpgmeError. Replace with meat from
_gpgme_wait_one and add support for conditions.
(_gpgme_wait_one): Just call _gpgme_wait_on_condition without
condition.
* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg
use synchronous mode).
(gpgme_op_keylist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.
* trustlist.c (gpgme_op_trustlist_start): Always use our own FD
table (eg use synchronous mode).
(gpgme_op_trustlist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.

2002-06-26 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (map_assuan_error): Map No_Data_Available to EOF.

* import.c (append_xml_impinfo): Kludge to print fingerprint

instead of keyid for use with gpgsm.
(import_status_handler): Set a flag to know whether any import
occurred.
(gpgme_op_import): Return -1 if no certificate ewas imported.

2002-06-25 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_io_cbs) [ENABLE_GPGSM]: Fixed
function arguments.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Only export the keys
listed in RECP.
* export.c (gpgme_op_export): If no data was returned,
return
GPGME_No_Recipients.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Implement.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return ERR.
(parse_status): New function.
(gpgsm_status_handler): Use parse_status.
(gpgsm_assuan_simple_command): Accept new arguments STATUS_FNC and
STATUS_FNC_VALUE and process status messages.
(gpgsm_set_recipients): Pass new arguments to gpgsm_assuan_simple_command.
(gpgsm_set_fd): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_remove_io_cb): Unlock FDT->lock.

2002-06-20 Werner Koch <wk@gnupg.org>

* rungpg.c (build_argv): Ignore GPG_AGENT_INFO if set but empty.

* verify.c (calc_sig_summary): Set bad policy for wrong key usage.
(skip_token): New.
(_gpgme_verify_status_handler): Watch out
for wrong key usage.
(gpgme_get_sig_string_attr): Hack to return info on the key

usage. Does now make use of the former RESERVED argument which
has been renamed to WHATIDX.
(gpgme_get_sig_ulong_attr): Renamed RESERVED to WHATIDX.

2002-06-14 Marcus Brinkmann <marcus@g10code.de>

* wait.c (do_select): Return -1 on error, and 0 if nothing to run.
(_gpgme_wait_one): Only set HANG to zero if do_select returned an
error, or there are no more file descriptors to wait on.
(_gpgme_wait_on_condition): Ignore return value from do_select for
now.

2002-06-13 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify): Make sure that we never access an
uninitialized result structure.

2002-06-12 Werner Koch <wk@gnupg.org>

* keylist.c (struct keylist_result_s): New.
(_gpgme_release_keylist_result): Release it here
(keylist_status_handler): Handle truncated.
(append_xml_keylistinfo): New.
* gpgme.c (_gpgme_release_result): and use it here.
* types.h: Declare the new type here.
*
context.h (struct gpgme_context_s): Use it here.

2002-06-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Close status_cb.fd.
(_gpgme_gpgsm_new): Duplicate status file descriptor, so we can
use our own close notification mechanism without interfering with
assuan.

2002-06-11 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_SIG_SUMMARY and the GPGME_SIGSUM_
constants.
* verify.c (calc_sig_summary): New.
(gpgme_get_sig_ulong_attr): And use it here.

2002-06-10 Werner Koch <wk@gnupg.org>

* rungpg.h: Add new status codes TRUNCATED and ERROR.
* verify.c (is_token, copy_token): New.
(_gpgme_verify_status_handler): Use copy_token, handle the new
ERROR status and store the errorcode used withgpgsm and trust

status codes.
* gpgme.h: New attribute ERRTOK.
* key.c (gpgme_key_get_string_attr): Add dummy case for it.
(gpgme_get_sig_string_attr): Use it here to return the last error.

2002-06-10 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c (_gpgme_gpgsm_start): Move the code that sets the
close notification for the status fd to ...
(_gpgme_gpgsm_new): ... here.
* wait.h: Include "sema.h". Remove prototypes of
_gpgme_remove_proc_from_wait_queue and
_gpgme_register_pipe_handler. Add prototypes of
_gpgme_fd_table_init, _gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_add_io_cb, _gpgme_remove_io_cb, _gpgme_wait_event_cb and
_gpgme_wait_one..
* wait.c: Remove global variables PROC_QUEUE, PROC_QUEUE_LOCK,
FD_TABLE_SIZE, FD_TABLE, FD_TABLE_LOCK. New global variables
FDT_GLOBAL, CTX_DONE_LIST, CTX_DONE_LIST_SIZE,
CTX_DONE_LIST_LENGTH and CTX_DONE_LIST_LOCK. Remove struct
proc_s. Replace struct wait_item_s.
(_gpgme_fd_table_init): New function.
(_gpgme_fd_table_deinit): Likewise.
(_gpgme_fd_table_put): Likewise.
(set_process_done): Remove function.
(do_select): Take argument FDT. Use that to decide which fds to
select on.
(_gpgme_remove_proc_from_wait_queue): Remove function.
(_gpgme_wait_event_cb):
New function.
(_gpgme_wait_one): Likewise.
(_gpgme_register_pipe_hanldler): Remove function.
(_gpgme_add_io_cb): New function.
(_gpgme_remove_io_cb): Likewise.
(_gpgme_freeze_fd): Remove function.
(_gpgme_thaw_fd): Remove function.
* rungpg.c (struct fd_data_map_s): Add new member TAG.
(struct gpg_object_s): Likewise for STATUS and COLON. Add member
IDX to CMD. Add new member IO_CBS.
(close_notify_handler): New variables POSSIBLY_DONE and NOT_DONE.
For each I/O callback, check if it should be unregistered. If all
callbacks have been unregistered, trigger GPGME_EVENT_DONE.
Remove member RUNNING.
(_gpgme_gpg_new): Initialize new members.
(_gpgme_gpg_release): Check PID not RUNNING. Don't call
_gpgme_remove_proc_from_wait_queue. Close GPG->CMD.FD if set.
(build_argv): Store away the index instead the file descriptor for

CMD.
(_gpgme_gpg_add_io_cb): New function.
(_gpgme_gpg_spawn): Use _gpgme_gpg_add_io_cb to register IO
callbacks.
(gpg_status_handler):
Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(read_status): Use _gpgme_gpg_add_io_cb instead _gpgme_thaw_fd.
Use IO_CBS->remove instead _gpgme_freeze_fd.
(gpg_colon_line_handler): Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(command_cb): Use IO_CBS->remove instead _gpgme_freeze_fd.
(_gpgme_gpg_set_io_cbs): New function.
* rungpg.h (_gpgme_gpg_set_io_cbs): Prototype for
_gpgme_gpg_set_io_cbs.
* gpgme.h (GpgmeIOCb): New type.
(GpgmeRegisterIOCb): Likewise.
(GpgmeRemoveIOCb): Likewise.
(GpgmeEventIO): Likewise.
(GpgmeEventIOCb): Likewise.
(struct GpgmeIOCbs): New structure to hold I/O callbacks.
(gpgme_set_op_io_cbs): New prototype.
(gpgme_get_op_io_cbs): Likewise.
* ops.h: New prototype for _gpgme_op_event_cb. Remove prototypes
for _gpgme_freeze_fd and _gpgme_thaw_fd. Remove PID argument from
_gpgme_data_inbound_handler and _gpgme_data_outbound_handler
prototype.
Add prototype for _gpgme_op_reset.
Add synchronous argument to _gpgme_decrypt_start prototype.
* io.h: Beautification.
* gpgme.c: Include "wait.h".
(gpgme_new): Initialize FDT.
(gpgme_set_io_cbs): New function.
(gpgme_get_io_cbs): Likewise.
(_gpgme_op_event_cb): Likewise.
* data.c (_gpgme_data_inbound_handler): Change return type to
void. Drop PID argument. Close FD on error and EOF.
(write_mem_data): Don't close FD here ...
(write_cb_data): ... or here ...
(_gpgme_data_outbound_handler): ... but here. Change return type
to void. Drop PID argument.
* context.h: Include "wait.h".
(struct gpgme_context_s): New members FDT and IO_CBS.
* op-support.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add op-support.c.
* ops.h: Add prototype for _gpgme_op_reset().
* decrypt.c (_gpgme_decrypt_start): New argument SYNCHRONOUS. Use
_gpgme_op_reset.

(gpgme_op_decrypt_start): Add synchronous argument.
(gpgme_op_decrypt): Likewise. Use _gpgme_wait_one instead
gpgme_wait.
*
delete.c (gpgme_op_delete_start): Rename to ...
(_gpgme_op_delete_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_delete_start): Just a wrapper around
_gpgme_op_delete_start now.
(gpgme_op_delete): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt.c: Include "wait.h".
(ggpgme_op_encrypt_start): Rename to ...
(_gpgme_op_encrypt_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_start): Just a wrapper around
_gpgme_op_encrypt_start now.
(gpgme_op_encrypt): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt_sign.c (gpgme_op_encrypt_sign_start): Rename to ...
(_gpgme_op_encrypt_sign_start): ... this. New argument
SYNCHRONOUS. Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_sign_start): Just a wrapper around
_gpgme_op_encrypt_sign_start now.
(gpgme_op_encrypt_sign): Add synchronous argument.
Use
_gpgme_wait_one instead gpgme_wait.
* export.c (gpgme_op_export_start): Rename to ...
(_gpgme_op_export_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_export_start): Just a wrapper around
_gpgme_op_export_start now.
(gpgme_op_export): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* genkey.c (gpgme_op_genkey_start): Rename to ...
(_gpgme_op_genkey_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_genkey_start): Just a wrapper around
_gpgme_op_genkey_start now.
(gpgme_op_genkey): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* import.c (gpgme_op_import_start): Rename to ...
(_gpgme_op_import_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_import_start): Just a wrapper around
_gpgme_op_import_start now.
(gpgme_op_import): Add synchronous argument. Use _gpgme_wait_one
instead

gpgme_wait.
* keylist.c (gpgme_op_keylist_start): Use _gpgme_op_reset.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (gpgme_op_sign_start): Rename to ...
(_gpgme_op_sign_start): ... this. New argument SYNCHRONOUS. Use
_gpgme_op_reset. Make function static.
(gpgme_op_sign_start): Just a wrapper around _gpgme_op_sign_start
now.
(gpgme_op_sign): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* trustlist.c (gpgme_op_trustlist_start): Use _gpgme_op_reset.
* verify.c (gpgme_op_verify_start): Rename to ...
(_gpgme_op_verify_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_verify_start): Just a wrapper around
_gpgme_op_verify_start now.
(gpgme_op_verify): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* engine-gpgsm.c (iocb_data_t): New type.
(struct gpgsm_object_s): New member status_cb. Replace input_fd
and input_data with input_cb. Replace output_fd and output_data
with
output_cb. Replace message_fd and message_data with
message_cb. New member io_cbs.
(_gpgme_gpgsm_new): Initialize all new members (and drop the old
ones).
(close_notify_handler): New variable POSSIBLY_DONE. For each I/O
callback, check if it should be unregistered. If all callbacks
have been unregistered, trigger GPGME_EVENT_DONE.
(_gpgme_gpgsm_release): Remove variable PID. Use new variable
names to close the file descriptors.
(_gpgme_gpgsm_op_decrypt): Use new variable names,
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise.
(gpgsm_status_handler): Drop argument PID. Change return type to
void. Close status pipe before returning because of EOF or error.
(_gpgme_gpgsm_add_io_cb): New function.
(_gpgme_gpgsm_start): Use _gpgme_gpgsm_add_io_cb to register
callback
function.
(_gpgme_gpgsm_set_io_cbs): New function.
* engine-gpgsm.h: New prototype for _gpgme_gpgsm_set_io_cbs.
* engine.c (_gpgme_engine_set_io_cbs): New function.

* engine.h: New prototype for _gpgme_engine_set_io_cbs.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Remove mutex.h.

2002-06-03 Marcus Brinkmann <marcus@g10code.de>

* key.c: Include <ctype.h>.
(_gpgme_key_append_name): Skip one more char when
processing escaped char. Submitted by Marc Mutz <mutz@kde.org>.
Handle hexadecimal encodings. Also reported by Marc. Thanks!

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Enable the _gpgme_ prefix. Fix all those prefix macros.
* posix-sema.c: Use that prefix here.
* posix-io.c: Include "ath.h".
(_gpgme_io_read): Use _gpgme_ath_read instead read.
(_gpgme_io_write): Use _gpgme_ath_write instead write.
(_gpgme_io_waitpid): Use _gpgme_ath_waitpid instead waitpid.
(_gpgme_io_select): Use _gpgme_ath_select
instead select.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (ath_components): New variable.
(ath_components_pthread): Likewise.
(ath_components_pth): Likewise.
(system_components): Add ath_componentes.

* ath.h: New file.
* ath.c: Likewise.
* ath-pthread.c: Likewise.
* ath-pth.c: Likewise.
* posix-sema.c (_gpgme_sema_cs_enter): Rework to use the ATH
interface.
* mutex.h: Remove file.

2002-05-30 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_string_attr): Return NULL when asking for
an issuer with IDX > 0. We don't support altIssuerNames for now.

2002-05-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Aehmm, added
missing variable definition. Oohh - Marcus was faster.

2002-05-22 Marcus Brinkmann <marcus@gnu.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Fix last change.

2002-05-21 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist)
(_gpgme_gpgsm_op_keylist_ext):
Pass the keylist mode to gpgsm.

2002-05-10 Werner Koch <wk@gnupg.org>

* key.h (gpgme_key_s): Add OTRUST.
* keylist.c (set_ownertrust): New.
(keylist_colon_handler): Get the ownertrust value
* key.c (gpgme_key_get_string_attr,gpgme_key_get_ulong_attr):
Return that value.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: New static variable GET_PATH_LOCK.
(_gpgme_get_gpg_path): Remove superfluous NULL initializer.
Take lock while determining path.
(_gpgme_get_gpgsm_path): Likewise.
* version.c (do_subsystem_inits): Set DONE to 1 after
initialization.
(gpgme_get_engine_info): New variable ENGINE_INFO_LOCK. Take lock
while determining engine info.
* rungpg.c (_gpgme_gpg_get_version): New variable
GPG_VERSION_LOCK. Take the lock while determining the program
version.
* posix-io.c: Include "sema.h".
(_gpgme_io_spawn): New variable FIXED_SIGNALS_LOCK. Take the lock
while fixing the signals.
(_gpgme_io_select): Make READFDS and WRITEFDS non-static.
*
key.c: Include "sema.h". New globals KEY_CACHE_LOCK and
KEY_REF_LOCK.
(capabilities_to_string): Make STRINGS very const.
(_gpgme_key_cache_add): Lock the key cache.
(_gpgme_key_cache_get): Likewise.
(gpgme_key_ref, gpgme_key_release): Lock the key_ref_lock.
* import.c (append_xml_impinfo): Make IMPORTED_FIELDS and
IMPORT_RES_FIELDS very const. Make FIELD and FIELD_NAME a little
const.
* engine.c (_gpgme_engine_get_info): New variable
ENGINE_INFO_LOCK. Take lock while determining engine info.

* engine-gpgsm.c: Include "sema.h".
(_gpgme_gpgsm_get_version): New variable GPGSM_VERSION_LOCK. Take
lock while getting program version.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* debug.h: New file.
* Makefile.am (libgpgme_la_SOURCES): Add debug.h.
* util.h: Removed all prototypes and declarations related to
debugging. Include "debug.h".

* debug.c (debug_level): Comment variable and remove superfluous
zero initializer.
(errfp): Likewise.
(_gpgme_debug_enabled):
Function removed.
(struct debug_control_s): Definition removed.
(_gpgme_debug_level): Function removed.
(_gpgme_debug_begin): Rewritten to use vasprintf. Accept a
pritnf-style format specification and a variable number of
arguments.
(_gpgme_debug_add): Rewritten using vasprintf. Expect that format
starts out with "%s" for simplicity.
(_gpgme_debug_end): Rewritten using vasprintf. Do not accept a
TEXT argument anymore.

* posix-io.c (_gpgme_io_select): Use new level argument for
DEBUG_BEGIN instead explicit if construct.

* debug.c (debug_init): Remove superfluous zero initializer,
remove volatile flag of INITIALIZED. Do not use the
double-checked locking algorithm, it is fundamentally flawed and
will empty your fridge (on a more serious note, despite the
volatile flag it doesn't give you the guarantee you would expect,
for example on a DEC Alpha or an SMP machine. The volatile only
serializes accesses to the volatile variable, but not to the other
variables).

2002-05-03
Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Redirect any gpgsm error
output to /dev/null.

* verify.c (gpgme_get_sig_key): Set the protocol of the listctx.
* gpgme.c (gpgme_get_protocol): New.

* data.c (gpgme_data_write): Changed type of BUFFER to void*.

(gpgme_data_read): Ditto.

* verify.c (_gpgme_verify_status_handler): Handle TRUST_* status
lines so that a claim can be made without looking up the key.
(gpgme_get_sig_string_attr): New.
(gpgme_get_sig_ulong_attr): New.

* gpgme.h (GpgmeAttr): Added GPGME_ATTR_SIG_STATUS.

* rungpg.h: Add new status codes from gpg 1.0.7 and formatted the
list to align with the status.h file from gnupg.

* gpgme.h (GpgmeSigStat): Add _GOOD_EXP and _GOOD_EXPKEY.
* verify.c (_gpgme_verify_status_handler, finish_sig): Handle
these new status codes. Store the expiration time

2002-04-27 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeData_Encoding): New.
* data.c (gpgme_data_get_encoding,gpgme_data_set_encoding):
New.
* engine-gpgsm.c (map_input_enc): New. Use it in all local
functions where the INPUT command gets send.

2002-04-27 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Close the output
descriptor only when we don't need it anymore. Close the message
descriptor if we don't need it.

2002-04-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_LIBADD): Use libtool libraries.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Call gpgme_data_release on
GPG->cmd.cb_data, not xfree.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set the display, ttyname,
ttytype, lc_ctype and lc_messages options in the server.

2002-04-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Add new error codes.

2002-04-23 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_ulong_attr): Swapped use of can_encrypt and
can_certify to return
the requested values.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_progress_cb): Allow either return parameter
to be NULL.
(gpgme_get_passphrase_cb): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_passphrase_cb): New function.
(gpgme_get_progress_cb): New function.
* gpgme.h: Add new prototypes for gpgme_get_passphrase_cb and
gpgme_get_progress_cb.

2002-03-28 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeAttr): Add values for issuer and chaining.
* key.h (gpgme_key_s): Add issuer and chaining elements for X509.
* keylist.c (keylist_colon_handler): Store them.
* key.c (gpgme_key_release): Free them.
(gpgme_key_get_as_xml,gpgme_key_get_string_attr): Print them.

2002-03-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_SOURCES): Add mutex.h

2002-03-21 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Make sure off_t and ssize_t are
defined.

2002-03-18 Marcus Brinkmann <marcus@g10code.de>

*
Makefile.am (system_components): New variable, set depending on
HAVE_DOSISH_SYSTEM.
(libgpgme_la_SOURCES): Use system_components. Remove `syshdr.h'.
* syshdr.h: File removed.

* posix-io.c: Remove !HAVE_DOSISH_SYSTEM safeguard. Clean up source.
* posix-sema.c: Likewise.
* posix-util.c: Likewise.

* w32-io.c: Remove HAVE_DOSISH_SYSTEM safeguard.
* w32-sema.c: Likewise.
* w32-util.c: Likewise.

* posix-io.c: Include `unistd.h', do not include `syshdr.h'.
* posix-sema.c: Likewise.
* w32-io.c: Include `io.h', do not include `syshdr.h'
* w32-sema.c: Likewise.
* w32-util.c: Likewise.
* data.c: Do not include `syshdr.h'.
* wait.c: Likewise.
* wait.h: Code cleanup.

* mutex.h: New file.
* posix-sema.c: Implement.

2002-03-08 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Fixed type. Thanks to Frank Heckenbach.

2002-03-07 Werner Koch <wk@gnupg.org>

* gpgme.h (gpgme_op_keylist_ext_start): Add prototype.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

*
encrypt.c (_gpgme_encrypt_sym_status_handler): New function.
(gpgme_op_encrypt_start): New variable SYMMETRIC, set it if RECP
is null, and if it is set, use _gpgme_encrypt_sym_status_handler
as status handler and run _gpgme_passphrase_start.
* rungpg.c (_gpgme_gpg_op_encrypt): If RECP is zero, do symmetric
encryption.
* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): If RECP is zero,
return error value.

* rungpg.c (_gpgme_gpg_op_verify): Add "--" argument.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Also set the
error No_Passphrase if only a bad passphrase was provided.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_verify): If TEXT is of mode
GPGME_DATA_MODE_IN, construct a command line that stores the
plaintext in TEXT.

* verify.c (gpgme_op_verify_start): Accept TEXT being
uninitialized, and in this case interpret SIG as a normal or
cleartext signature and TEXT as a return
data object.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext) [!ENABLE_GPGSM]:
Add stub function.

2002-02-28 Werner Koch <wk@gnupg.org>

* key.h (subkey_s): New member expires_at.
* keylist.c (keylist_colon_handler): Set it here
* key.c (gpgme_key_get_as_xml,gpgme_key_get_ulong_attr): Return it.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h (_gpgme_gpg_op_keylist_ext): New prototype.
* rungpg.c (_gpgme_gpg_op_keylist_ext): New function.
* engine-gpgsm.h (_gpgme_gpgsm_op_keylist_ext): New prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): New function.
* engine.h (_gpgme_engine_op_keylist_ext): New prototype.
* engine.c (_gpgme_engine_op_keylist_ext): New function.
* keylist.c (gpgme_op_keylist_ext_start): New function.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new error code GPGME_Invalid_Recipient.
* encrypt.c (struct
encrypt_result_s): New member invalid_recipients,
rename no_recipients to no_valid_recipients.
(_gpgme_encrypt_status_handler): Include error for invalid
recipients.
* engine-gpgsm.c (gpgsm_set_recipients): Change type of first
argument to GpgsmObject. Use that to report back the status about
the recipients.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Fix the last change.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Parse the args line to
see if the problem is due to a missing key, and report that back
to the user.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_engine_op_encrypt_sign): New function.
* engine.h (_gpgme_engine_op_encrypt_sign): New prototype.
* rungpg.c (_gpgme_append_gpg_args_from_signers): New function.
(_gpgme_gpg_op_sign): Use that new function.
(_gpgme_gpg_op_encrypt_sign): New function.
* rungpg.h (_gpgme_gpg_op_encrypt_sign):
New prototype.
* gpgme.h (gpgme_op_encrypt_sign_start): New prototype.
(gpgme_op_encrypt_sign): Likewise.
* Makefile.am (libgpgme_la_SOURCES): Add encrypt-sign.c.
* ops.h (_gpgme_encrypt_status_handler): Add prototype.
(_gpgme_sign_status_handler): Add prototype.
* sign.c (sign_status_handler): Rename to ...
(_gpgme_sign_status_handler): ... this and make non-static.
* encrypt.c (encrypt_status_handler): Rename to ...
(_gpgme_encrypt_status_handler): ... this and make non-static.
* encrypt.c (gpgme_op_encrypt_start): Use new status handler name.
* sign.c (gpgme_op_sign_start): Likewise.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): New member include_certs.
* gpgme.h (gpgme_set_include_certs): Add prototype.
(gpgme_get_include_certs): Likewise.
* gpgme.c (gpgme_set_include_certs): New function.
(gpgme_get_include_certs): Likewise.
(gpgme_new): Set include_certs to 1 (the default).
* engine.c (_gpgme_engine_op_sign): Accept
new argument include_certs,
and pass it to _gpgme_gpgsm_op_sign.
* engine.h (_gpgme_engine_op_sign): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Accept new argument
include_certs and handle it.
* engine-gpgsm.h (_gpgme_gpgsm_start): Add new argument include_certs.
* sign.c (gpgme_op_sign_start): Add new argument to
_gpgme_engine_op_sign call.

2002-02-14 Werner Koch <wk@gnupg.org>

* keylist.c (gpgme_op_keylist_start): Do not use a verbose listing.

2002-02-13 Werner Koch <wk@gnupg.org>

* vasprintf.c, fopencookie.c: Add replacement functions.
* util.h: Add prototypes for them.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return 0 if we
reach the end of the function.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Fix logic in validity check.
(gpgme_op_genkey_start): Skip newlines after opening tag.

* engine-gpgsm.c (_gpgme_gpgsm_start): Remove cruft.

2002-02-08
Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Allow PUBKEY and SECKEY to be
set, and pass them down to the crypto engine.
* engine-gpgsm.h (_gpgme_gpgsm_start): New arguments PUBKEY and SECKEY.
* engine.h: Likewise.
* rungpg.h (_gpgme_gpg_spawn): Likewise.
* engine.c (_gpgme_engine_op_genkey): Likewise. Use those
arguments.
* rungpg.c (_gpgme_gpg_op_genkey): Likewise. Complain if those
arguments are set.
* engine-gpgsm.c (_gpgme_gpgsm_op_genkey): Likewise. Implement
function.

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Beautify comment.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_keylist): Remove handling of keylist
mode (for now).

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* wait.c (gpgme_wait): Add new argument STATUS, in which the
status of the returned context is returned.
(_gpgme_wait_on_condition): Rework the function a bit, to make it
aware of cancelled processes, and to
allow to use gpgme_wait with
CTX being NULL (as documented in the source).
(struct proc_s): New member REPORTED.
* gpgme.h: Fix prototype.
* verify.c (gpgme_op_verify): Fix use of gpgme_wait.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.

* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_keylist_mode): Possibly return an error
value.
(gpgme_get_keylist_mode): New function.
(gpgme_new): Set the default for keylist_mode member of CTX.

* gpgme.h (gpgme_set_keylist_mode): Fix prototype.
(gpgme_get_keylist_mode): New prototype.
(GPGME_KEYLIST_MODE_LOCAL): New macro.
(GPGME_KEYLIST_MODE_EXTERN): Likewise..

2002-02-02 Marcus Brinkmann <marcus@g10code.de>

This patch has gotten a bit large... mmh. The
main thing that
happens here is that error values are now not determined in the
operation function after gpgme_wait completed, but in the status
handler when EOF is received. It should always be the case that
either an error is flagged or EOF is received, so that after a
gpgme_wait you should never have the situation that no error is
flagged and EOF is not received. One problem is that the engine
status handlers don't have access to the context, a horrible
kludge works around this for now. All errors that happen during a
pending operation should be caught and reported in ctx->error,
including out-of-core and cancellation. This rounds up neatly a
couple of loose ends, and makes it possible to pass up any errors
in the communication with the backend as well. As a bonus, there
will be a function to access gpgme->wait, so that the operations
can truly be implemented with their _start function.

* engine-gpgsm.c (gpgsm_status_handler): Horrible kludge to report
error back
to the context.
* rungpg.c (gpg_status_handler): Same horrible kludge applied here.

* engine-gpgsm.c (gpgsm_assuan_simple_command): Add error checking.

* wait.c (_gpgme_wait_on_condition): If canceled, set CTX->error
to a value indication that.

* verify.c (add_notation): Set error, not out_of_core.

(finish_sig): Likewise.
(gpgme_op_verify_start): Don't clear out_of_core.
(_gpgme_verify_status_handler): At EOF, clean up the notation data.
(gpgme_op_verify): And don't do it here.

* trustlist.c (trustlist_status_handler): Check error, not out_of_core.
(gpgme_op_trustlist_start): Don't clear out_of_core.
(gpgme_op_trustlist_next): Check error, not out_of_core.
(gpgme_op_trustlist_end): Likewise.

* ops.h (test_and_allocate_result): New macro.
(_gpgme_passphrase_result): Remove prototype.
* delete.c (gpgme_op_delete): Return error from context.
(delete_status_handler): Use macro test_and_allocate_result.
Perform error checking at EOF.
(gpgme_op_delete_start): Release
result.
* passphrase.c (_gpgme_passphrase_status_handler): Use macro
test_and_allocate_result, and perform error checking here.
(_gpgme_passphrase_result): Function removed.
* sign.c (gpgme_op_sign_start): Do not set out_of_core to zero.
(gpgme_op_sign): Just return the error value from the context.
(sign_status_handler): Only progress if no error is set yet. If
we process an EOF, set the resulting error value (if any).
* decrypt.c (_gpgme_decrypt_result): Function removed.
(create_result_struct): Function removed.
(_gpgme_decrypt_status_handler): Use macro test_and_allocate_result,
caclulate error on EOF, do not progress with errors.
(_gpgme_decrypt_start): Do not set out_of_core to zero.
(gpgme_op_decrypt): Just return the error value from the context.
* encrypt.c (encrypt_status_handler): Perform the error checking
here.
(gpgme_op_encrypt_start): Do not clear out_of_core.
* export.c (export_status_handler): Return if error is set in context.
(gpgme_op_export_start):
Release result.
(gpgme_op_export): Return error from context.
* decrypt-verify.c (gpgme_op_decrypt_verify): Return the error in
the context.
* genkey.c (genkey_status_handler): Use macro
test_and_allocate_result. Perform error checking at EOF.
(gpgme_op_genkey): Just return the error from context.
* import.c (gpgme_op_import): Return the error from context.
(import_status_handler): Use macro test_and_allocate_result.
* keylist.c (gpgme_op_keylist_start): Do not clear out_of_core.
(gpgme_op_keylist_next): Return error of context.
(keylist_colon_handler): Set error instead out_of_code.
(finish_key): Likewise.

* context.h: Remove member out_of_core, add member error.
* gpgme.c (_gpgme_release_result): Clear error flag.

* engine.h (_gpgme_engine_get_error): New prototype.
* engine.c (_gpgme_engine_get_error): New function.
* engine-gpgsm.c (_gpgme_gpgsm_get_error): New function.

* engine-gpgsm.c (map_assuan_error): New function.
(gpgsm_assuan_simple_command): Change
return type to GpgmeError,
use the new function to map error values.
(gpgsm_set_fd): Change return type tp GpgmeError.
(_gpgme_gpgsm_op_decrypt): Change type of ERR to GpgmeError.
(gpgsm_set_recipients): Likewise. Change type of return value
equivalently. Adjust error values.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(struct gpgsm_object_s): New member error.
(gpgsm_status_handler): Set error if error occurs. Determine
error number from ERR line received. If assuan_read_line fails,
terminate the connection.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (MOSTLYCLEANFILES): New variable.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): At error, terminate the
connection to the server.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h: Add STATUS_KEY_CREATED.

* progress.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add progress.c.

* genkey.c (genkey_status_handler):
Use
_gpgme_progress_status_handler. Add check for status.
(struct genkey_result_s): New structure.
(_gpgme_release_genkey_result): New function.
(gpgme_op_genkey): Check for error.
* gpgme.c (_gpgme_release_result): Call
_gpgme_release_genkey_result.
* ops.h (_gpgme_release_genkey_result): Add prototype.

* types.h (GenKeyResult): New type.
* context.h (gpgme_context_s): Add GenKeyResult to member result.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_release_result): Call
_gpgme_release_delete_result.
* ops.h (_gpgme_release_delete_result): Add prototype.
* types.h (DeleteResult): New type.
* context.h (gpgme_context_s): Add DeleteResult to member result.

* delete.c (enum delete_problem): New type.
(struct delete_result_s): New structure.
(_gpgme_release_delete_result): New function.
(delete_status_handler): Implement more status codes.
(gpgme_op_delete): Return error on failure.

* import.c (MAX_IMPORTED_FIELDS): Bump up to 14.

2002-01-30
Marcus Brinkmann <marcus@g10code.de>

* import.c (struct import_result_s): New structure.
(_gpgme_release_import_result): New function.
(append_xml_impinfo): Likewise.
(import_status_handler): Implement.
* gpgme.c (_gpgme_release_result): Add call to
_gpgme_release_import_result.
* ops.h (_gpgme_release_import_result): Add prototype.
* types.h (ImportResult): New type.
* context.h (gpgme_context_s): Add ImportResult to member result.

* encrypt.c (gpgme_op_encrypt): Code clean up.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add lots of comment and fix the formatting. Add
gpgme_trustlist_end prototype.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new type GpgmeIdleFunc. Change type of
gpgme_register_idle to return and accept this type.
* wait.c (gpgme_register_idle): Fix type.
Save and return old value of idle_function.

2002-01-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Implement
secret only mode.

* keylist.c (keylist_colon_handler): Add support for the new "crs"
record type.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Call assuan_disconnect,
not assuan_pipe_disconnect.

* Makefile.am (libgpgme_la_LIBADD): Change to link assuan and
jnlib (needed by assuan) statically into libgpgme. Linking a
static library into a shared library this way is not portable.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type of R_HD from void* to
void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_new_from_filepart): Change type of LENGTH
from off_t to size_t.
* gpgme.h: Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_wait_on_condition): If the process finished,
reset the pending flag. Also if the operation was cancelled.

(struct proc_s): Rename READY to DONE.
(wait_item_s): Likewise.
(set_process_ready): Rename
to ...
(set_process_done): ... this.
(_gpgme_remove_proc_from_wait_queue): Call set_process_done
instead set_process_ready.
(_gpgme_wait_on_condition): Likewise.
(do_select): Rename READY to DONE.

* verify.c (gpgme_op_verify): Do not set pending to zero here.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.
* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.

* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.
* decrypt.c (gpgme_op_decrypt): Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* export.c: Cleanup.

2002-01-15 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c: Various source clean ups.
(my_isdigit): Removed.
(gpgme_op_trustlist_end): New function.

2002-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c: Various source clean ups, like renaming C to CTX where
appropriate.
(gpgme_new): Clear
R_CTX before starting the work.
(my_isdigit): Removed.
(my_isxdigit): Likewise.

* data.c: Various source clean ups.
(gpgme_data_new_from_mem): Check BUFFER after clearing R_DH.
(gpgme_data_new_with_read_cb): Similar for READ_CB.
(gpgme_data_new_from_file): Loop over fread while EINTR.
(gpgme_data_new_from_filepart): Rediddled a bit. Allow LENGTH to
be zero. Loop over fread while EINTR.

(my_isdigit): Removed.
(my_isxdigit): Likewise.

2001-12-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Replace General_Error with
Pipe_Error where appropriate.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine.c: Include `string.h'. Reported by Stphane Corthsy.

* version.c (get_engine_info): Remove prototype.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): New variable CHILD_FDS.
Fill it with the servers fds, and pass it to assuan_pipe_connect.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 *
 keylist.c (gpgme_op_keylist_end): New function.
 * gpgme.h (gpgme_op_keylist_end): New prototype.

 * engine.h (gpgme_engine_check_version): Move prototype to ...
 * gpgme.h (gpgme_engine_check_version): ... here.

 * genkey.c (gpgme_op_genkey_start): Remove unused variable.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * version.c (gpgme_get_engine_info): Reimplemented.
 (gpgme_check_engine): Reimplemented.
 (_gpgme_compare_versions): Return NULL if MY_VERSION is NULL.

 * engine.c: Include `io.h'.
 (gpgme_engine_get_info): New function.
 * engine.h (gpgme_engine_check_version, _gpgme_engine_get_info):
 Add prototype.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * rungpg.c (struct reap_s, reap_list, reap_list_lock): Moved to ...
 * engine.c (struct reap_s, reap_list, reap_list_lock): ... here.
 Include `time.h', `sys/types.h', `assert.h', and `sema.h'.

 * rungpg.c (_gpgme_engine_add_child_to_reap_list): New function.
 (do_reaping, _gpgme_gpg_housecleaning): Moved to
 ...
 * engine.c (do_reaping, _gpgme_engine_housecleaning): ... here.
 * rungpg.c (_gpgme_gpg_release): Replace code that is now in its
 own function by call to _gpgme_engine_add_child_to_reap_list().

 * wait.c: Include `engine.h'.
 (run_idle): Call _gpgme_engine_housecleaning(), not
 _gpgme_gpg_housecleaning().

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * key.c (_gpgme_key_append_name): Append, not prepend, the uid.
 Initialize the next field of the uid structure.
 (gpgme_key_get_as_xml): Do not list last uid first.

2001-12-17 Marcus Brinkmann <marcus@g10code.de>

 * engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New

function [!ENABLE_GPGSM].

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Put TEXT into
message_data, not SIG.
(_gpgme_gpgsm_op_sign): Use `--detached', not `--detach'.

* sign.c (sign_status_handler): Call
_gpgme_passphrase_status_handler early.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c: Revert last change.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Freeze the output file
handler when ending this operation, otherwise the wait function
will sit on it.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct gpgsm_object_s): New member colon.attic.
(_gpgme_gpgsm_new): Initialize some more members.
(_gpgme_gpgsm_release): Free the colon line handler's attic line.
(gpgsm_status_handler): Rework the inline-data processing.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not add the fds to the child
list that are not dup'ed, for those the close-on-exec flag is set
now.
* version.c (_gpgme_get_program_version): Remove first entry in
CFD, as the close-on-exec flag is now set for this fd.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): Do not add `armor'
option to `ENCRYPT'.
* engine-gpgsm.c
(gpgsm_set_recipients): Free LINE when returning
successfully.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (close_notify_handler): New function.

(_gpgme_gpgsm_new): Manage the file descriptors a
bit differently. Do not set close-on-exec flags.
(_gpgme_gpgsm_op_decrypt): Do not set message_fd
to -1, this is done by the close handler.
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_import): Likewise (also for output_fd).
(_gpgme_gpgsm_op_keylist): Likewise (also for input_fd and output_fd).
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise, but for output_fd.

* posix-io.c (_gpgme_io_pipe): Set the close-on-exec flag for the
non-inherited file descriptor index of the pipe.

2001-12-13 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New.
(gpgsm_status_handler): Pass datalines to a colon handler
* engine.c (_gpgme_engine_set_colon_line_handler): Set the colon
handler for gpgsm.

* engine-gpgsm.c
(_gpgme_gpgsm_op_keylist): Allow NULL for
pattern.
(gpgsm_assuan_simple_command): Removed underscore from
assuan_write_line.
(_gpgme_gpgsm_start): Ditto.
(gpgsm_assuan_simple_command): Replaced internal Assuan read
function by the new assuan_read_line. Removed the use of the
internal header.
(gpgsm_status_handler): Ditto. Use the new assuan_pending_line.
(_gpgme_gpgsm_start): Use the documented way to get an fd from
assuan.

* keylist.c (keylist_colon_handler): Handle "crt" records
* key.h (gpgme_key_s): Add an x509 flag.
* key.c (parse_x509_user_id): New.
(_gpgme_key_append_name): Handle x.509 names.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Make it work with current
version of assuan.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_set_fd): Accept one more argument OPT.
(_gpgme_gpgsm_op_encrypt): Pass armor argument to gpgsm_set_fd for
output descriptor.

(_gpgme_gpgsm_op_sign):
Likewise.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_next): Set pending to 0 if EOF
occurs.

2001-11-26 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Fix stupid typo.

2001-11-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Don't break if bsearch fails.
Deal with assuan read line returning more than one line (for now).

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Implement it according to
the current protocol definition.

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set CLOEXEC flag for parent
ends of the pipe.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Include stdlib.h and string.h. Also include,
for now, rungpg.h and status-table.h.
(gpgsm_status_handler): Implement more of the status handler.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

*
engine.c (_gpgme_engine_op_decrypt): Implement CMS case.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): New function.
(gpgsm_assuan_simple_command): Likewise.
(gpgsm_set_recipients): Likewise.

(gpgsm_set_fd): Reimplement using gpgsm_assuan_simple_command.
(_gpgme_gpgsm_op_delete): New function.
(_gpgme_gpgsm_op_export): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_trustlist): Likewise.
(_gpgme_gpgsm_release): Release command.
(_gpgme_gpgsm_op_decrypt): Allocate command.
(_gpgme_gpgsm_op_import): Likewise.
(gpgsm_status_handler): Also treat `ERR' strings as EOF.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h
(gpgme_set_protocol): New prototype.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_decrypt): New function.
(_gpgme_gpgsm_op_import): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Shuffle around header inclusion a bit, to still
keep them separate.
(_gpgme_set_status_handler) [!ENABLE_GPGSM]: New function.

2001-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c: Include more headers so that NULL and mk_error
is defined even with an undefined GPGSM_PATH.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_inbound_handler, write_mem_data, write_cb_data,
gpg_outbound_handler): Moved to ...
* data.c (_gpgme_data_inbound_handler, write_mem_data,
write_cb_data, _gpgme_data_outbound_handler): ... here. Make the
_gpgme_* ones non-static.
* data.c: Include io.h.

* ops.h (_gpgme_data_inbound_handler): New prototype.
(_gpgme_data_outbound_handler): Likewise.
(_gpgme_gpg_spawn): Use
these new functions.

* engine-gpgsm.h (_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,

_gpgme_gpgsm_op_encrypt, _gpgme_gpgsm_op_export,
_gpgme_gpgsm_op_genkey, _gpgme_gpgsm_op_import,
_gpgme_gpgsm_op_keylist, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_trustlist, _gpgme_gpgsm_op_verify,
_gpgme_gpgsm_start, _gpgme_gpgsm_set_status_handler): New prototype.
Include <rungpg.h> for status handler function.

* engine-gpgsm.c (struct gpgsm_object_s): New members input_fd,
input_data, output_fd, output_data, message_fd, message_data, command
and status.
(_gpgme_gpgsm_new): Open input, output and message pipes before
connecting to the client. Close server's ends afterwards.
(_gpgme_gpgsm_release): Close open file descriptors. Remove
server process from wait queue.
(_gpgme_gpgsm_op_verify, _gpgme_gpgsm_start,
_gpgme_gpgsm_set_status_handler, gpgms_status_handler): New function.

* engine.c (_gpgme_engine_start): Implement for GPGME_PROTOCOL_CMS.
(_gpgme_engine_set_status_handler):
Likewise.
(_gpgme_engine_op_verify): Likewise.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* context.h: Do not include rungpg.h, but engine.h.
(struct gpgme_context_s): Replace member gpg with engine.
* gpgme.c (gpgme_release): Release engine, not gpg.

* recipient.c (_gpgme_append_gpg_args_from_recifgpients): Function
moved ...
* rungpg.c (_gpgme_append_gpg_args_from_recipients): ... here.
Make static, change order of arguments, and return an error value.
* ops.h (_gpgme_append_gpg_args_from_recipients): Removed prototype.

* rungpg.h (_gpgme_gpg_op_verify): Add prototype.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt): Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.
* rungpg.c (_gpgme_gpg_op_verify): New function.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt):

Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.

* engine.h (_gpgme_engine_set_status_handler): Add prototype.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler): Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.
* engine.c (_gpgme_engine_set_status_handler): New function.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler):
Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.

* verify.c (gpgme_op_verify_start): Reimplement in terms of above
functions.
* encrypt.c (gpgme_op_encrypt_start): Likewise.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* passphrase.c (_gpgme_passphrase_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* types.h: Add types EngineObject and GpgsmObject.

* Makefile.am (libgpgme_la_SOURCES): Add engine-gpgsm.h,
engine-gpgsm.c, engine.h and engine.c.
* engine.h: New file.
* engine.c: Likewise.
* engine-gpgsm.h: Likewise.
*
engine-gpgsm.c: Likewise.

* rungpg.c (_gpgme_gpg_get_version): New function.
(_gpgme_gpg_check_version): Likewise.
* rungpg.h: Add prototypes for _gpgme_gpg_get_version and
_gpgme_gpg_check_version.

* version.c (compare_versions): Rename to ...
(_gpgme_compare_versions): ... this. Make non-static.
(gpgme_check_version): Use _gpgme_compare_versions rather than
compare_versions.
(gpgme_check_engine): Likewise.
* ops.h (_gpgme_get_program_version): Add prototype.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_INCLUDES): Remove obsolete directive.
(AM_CPPFLAGS): New directive [BUILD_ASSUAN].
(libgpgme_la_LIBADD): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* version.c: Remove global variables lineno and
tmp_engine_version.
(version_handler): Removed.
(_gpgme_get_program_version): New function.
(get_engine_info): Don't use context and version_handler,
but _gpgme_get_program_version.
* ops.h (_gpgme_get_program_version):
Add prototype for
_gpgme_get_program_version (we expect to use it elsewhere soon).

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* version.c (get_engine_info): If GnuPG is not available, return
an error message.
* posix-util.c (_gpgme_get_gpg_path): Allow GPG_PATH to be
undefined.
(_gpgme_get_gpgsm_path): New function.
* w32-util.c (find_program_in_registry): New static function.

(_gpgme_get_gpg_path): Allow GPG_PATH to be undefined. Rework
to use find_program_in_registry.
(_gpgme_get_gpgsm_path): New function.
(util.h): Prototype _gpgme_get_gpgsm_path).
* rungpg.c (_gpgme_gpg_spawn): Verify that _gpgme_get_gpg_path()
returns non-null.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add decrypt-verify.c.
* types.h: Add decrypt-verify types.
* ops.h: Likewise.
* context.h: Add result type for decrypt-verify.
* gpgme.h: Add decrypt-verify prototypes.

* decrypt.c (decrypt_status_handler):
Renamed to ...
(_gpgme_decrypt_status_handler): ... this. Make non-static.
(_gpgme_decrypt_start): New function, derived from
gpgme_op_decrypt_start.
(gpgme_op_decrypt_start): Reimplement in terms of
_gpgme_decrypt_start.
(_gpgme_decrypt_result): New function to retrieve error value.
(gpgme_op_decrypt): Use _gpgme_decrypt_result.
* ops.h: Add prototypes for new functions.

* verify.c (verify_status_handler): Renamed to ...
(_gpgme_verify_status_handler): ... this. Make non-static.
(gpgme_op_verify_start): Use new function name.
(intersect_stati): Renamed to ...
(_gpgme_intersect_stati): ... this. Make non-static.
(gpgme_op_verify): Use new name.
* ops.h: Add prototypes for new functions.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add passphrase.c.
* ops.h (_gpgme_passphrase_result): Add prototypes from
passphrase.c.
* types.h: Likewise.
* context.h: Add member passphrase to result.
*
gpgme.c (_gpgme_release_result): Release passphrase member.

* decrypt.c: Some formatting and variable name changes (like
CTX instead C).

(struct decrypt_result_s): Remove members now found in
passphrase result.
(_gpgme_release_decrypt_result): Don't release removed members.
(decrypt_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_decrypt_start): Don't set command handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_decrypt): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

* sign.c Some formatting and variable name changes (like
CTX instead C).
(struct sign_result_s): Remove members now found in
passphrase result.
(_gpgme_release_sign_result): Don't release removed members.
(sign_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_sign_start): Don't set command
handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_sign): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (command_handler): Fix last change.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_release_verify_result): Rename RES to RESULT.
Rename R2 to NEXT_RESULT.
(intersect_stati): Rename RES to RESULT.
(gpgme_get_sig_status): Likewise. Do not check return_type, but
the member verify of result.
(gpgme_get_sig_key): Likewise.

* sign.c (_gpgme_release_sign_result): Rename RES to RESULT. If
RESULT is zero, return.
(sign_status_handler, command_handler): Do not check return_type,
but the member sign of result.
(gpgme_op_sign): Likewise. Drop assertion.

* encrypt.c (_gpgme_release_encrypt_result): Rename RES to RESULT.
If RESULT is zero, return.
(encrypt_status_handler): Do not check return_type, but the member
encrypt of result.

(gpgme_op_encrypt):
Likewise. Drop assertion.

* decrypt.c (_gpgme_release_decrypt_result): Rename RES to RESULT.
(create_result_struct): Do not set result_type.
(command_handler, decrypt_status_handler): Do not check
return_type, but the member decrypt of result.
(gpgme_op_decrypt): Likewise. Drop assertion.

* context.h (enum ResultType): Removed.
(struct gpgme_context_s): Remove member result_type.
(struct result): Replaces union result.
* gpgme.c: Include string.h.
(_gpgme_release_result): Release all members of c->result, which
is now a struct. Zero out all members of the struct afterwards.

2001-11-11 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Release GPG->cmd.cb_data.
Release all members of the list GPG->arglist.
Reported by Michael Schmidt <mschmidt@cs.uni-sb.de>.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (pipemode_copy): Change type of NBYTES to size_t.

* key.c: Include string.h.
* data.c: Likewise.
* recipient.c: Likewise.

2001-10-29
Marcus Brinkmann <marcus@g10code.de>

* context.h: New member signers_len.
* signers.c (gpgme_signers_clear): Require that signers are
non-NULL with assertion. Use signers_len to determine how much
keys to release. Add documentation.
(gpgme_signers_add): Use signers_len to determine if the buffer is
large enough. Use xtryrealloc rather than xtrymalloc and copying.
Add documentation.
(gpgme_signers_enum): Use signers_len to determine if key is
available. Add documentation.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_append): Check if LENGTH is smaller than
ALLOC_CHUNK, not DH->length.

2001-10-17 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.c (gpgme_set_protocol): Fix last change.

2001-10-15 Werner Koch <wk@gnupg.org>

 * gpgme.h (GpgmeProtocol): New.
 * gpgme.c (gpgme_set_protocol): New.

2001-09-26 Werner Koch <wk@gnupg.org>

 * gpgme.c (gpgme_set_passphrase_cb): Ignore a NULL context.
 (gpgme_set_progress_cb): Ditto.
 Suggested by Mark Mutz.

2001-09-17 Werner Koch <wk@gnupg.org>

 * keylist.c (finish_key): Shortcut for no tmp_key. Changed all
 callers to use this function without a check for tmp_key.

 * keylist.c (gpgme_op_keylist_next): Reset the key_cond after
 emptying the queue. Bug reported by Stphane Corthsy.

2001-09-12 Werner Koch <wk@gnupg.org>

 * data.c (gpgme_data_rewind): Allow rewind for callbacks.

2001-09-07 Werner Koch <wk@gnupg.org>

 * rungpg.h: Add NO_RECP.
 * encrypt.c (encrypt_status_handler): Take on No_RECP.
 (gpgme_op_encrypt): Better error return.

 * verify.c (verify_status_handler): Take on NODATA.

2001-09-03 Werner Koch <wk@gnupg.org>

 * rungpg.h: Added STATUS_INV_RECP.
 * gpgme.c (_gpgme_release_result): Add support for new
 EncryptResult object.
 * encrypt.c (append_xml_encinfo): New.
 (encrypt_status_handler): Add some status parsing.
 (_gpgme_release_encrypt_result): New.

2001-08-29 Werner Koch <wk@gnupg.org>

 * recipient.c (gpgme_recipients_release):

Free the list. By Timo.

* keylist.c (keylist_colon_handler): Do a finish key if we receive
an EOF here. This is probably the reason for a lot of bugs
related to keylisting. It is so obvious. Kudos to Enno Cramer
for pointing that out.

2001-08-28 Werner Koch <wk@gnupg.org>

* gpgme.c, gpgme.h (gpgme_get_op_info): New.
(_gpgme_set_op_info): New.
(_gpgme_release_result): Reset the op_info here.
* sign.c (append_xml_siginfo): New.
(sign_status_handler): Store the sig create information.

2001-07-31 Werner Koch <wk@gnupg.org>

* encrypt.c (gpgme_op_encrypt): Hack to detect no valid recipients.

2001-07-30 Werner Koch <wk@gnupg.org>

* gpgme.c (gpgme_get_armor,gpgme_get_textmode): New.

* rungpg.c (build_argv): Disable armor comments
* w32-io.c (build_commandline): Need to add quotes here

2001-07-24 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_read): Add a a way to return the available bytes.

2001-07-23 Werner Koch <wk@gnupg.org>

* util.c: Removed
stpcpy() because we use the version from jnlib.

2001-07-19 Werner Koch <wk@gnupg.org>

* mkstatus: Define the collating sequence for sort.

2001-06-26 Werner Koch <wk@gnupg.org>

* rungpg.h: Add STATUS_UNEXPECTED as suggested by Timo.

2001-06-15 Werner Koch <wk@gnupg.org>

* keylist.c (set_userid_flags): Fixed the assigned values. Kudos
to Timo for pointing this out.

2001-06-01 Werner Koch <wk@gnupg.org>

* debug.c (_gpgme_debug_begin): Fixed a /tmp race. Noted by
Johannes Poehlmann.

2001-05-28 Werner Koch <wk@gnupg.org>

* version.c (gpgme_check_engine): Stop version number parsing at
the opening angle and not the closing one. By Tommy Reynolds.

2001-05-01 Jos Carlos Garca Sogo <jose@jaimedelamo.eu.org>

* encrypt.c (gpgme_op_encrypt_start): Deleted the assert (!c->gpg)
line, because it gave an error if another operation had been made
before using the same context.

* decrypt.c (gpgme_op_decrypt_start): The same as above. Also added
one line to release
the gpg object in the context (if any).

2001-04-26 Werner Koch <wk@gnupg.org>

* key.c, key.h (_gpgme_key_cache_init): New.
(_gpgme_key_cache_add): New.
(_gpgme_key_cache_get): New.
* version.c (do_subsystem_inits): Init the cache.
* keylist.c (finish_key): Put key into the cache
* verify.c (gpgme_get_sig_key): First look into the cache.

2001-04-19 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Adjusted for the changed
--fixed-list-mode of gpg 1.0.4h.

2001-04-05 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify_start): Enabled pipemode for detached sigs.

2001-04-04 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_select): Don't select on the writer if there
are still bytes pending. Timo found this not easy to track down
race condition.

2001-04-02 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_KEY_{EXPIRED,DISABLED}.
* key.c (gpgme_key_get_ulong_attr): And return those attribs.

* verify.c (gpgme_get_sig_key): Set keyliosting mode
depending on
the mode set in the current context. Suggested by Timo.

* key.c (gpgme_key_get_ulong_attr): Return can_certify and not
can_encrypt. By Timo.

2001-03-30 Werner Koch <wk@gnupg.org>

* debug.c (debug_init): Allow to specify a debug file.
(_gpgme_debug_level): New.

* posix-io.c (_gpgme_io_read, _gpgme_io_write): Print output.
(_gpgme_io_select): Debug only with level > 2.

2001-03-15 Werner Koch <wk@gnupg.org>

* rungpg.c: Included time.h.

* key.h: New keyflags for capabilities.
* keylist.c (set_mainkey_capability, set_subkey_capability): New.
(keylist_colon_handler): Parse them.
* gpgme.h: New attribute values for capabilities.
* key.c (gpgme_key_get_string_attr): Return them.
(capabilities_to_string): New.
(gpgme_key_get_ulong_attr): Return the global caps.

2001-03-14 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,destroy_writer): Fixed syntax error.
Thanks to Jan Oliver Wagner.

2001-03-13 Werner Koch <wk@gnupg.org>

* context.h: Add
invalid and revoke flags to user_id structure.
* keylist.c (gpgme_op_keylist_start): Use --fixed-list-mode.
(keylist_colon_handler): Adjust for that.
(set_userid_flags): New.
(set_mainkey_trust_info): Handle new key invalid flag
(set_subkey_trust_info): Ditto.
* gpgme.h: Add new attributes for key and user ID flags.
* key.c (_gpgme_key_append_name): Init these flags
(gpgme_key_get_as_xml): Print them.
(one_uid_as_xml): New helper for above.
(gpgme_key_get_string_attr, gpgme_key_get_ulong_attr):
Return the new attributes. Enhanced, so that subkey information

can be returned now.

2001-02-28 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader): Set stop_me flag.
(writer,create_writer,destroy_writer,find_writer,kill_writer): New.
(_gpgme_io_write): Use a writer thread to avoid blocking.
(_gpgme_io_close): Cleanup a writer thread
(_gpgme_io_select): Repalce the faked wait on writing by a real
waiting which is now possible due to the use of a writer thread.

2001-02-20
 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,kill_reader): New.
(create_reader, reader): Add a new event to stop the thread.
(_gpgme_io_close): Kill the reader thread.

* posix-io.c (_gpgme_io_select): Handle frozen fds here.
* 32-io.c (_gpgme_io_select): Ditto. Removed a bunch of unused code.

* wait.c: Reworked the whole thing.
* rungpg.c (_gpgme_gpg_new): Init pid to -1.
(_gpgme_gpg_release): Remove the process from the wait queue.

2001-02-19 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close): Do the notification.

* posix-io.c (_gpgme_io_select): Use a 1 sec timeout and not 200
microseconds.

* wait.c (remove_process): Don't close the fd here.
(do_select): Set the fd to -1 and remove the is_closed flag everywhere.
(_gpgme_wait_on_condition): Remove the assert on the queue and
break out if we could not find the queue. The whole thing should
be reworked.

* posix-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close):
Do the notification.

* rungpg.c (close_notify_handler): New.
(_gpgme_gpg_new): Register a callback for the fd.
(_gpgme_gpg_set_colon_line_handler): Ditto.
(build_argv): Ditto

2001-02-13 Werner Koch <wk@gnupg.org>

* rungpg.c (struct reap_s): Replaced pid_t by int.

* types.h: Add ulong typedef.

* rungpg.c (do_reaping, _gpgme_gpg_housecleaning): New.
(_gpgme_gpg_release): Reap children.
* io.h, posix-io.c (_gpgme_io_kill): New.
* w32-io.c (_gpgme_io_kill): New (dummy).

* keylist.c (gpgme_op_keylist_start): Cancel a pending request.

* posix-io.c (_gpgme_io_read): Add some debug output.
(_gpgme_io_write): Ditto.
(_gpgme_io_select): Increased the timeout.

2001-02-12 Werner Koch <wk@gnupg.org>

Enhanced the signature verification, so that it can how handle
more than one signature and is able to return more information on
the signatures.
* verify.c (gpgme_get_sig_key): New.
(gpgme_get_sig_status): New.

* gpgme.h: Add stdio.h.
(GpgmeSigStat):
New status DIFF.

2001-02-01 Werner Koch <wk@gnupg.org>

* w32-io.c (set_synchronize): Add EVENT_MODIFY_STATE. Add Debug
code to all Set/ResetEvent().

* rungpg.c (read_status): Check for end of stream only if we have
an r. By Timo.

2001-01-31 Werner Koch <wk@gnupg.org>

* wait.c (_gpgme_wait_on_condition): Removed all exit code processing.
(propagate_term_results,clear_active_fds): Removed.
(count_active_fds): Renamed to ..
(count_active_and_thawed_fds): .. this and count only thawed fds.

* rungpg.c (gpg_colon_line_handler): Return colon.eof and not
status.eof ;-)

2001-01-30 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_spawn): Use the supplied path arg.

* version.c (get_engine_info): Return better error information.

* posix-util.c, w32-util.c: New.
(_gpgme_get_gpg_path): New, suggested by Jan-Oliver.
* rungpg.c (_gpgme_gpg_spawn): Use new function to get GPG's path.

* signers.c (gpgme_signers_add): Ooops, one should test code and
not just write it;
the newarr was not assigned. Thanks to Jos
for pointing this out. Hmmm, still not tested, why should a coder
test his fix :-)

* w32-io.c: Does now use reader threads, so that we can use
WaitForMultipleObjects.
* sema.h, posix-sema.c, w32-sema.c: Support for Critical sections.
Does currently only work for W32.

* debug.c, util.h : New. Changed all fprintfs to use this new
set of debugging functions.

2001-01-23 Werner Koch <wk@gnupg.org>

* data.c (_gpgme_data_release_and_return_string): Fixed string
termination.

2001-01-22 Werner Koch <wk@gnupg.org>

* delete.c: New.

* signers.c: New.
* key.c (gpgme_key_ref, gpgme_key_unref): New.
* sign.c (gpgme_op_sign_start): Allow the use of other keys.

* version.c (gpgme_get_engine_info,gpgme_check_engine): New.
* rungpg.c (_gpgme_gpg_set_simple_line_handler): New.

2001-01-05 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_rewind): Allow to rewind data_type_none.

Copyright (C) 2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives

unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
Just GNU it!
Just GNU it!
Just GNU it!

```
;;; -*- Mode: lisp -*-

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME.
;;;
;;; GPGME is free software; you can redistribute it and/or
;;; modify it under the terms of the GNU Lesser General Public License
;;; as published by the Free Software Foundation; either version 2.1 of
;;; the License, or (at your option) any later version.
;;;
;;; GPGME is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU Lesser General Public
;;; License along with GPGME; if not, write to the Free
;;; Software Foundation, Inc., 59 Temple Place - Suite 330, Boston, MA
;;; 02111-1307, USA.

(defpackage #:gpgme-system
 (:use #:common-lisp #:asdf))

(in-package #:gpgme-system)

(defsystem gpgme
 :description "GnuPG Made Easy."
 :author "g10 Code GmbH"
  :version "1.15.1"
 :licence "GPL"
 :defsystem-depends-on ("cffi-grovel")
 :depends-on ("cffi" "gpg-error" "trivial-garbage")
 :components ((:file "gpgme-package")
              (:cffi-grovel-file "gpgme-grovel"
               :depends-on ("gpgme-package"))
       (:file "gpgme"
  :depends-on ("gpgme-package" "gpgme-grovel"))))
```

```
# -*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* GPGME Python Bindings
 :PROPERTIES:
 :CUSTOM_ID: top
 :END:


** Contents
  :PROPERTIES:
  :CUSTOM_ID: contents
  :END:


- [[file:short-history][A short history of the project]]
- [[file:what-is-new][What's New]]
 - [[file:maintenance-mode][Maintenance Mode]] (from January, 2019)
- [[file:what-was-new][What Was New]]
- [[file:gpgme-python-howto][GPGME Python Bindings HOWTO]]
      GNU GENERAL PUBLIC LICENSE
         Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
    59 Temple Place, Suite 330, Boston, MA  02111-1307  USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

       Preamble

 The licenses for most software are designed to take away your
freedom to share and change it.  By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users.  This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it.  (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.)  You can apply it to
your programs, too.
```

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below,

refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but

does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for

making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot

distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of

this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the

library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAG0EHRlc3RAZXhhbXBsZS5v
cmeJAVQEEwEIAD4WIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8Jn
AAULCQgHAgYVCgkICwIEFgIDAQIeAQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGw
Fq07W9N01HWULyhHKoMmcHL6rfZ64oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6
kaBe+wF6Kqir6udFSBW9rPcFg6/VZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rN
GkYo1JCBR0XdRJYCSX3yB4TWv/eXnZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k7
0DevQeBsv+UjVXjWpNTZmPbvDnd995uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6U
unOf9Rlp1oMzdxMool/d1MlCxg2h3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ
1J8Nsv87SZeEuQENBFrsKEkBCADjoEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6
yE+x2hk5FoQCajxKa/d4AVxOnJpdwhAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0p
O7bgAiZxkA6RHxtNqhpPnPQoXvUzkzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/
8i9Taz67pdZwuJjac8qBuJHjzAo1bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt
3RuqVGP316Fk+Sy2+60tC/HlX8jgMyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyL
UGKU+L8cB2g1PGGp2biBFWqZbudZoyRBet/0yH/zirBdQJw1ABEBAAGJATwEGAEI
ACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAKCRAjAWNe
7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ5F32NDJ9
PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7Jq3e/4Iy
0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02Lkr+2Cc/Q
k6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe23nntMSD
A+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t9Mmd7bM1
+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=QyY6
-----END
 PGP PUBLIC KEY BLOCK-----
Using gpgme.js

At first, make sure that the environment you want to use gpgme.js in has access
and permissions for nativeMessaging, and gpgme-json installed. For details,
see the README.

The library itself is started via the {@link init} method. This will test the
nativeMessaging connection, and then resolve into an Object offering
the top level API:

* [encrypt]{@link GpgME#encrypt}
* [decrypt]{@link GpgME#decrypt}
* [sign]{@link GpgME#sign}
* [verify]{@link GpgME#verify}
* [Keyring]{@link GPGME_Keyring}

```
gpgmejs.init()
  .then(function(GPGME) {
     // using GPGME
  }, function(error){
     // error handling;
  })
```

All methods that require communication with nativeMessaging are asynchronous,
using Promises. Rejections will be instances of {@link GPGME_Error}.

An exaeption are Keys, which can be initialized in a 'sync' mode, allowing them
to be cached and used synchronously until manually refreshed.

Keyring and Keys

The gnupg keys
 can be accessed via the [Keyring]{@link GPGME_Keyring}.

The Keyring offers the methods for accessing information on all Keys known to
gnupg.

**Due to security constraints, the javascript-binding currently only offers
limited support for secret-Key interaction.**

The existence of secret Keys is not secret, and those secret Keys can be used
for signing, but Operations that may expose, modify or delete secret Keys are
not supported.

* [getKeysArmored]{@link GPGME_Keyring#getKeysArmored}
* [getKeys]{@link GPGME_Keyring#getKeys}
* [getDefaultKey]{@link GPGME_Keyring#getDefaultKey}
* [generateKey]{@link GPGME_Keyring#generateKey}
* [deleteKey]{@link GPGME_Keyring#deleteKey}
#!/usr/bin/env bash
MIT licenses will each have a unique MD5 sum since they contain a unique copyright.
This script will read the license file into memory, strip out the copyright, and then
generate an MD5 that is not unique and can be matched against a known MIT MD5 sum.
set -e

calculate_md5_sum() {
 local FILE="$1"

 # Read the contents of the file into a variable
 local raw_license_text=$(<"$FILE")

```
 # Convert to lowercase
 local lowercase_license_text="${raw_license_text,,}"

 # Remove anything before the beginning of the license
 local stripped_license_text=$(awk '/permission is hereby granted,/{p=1} p' <<< "$lowercase_license_text")

 # Replace line breaks (Windows or Linux) with a single space
 local replaced_linebreaks=$(tr '\r\n' ' ' <<< "$stripped_license_text")

 # Replace multiple spaces with a single space
 local normalized_license_text=$(tr -s ' ' <<< "$replaced_linebreaks")

 # Strip away any non-printable, non-whitespace characters
 local clean_unprintable_license_text=$(tr
 -cd '[:print:][:space:]' <<< "$normalized_license_text")

 # Remove punctuation and special characters
 local clean_license_text=$(echo "$clean_unprintable_license_text" | sed 's/[^a-zA-Z ]//g')

 # Calculate the MD5 sum of the cleaned license text
 local MD5SUM=$(echo -n "$clean_license_text" | md5sum | awk '{print $1}')

 # Output the MD5 sum
 echo "$MD5SUM"
}

# Check if the FILE argument is provided
if [ -z "$1" ]; then
 echo "Please provide a FILE as an argument."
 exit 1
fi

# Invoke the function with the provided FILE argument
calculate_md5_sum "$1"
;;;; gpgme-grovel.lisp

;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
```

;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

(in-package :gpgme)

(include "errno.h" "sys/types.h")

(constant (+ebadf+ "EBADF"))

(ctype off-t "off_t")
(ctype size-t "size_t")
(ctype ssize-t "ssize_t")

(cvar ("errno" *errno*) :int)
(21:protected-private-key(3:dsa(1:p129:_d8|po3s@!WGUOAXRC$_[8SN:y|o?2[.pVxn(kOc\Bk0zu&FnK)(1:q21:
vBeOP\P)(1:g129:fU/e(2hp@hjc2uE=Sg GO;ZkIyFnGM!GsG@
= _SZklI)(1:y128:K:9tA]4SU1 }sG`nZpx/imV^>A;V%?5!!sS{!=-6@|
=d
)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:Li7:6452224)16:,kO{,)80:z7OCG/sB48(H9%*ojSO
OGSma`YUs1h<_)(12:protected-at15:20130812T105134)))
For a list of the authors of the source code of GPGME, please see the
file AUTHORS. The following people supported GPGME development in
various ways (for example by finding bugs or giving advice), and we
want to thank them for their help. If we forgot you, please let us
know.

Adriaan de Groot adridg@cs.kun.nl
Albrecht Dre albrecht.dress@arcor.de
Alfons Hoogervorst alfons@proteus.demon.nl
Daniel Mueller daniel@danm.de
Enno Cramer uebergeek@web.de
Frank Heckenbach frank@g-n-u.de
Igor Belyi gpgme@katehok.ac93.org
Jan-Oliver Wagner jan@intevation.de
Johannes Poehlmann jhp@caldera.de
Jose C. Garca Sogo jose@jaimedelamo.eu.org
Leo Gaspard ekleog@gmail.com
Mark Mutz mutz@kde.org
Miguel Coca mcoca@gnu.org
Noel Torres envite@rolamasao.org
Patrick Spendrin patrick.spendrin@kdab.com
Stphane Corthsy stephane@sente.ch
Timo Schulz twoaday@freakmail.de
Tommy Reynolds reynolds@redhat.com
W.

Trevor King wking@tremily.us

Copyright 2001, 2002, 2004, 2010, 2012 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
% Created 2019-01-18 Fri 10:10
% Intended LaTeX compiler: xelatex
\documentclass[12pt]{article}
\usepackage{graphicx}
\usepackage{grffile}
\usepackage{longtable}
\usepackage{wrapfig}
\usepackage{rotating}
\usepackage[normalem]{ulem}
\usepackage{amsmath}
\usepackage{textcomp}
\usepackage{amssymb}
\usepackage{capt-of}
\usepackage{hyperref}
\usepackage{xltxtra}
\usepackage[margin=1in]{geometry}
\setmainfont[Ligatures={Common}]{Times New Roman}
\author{Ben McGinnes <ben@gnupg.org>}
\author{Ben McGinnes}
\date{\today}
\title{GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)}
\hypersetup{
pdfauthor={Ben McGinnes},
pdftitle={GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)},
pdfkeywords={},
pdfsubject={},
pdfcreator={Emacs 26.1 (Org mode 9.1.14)},
pdflang={English}}
\begin{document}

\maketitle
\tableofcontents

\section{Introduction}
\label{sec:org8e5fa02}

\begin{center}
\begin{tabular}{ll}
Version: & 0.1.4\\
GPGME Version: & 1.12.1\\
Author: & Ben
 McGinnes <ben@gnupg.org>\\
Author GPG Key: & DB4724E6FA4286C92B4E55C4321E4E2373590E5D\\
Language: & Australian English, British English\\
Language codes: & en-AU, en-GB, en\\
\end{tabular}
\end{center}

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.

\subsection{Python 2 versus Python 3}
\label{sec:org517cbf4}
Though the GPGME Python bindings themselves provide support for both
Python 2 and 3, the focus is unequivocally on Python 3 and
specifically from Python 3.4 and above. As a consequence all the
examples and instructions in this guide use Python 3 code.

Much of it will work with Python 2, but much of it also deals with
Python 3 byte literals, particularly when reading and writing data.
Developers concentrating on Python 2.7, and possibly even 2.6, will
need to make the appropriate modifications to support the older string
and unicode types as opposed to bytes.

There are multiple reasons for concentrating
 on Python 3; some of
which relate to the immediate integration of these bindings, some of
which relate to longer term plans for both GPGME and the python
bindings and some of which relate to the impending EOL period for
Python 2.7. Essentially, though, there is little value in tying the
bindings to a version of the language which is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data
types with which GPGME deals considerably easier.

\subsection{Examples}
\label{sec:org2c08d53}
All of the examples found in this document can be found as Python 3
scripts in the \texttt{lang/python/examples/howto} directory.

\subsection{Unofficial Drafts}
\label{sec:orgceb2216}

In addition to shipping with each release of GPGME, there is a section
on locations to read or download \hyperref[sec:org080a94a]{draft editions} of this document from
at the end of it. These are unofficial versions produced in between
major releases.

\subsection{What's New}
\label{sec:orga79ddc2}
Full
 details of what is new are now available in the \href{what-is-new.org}{What's New} file
and archives of the preceding \emph{What's New} sections are available in
the \href{what-was-new}{What Was New} file.

\subsubsection{New in GPGME 1130}
\label{sec:org746b75d}
See the \href{what-is-new\#new-stuff-1-13-0}{What's New} document for what is new in version 1.13.0.

\subsubsection{New in GPGME 1120}
\label{sec:org7adcade}
See the \href{what-was-new\#new-stuff-1-12-0}{What Was New} document for what was new in version 1.12.0.

\section{GPGME Concepts}
\label{sec:orgb257fc1}
\subsection{A C API}
\label{sec:org4fe1dfa}
Unlike many modern APIs with which programmers will be more familiar
with these days, the GPGME API is a C API. The API is intended for
use by C coders who would be able to access its features by including
the \texttt{gpgme.h} header file with their own C source code and then access
its functions just as they would any other C headers.

This is a very
 effective method of gaining complete access to the API
and in the most efficient manner possible. It does, however, have the
drawback that it cannot be directly used by other languages without
some means of providing an interface to those languages. This is
where the need for bindings in various languages stems.

\subsection{Python bindings}
\label{sec:org0e49e52}
The Python bindings for GPGME provide a higher level means of
accessing the complete feature set of GPGME itself. It also provides
a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of
\texttt{gpgme.h} generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied
to the exact same version of GPGME used to generate that copy of
\texttt{gpgme.h}.

\subsection{Difference between the Python bindings and other GnuPG Python packages}
\label{sec:org97acfd7}
There have been numerous attempts to add GnuPG support to Python
over
the years. Some of the most well known are listed here, along with
what differentiates them.

\subsubsection{The python-gnupg package maintained by Vinay Sajip}
\label{sec:org0136847}
This is arguably the most popular means of integrating GPG with
Python. The package utilises the \texttt{subprocess} module to implement
wrappers for the \texttt{gpg} and \texttt{gpg2} executables normally invoked on the
command line (\texttt{gpg.exe} and \texttt{gpg2.exe} on Windows).

The popularity of this package stemmed from its ease of use and
capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the
past; most of which stemmed from using unsafe methods of accessing the
command line via the \texttt{subprocess} calls. While some effort has been
made over the last two to three years (as of 2018) to mitigate this,
particularly by no longer providing shell access through those
subprocess calls, the wrapper is still somewhat
limited in the scope
of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

\subsubsection{The gnupg package created and maintained by Isis Lovecruft}
\label{sec:orgdc03987}
In 2015 Isis Lovecruft from the Tor Project forked and then
re-implemented the python-gnupg package as just gnupg. This new
package also relied on subprocess to call the \texttt{gpg} or \texttt{gpg2}
binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however,
resulted in conflicts with the original python-gnupg and since its
functions were called in a different manner to python-gnupg, the

release of this package also resulted in a great deal of consternation
when people installed what they thought was an upgrade that
subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License
version 3.0 (or any later version).

\subsubsection{The PyME package maintained by Martin
Albrecht}
\label{sec:org715600b}
This package is the origin of these bindings, though they are somewhat
different now. For details of when and how the PyME package was
folded back into GPGME itself see the \href{short-history.org}{Short History} document.\footnote{\texttt{short-history} and/or \texttt{short-history.html}.}

The PyME package was first released in 2002 and was also the first
attempt to implement a low level binding to GPGME. In doing so it
provided access to considerably more functionality than either the
\texttt{python-gnupg} or \texttt{gnupg} packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME
itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version
2.1 (or any
later version).

\section{GPGME Python bindings installation}
\label{sec:org73d8d6f}
\subsection{No PyPI}
\label{sec:orgec9a038}
Most third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against \texttt{gpgme.h} and \texttt{gpgme.h} is generated from
\texttt{gpgme.h.in} at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require

either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding \hyperref[sec:org645735a]{CFFI and SWIG} at the end of this
section for further details.

\subsection{Requirements}
\label{sec:org2f7f06c}
The
GPGME Python bindings only have three requirements:

\begin{enumerate}
\item A suitable version of Python 2 or Python 3. With Python 2 that
means CPython 2.7 and with Python 3 that means CPython 3.4 or
higher.
\item \href{https://www.swig.org}{SWIG}.
\item GPGME itself. Which also means that all of GPGME's dependencies
must be installed too.
\end{enumerate}

\subsubsection{Recommended Additions}
\label{sec:org25bd7d4}
Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide
a significant advantage in some way.

\begin{enumerate}
\item If possible, use Python 3 instead of 2.
\item Favour a more recent version of Python since even 3.4 is due to
reach EOL soon. In production systems and services, Python 3.6
should be robust enough to be relied on.
\item If possible add the
following Python modules which are not part of
the standard library: \href{http://docs.python-requests.org/en/latest/index.html}{Requests},
\href{https://cython.org/}{Cython}, \href{https://pendulum.eustace.io/}{Pendulum} and
\href{https://github.com/Selfnet/hkp4py}{hkp4py}.
\end{enumerate}

Chances are quite high that at least the first one and maybe two of
those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly
well known and commonly installed ones, however, which are in many

cases likely to have already been installed on many systems or be
familiar to Python programmers.

\subsection{Installation}
\label{sec:orgf1c7587}
Installing the Python bindings is effectively achieved by compiling
and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME
are installed you only need to confirm that the version(s) of Python
you want the
bindings installed for are in your \texttt{\$PATH}.

By default GPGME will attempt to install the bindings for the most
recent or highest version number of Python 2 and Python 3 it detects
in \texttt{\$PATH}. It specifically checks for the \texttt{python} and \texttt{python3}
executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: \texttt{python},
\texttt{python2} and \texttt{python2.7}.

For Python 3 it checks for these executables in this order: \texttt{python3},
\texttt{python3.7}, \texttt{python3.6}, \texttt{python3.5} and \texttt{python3.4}.\footnote{With no issues reported
specific to Python 3.7, the release of
Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing
with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of
3.6 now. Production environments with more conservative requirements
will always enforce their own policies anyway and installation to each
supported minor release
is quite possible too.}

On systems where \texttt{python} is actually \texttt{python3} and not \texttt{python2} it
may be possible that \texttt{python2} may be overlooked, but there have been
no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has
been extensive testing and work with these bindings with no issues
specifically relating to the new version of Python or any of the new
features of either the language or the bindings. This has also been
the case with Python 3.7.1rc1. With that in mind and given the
release of Python 3.7.1 is scheduled for around the same time as GPGME
1.12.0, the order of preferred Python versions has been changed to
move Python 3.7 ahead of Python 3.6.

\subsubsection{Installing GPGME}
\label{sec:org903bd67}

See the GPGME \texttt{README} file for details of how to install GPGME from
source.

\subsection{Known Issues}
\label{sec:org0d2a332}
There are a few known issues with the current build process
 and the
Python bindings. For the most part these are easily addressed should
they be encountered.

\subsubsection{Breaking Builds}
\label{sec:orgbac75f3}
Occasionally when installing GPGME with the Python bindings included
it may be observed that the \texttt{make} portion of that process induces a
large very number of warnings and, eventually errors which end that
part of the build process. Yet following that with \texttt{make check} and
\texttt{make install} appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to
dynamically generate the C bindings for GPGME in the first place. So
the entire process will always produce \texttt{lang/python/python2-gpg/} and
\texttt{lang/python/python3-gpg/} directories. These should contain the
build output generated during compilation, including the complete
bindings and module installed into \texttt{site-packages}.

Occasionally the errors in the early part or some other conflict
(e.g. not installing
 as \textbf{\emph{root}} or \textbf{\emph{su}}) may result in nothing
being installed to the relevant \texttt{site-packages} directory and the
build directory missing a lot of expected files. Even when this
occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the
\textbf{root} user or prepended with \texttt{sudo -H}\footnote{Yes, even if you use virtualenv with everything you
do in
Python. If you want to install this module as just your user account
then you will need to manually configure, compile and install the
\emph{entire} GnuPG stack as that user as well. This includes libraries
which are not often installed that way. It can be done and there are
circumstances under which it is worthwhile, but generally only on
POSIX systems which utilise single user mode (some even require it).} in the \texttt{lang/python/}
directory:

\begin{verbatim}
/path/to/pythonX.Y setup.py build
/path/to/pythonX.Y setup.py

build
/path/to/pythonX.Y setup.py install
\end{verbatim}

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or incomplete steps during the
\texttt{configure}, \texttt{make} and \texttt{make install} steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
\texttt{setup.py} and \texttt{gpgme.h} files).

\begin{enumerate}
\item IMPORTANT Note
\label{sec:org37f3d4a}
If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when
listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build
process before generating bindings for those other languages. In
these cases it may be preferable
 to configure all preferred language
bindings separately with alternative \texttt{configure} steps for GPGME using
the \texttt{-{}-enable-languages=\$LANGUAGE} option.

Alternatively \texttt{make} (or \texttt{gmake}, depending on your platform) may be
run with the the \texttt{-k} option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.
\end{enumerate}

\subsubsection{Reinstalling Responsibly}
\label{sec:org21e4dec}
Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the
relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues

observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing the previous version(s) is simply a matter of changing to the
relevant \texttt{site-packages} directory for the version of Python in
question and removing the \texttt{gpg/} directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

\subsubsection{Multiple installations}
\label{sec:org30b18bd}
For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python
installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings \textbf{must} match those used to
compile Python itself, including the version number(s) (at least going
by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME \href{https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e}{1.12.1} the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, 3.6,
3.7 and 3.8 (dev branch) that it finds. Usually this will be in the
same prefix as GPGME itself, but is dictated by the \texttt{\$PATH} when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find,
including alternative prefixes.

\subsubsection{Won't Work With Windows}

\label{sec:org0ebae3a}
There are semi-regular reports of Windows users having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
\href{https://python.org}{Python website} (i.e. mostly MSI installers, sometimes self-extracting
\texttt{.exe} files).

The Windows versions of Python are not built using Cygwin, MinGW or
Msys2; they're built using Microsoft Visual Studio. Furthermore the
version used is \emph{considerably} more advanced than the version which
MinGW obtained a small number of files from many years ago in order to
be able to compile anything at all. Not only that, but there are
changes to the version of
 Visual Studio between some micro releases,
though that is is particularly the case with Python 2.7, since it has
been kept around far longer than it should have been.

There are two theoretical solutions to this issue:

\begin{enumerate}
\item Compile and install the GnuPG stack, including GPGME and the
Python bindings using the same version of Microsoft Visual Studio
used by the Python Foundation to compile the version of Python
installed.

If there are multiple versions of Python then this will need to be
done with each different version of Visual Studio used for those
versions of Python.

\item Compile and install Python using the same tools used by choice,
such as MinGW or Msys2.
\end{enumerate}

Do \textbf{not} use the official Windows installer for Python unless
following the first method.

In this type of situation it may even be for the best to accept that
there are less limitations on permissive software than free software
and simply opt to use a recent version of the Community
 Edition of
Microsoft Visual Studio to compile and build all of it, no matter
what.

Investigations into the extent or the limitations of this issue are
ongoing.

The following table lists the version of Microsoft Visual Studio which
needs to be used when compiling GPGME and the Python bindings with
each version of the CPython binary released \href{https://www.python.org/downloads/windows/}{for Windows}:

\begin{center}
\begin{tabular}{rll}
CPython & Microsoft product name & runtime filename\\
2.7.6 & Visual Studio 2008 & MSVCR90.DLL\\
3.4.0 & Visual Studio 2010 & MSVCR100.DLL\\
3.5.0 & Visual Studio 2015 & \textbf{see below}\\
3.6.0 & Visual Studio 2015 & \textbf{see below}\\
3.7.0 & Visual Studio 2017* & \textbf{see below}\\
\end{tabular}
\end{center}

It is important to note that MingW and Msys2 ship with the Visual C
runtime from Microsoft Visual Studio 2005 and are thus \textbf{incompatible}
with all the versions of CPython which can be used with the GPGME
Python bindings.

It is
also important to note that from CPython 3.5 onwards, the Python
Foundation has adopted the reworking of the Visual C runtime which was
performed for Visual Studio 2015 and aimed at resolving many of these
kinds of issues. Much greater detail on these issues and the correct
file(s) to link to are available from Matthew Brett's invaluable page,
\href{https://matthew-brett.github.io/pydagogue/python_msvc.html}{Using Microsoft Visual C with Python}. It is
also worth reading the
Microsoft Developer Network blog post on \href{http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx}{the universal CRT} and Steve
Dower's blog posts on Python extensions (\href{http://stevedower.id.au/blog/building-for-python-3-5}{part 1} and
\href{http://stevedower.id.au/blog/building-for-python-3-5-part-two}{part 2}).

The second of those two posts by Steve Dower contains the details of
specific configuration options required for compiling anything to be
used with official CPython
releases. In addition to those
configuration and compiler settings to use, the versions of Visual
Studio prior to Visual Studio 2015 did not support 64-bit systems by
default. So compiling a 64-bit version of these bindings for a 64-bit
version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the \href{https://wiki.python.org/moin/WindowsCompilers}{Windows compilers}
wiki page on the
CPython wiki is another essential reference on the relevant versions
of Visual Studio to use and the degree of compatibility with CPython
releases.

Eventually someone will ask why there isn't an installable binary for
Windows, which the GPGME of the licenses do not preclude as long as
the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with
differing configuration options depending on the target Windows
version and whether the architecture is 64-bit or 32-bit makes it
difficult to provide a correct
 binary installer for Windows users. At
the bare minimum doing so would require the GnuPG project compile ten
different versions of the bindings with each release; both 32-bit and
64-bit versions for CPython 2.7 and 3.4, with 64-bit versions for both
x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5,
3.6, 3.7 and later releases. That's the bare \textbf{minimum}, it'd probably
be higher.

Additionally, with only a binary installation used in conjunction with
the CPython installer from \texttt{python.org} the advanced options available
which utilise \hyperref[sec:org3b53926]{Cython} will not be able to be used at all. Cython
depends on being able to compile the C code it generates and that too
would need to utilise a matching runtime to both the installed version
of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

\begin{enumerate}
\item Use a recent version of CPython; at least 3.5, but ideally 3.6 or
later.

\item
 Use Visual Studio 2015 or the standalone build tools for Visual
Studio 2017 (or later).

\item Compile both CPython and GPGME with these bindings using the tools
selected in step 2.

\item Ignore MingW, Msys2 and the official CPython binary installers.

\item Be thankful the answer to this question wasn't simply to say
something like, install Linux or install FreeBSD (or even
Apple's OS X).
\end{enumerate}

\subsubsection{CFFI is the Best and GPGME should use it instead of SWIG}
\label{sec:org645735a}
There are many reasons for favouring \href{https://cffi.readthedocs.io/en/latest/overview.html}{CFFI} and

proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the
 bindings to Python using the \texttt{gpgme.h} file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in
at least one of CFFI's dependencies before any of this can be
addressed.

So if you're a massive fan of CFFI; that's great, but if you want this
project to switch to CFFI then rather than just insisting that it
should, I'd suggest you volunteer to bring CFFI up to the level this
project needs.

If you're actually seriously considering doing so, then I'd suggest
taking the \texttt{gpgme-tool.c} file in the GPGME \texttt{src/} directory and
getting that to work with any of the CFFI API methods
 (not the ABI
methods, they'll work with pretty much anything). When you start
running into trouble with "ifdefs" then you'll know what sort of
things are lacking. That doesn't even take into account the amount of
work saved via SWIG's code generation techniques either.

\subsubsection{Virtualised Environments}
\label{sec:orgb0d56f5}
It is fairly common practice amongst Python developers to, as much as
possible, use packages like virtualenv to keep various things that are
to be installed from interfering with each other. Given how much of
the GPGME bindings is often at odds with the usual pythonic way of
doing things, it stands to reason that this would be called into
question too.

As it happens the answer as to whether or not the bindings can be used
with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching

prefix of GPGME itself. Which means that when GPGME, and ideally the
rest of the GnuPG stack, is installed to a prefix
 like \texttt{/usr/local} or
\texttt{/opt/local} then the bindings would need to be installed to the main
Python installation and not a virtualised abstraction. Attempts to
separate the two in the past have been known to cause weird and
intermittent errors ranging from minor annoyances to complete failures
in the build process.

As a consequence we only recommend building with and installing to the
main Python installations within the same prefix as GPGME is installed
to or which are found by GPGME's configuration stage immediately prior
to running the make commands. Which is exactly what the compiling and
installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled
module may be installed into a virtualenv of the same major and minor
version matching the build. Alternatively it is possible to utilise a
\texttt{sites.pth} file in the \texttt{site-packages/} directory of a virtualenv
installation, which links back to the system
 installations
corresponding directory in order to import anything installed system
wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet
complete, preliminary testing of them indicates that both are viable
as long as the main installation is complete. Which means that
certain other options normally restricted to virtual environments are
also available, including integration with pythonic test suites
(e.g. \href{https://docs.pytest.org/en/latest/index.html}{pytest}) and other large projects.

That said, it is worth reiterating the warning regarding non-standard
installations. If one were to attempt to install the bindings only to
a virtual environment without somehow also including the full GnuPG
stack (or enough of it as to include GPGME) then it is highly likely
that errors would be encountered at some point and more than a little
likely that the build process itself would break.

If a degree of separation
 from the main operating system is still
required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. \href{https://www.virtualbox.org/}{VirtualBox}), a
hardware emulation layer (e.g. \href{https://www.qemu.org/}{QEMU}) or an application container
(e.g. \href{https://www.docker.com/why-docker}{Docker}).

Finally it should be noted that the limited tests conducted thus far
have been using the \texttt{virtualenv} command in a new directory to create
the virtual python environment. As opposed to the standard \texttt{python3

-m venv} and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command \texttt{python3 -m virtualenv /path/to/install/virtual/thingy}
instead.

\section{Fundamentals}
\label{sec:org832642e}
Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly
 or these Python bindings.

\subsection{No REST}
\label{sec:org3d694ba}
The first part of which is or will be fairly blatantly obvious upon
viewing the first example, but it's worth reiterating anyway. That
being that this API is \emph{\textbf{not}} a REST API. Nor indeed could it ever
be one.

Most, if not all, Python programmers (and not just Python programmers)
know how easy it is to work with a RESTful API. In fact they've
become so popular that many other APIs attempt to emulate REST-like
behaviour as much as they are able. Right down to the use of JSON
formatted output to facilitate the use of their API without having to
retrain developers.

This API does not do that. It would not be able to do that and also
provide access to the entire C API on which it's built. It does,
however, provide a very pythonic interface on top of the direct
bindings and it's this pythonic layer that this HOWTO deals with.

\subsection{Context}
\label{sec:org10e4004}
One of the reasons which prevents
 this API from being RESTful is that
most operations require more than one instruction to the API to
perform the task. Sure, there are certain functions which can be
performed simultaneously, particularly if the result known or strongly
anticipated (e.g. selecting and encrypting to a key known to be in the
public keybox).

There are many more, however, which cannot be manipulated so readily:
they must be performed in a specific sequence and the result of one
operation has a direct bearing on the outcome of subsequent
operations. Not merely by generating an error either.

When dealing with this type of persistent state on the web, full of
both the RESTful and REST-like, it's most commonly referred to as a
session. In GPGME, however, it is called a context and every
operation type has one.

\section{Working with keys}
\label{sec:orgff114ca}
\subsection{Key selection}
\label{sec:org6589217}
Selecting keys to encrypt to or to sign with will be a common
occurrence when working with
 GPGMe and the means available for doing
so are quite simple.

They do depend on utilising a Context; however once the data is
recorded in another variable, that Context does not need to be the
same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that
key's key ID or fingerprint, preferably the full fingerprint without
any spaces in it. A long key ID will probably be okay, but is not
advised and short key IDs are already a problem with some being
generated to match specific patterns. It does not matter whether the
pattern is upper or lower case.

So this is the best method:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

This is passable and very likely to be common:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

And this is a really bad idea:

\begin{verbatim}

```
import
 gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
\end{verbatim}

Alternatively it may be that the intention is to create a list of keys
which all match a particular search string.  For instance all the
addresses at a particular domain, like this:

\begin{verbatim}
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
\end{verbatim}


\subsubsection{Counting keys}
\label{sec:org63a3d62}
Counting the number of keys in your public keybox (\texttt{pubring.kbx}), the
format which has superseded the old keyring format (\texttt{pubring.gpg} and
\texttt{secring.gpg}), or the number of secret keys is a very simple task.

\begin{verbatim}
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys:  {0}
 Number of public keys:  {1}
""".format(secnum, pubnum))
\end{verbatim}

NOTE:
 The \hyperref[sec:org3b53926]{Cython} introduction in the \hyperref[sec:org944cc00]{Advanced and
Experimental}
section uses this same key counting code with Cython to demonstrate
```

some areas where Cython can improve performance even with the
bindings. Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.

\subsection{Get key}
\label{sec:org26adb2e}
An alternative method of getting a single key via its fingerprint is
available directly within a Context with \texttt{Context().get_key}. This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due
 to expire at the end of 2018:

\begin{verbatim}
import gpg

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
\end{verbatim}

Whereas this example demonstrates selecting the author's current key
with the \texttt{secret} key word argument set to \texttt{True}:

\begin{verbatim}
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
\end{verbatim}

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

\subsection{Importing keys}

\label{sec:org1ad598a}
Importing keys is possible with the \texttt{key_import()} method and takes
one argument which is a bytes literal object containing either the
binary or ASCII armoured key data for one or more
 keys.

The following example retrieves one or more keys from the SKS
keyservers via the web using the requests module. Since requests
returns the content as a bytes literal object, we can then use that
directly to import the resulting data into our keybox.

\begin{verbatim}
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)
result = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
  print(result)
elif result is not None and hasattr(result, "considered") is True:
  num_keys = len(result.imports)
  new_revs = result.new_revocations
  new_sigs = result.new_signatures
  new_subs = result.new_sub_keys
  new_uids = result.new_user_ids
  new_scrt = result.secret_imported
  nochange = result.unchanged
  print("""
 The total number of keys considered for import was: {0}

   Number of keys revoked: {1}
  Number of new signatures: {2}
    Number of new subkeys: {3}
   Number of new user IDs: {4}
 Number of new secret keys: {5}
  Number of unchanged keys: {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
  for i in range(num_keys):

```
      print("{0}\n".format(result.imports[i].fpr))
else:
  pass
\end{verbatim}

NOTE: When searching for a key ID of any length or a fingerprint
(without spaces), the SKS servers require the the leading \texttt{0x}
indicative of hexadecimal be included.  Also note that the old short
key IDs (e.g. \texttt{0xDEADBEEF}) should no longer be used due to the
relative ease by which such key IDs can be reproduced, as demonstrated
by the Evil32 Project in 2014 (which was subsequently exploited in
2016).

Testing for whether a string in any given search is or may be a
hexadecimal
 value which may be missing the leading \texttt{0x} is a simple
matter of using a try/except statement which attempts to convert the
string as hex to an integer and then back to hex; then using that to
search with.  Raising a ValueError simply results in treating the
string as a string.  This is the method and logic utilised in the
\texttt{import-keys-hkp.py} script (see below).


\subsubsection{Working with ProtonMail}
\label{sec:org27b0d6f}
Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail public keys.

\begin{verbatim}
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []

if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")

if keyterm.count("@") == 2 and keyterm.startswith("@") is
```

```
 True:
   ksearch.append(keyterm[1:])
   ksearch.append(keyterm[1:])
   ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
   ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
   ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
   ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
   ksearch.append("{0}@protonmail.com".format(keyterm))
   ksearch.append("{0}@protonmail.ch".format(keyterm))
   ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
   uidlist = keyterm.split("@")
   for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
   uidlist = keyterm.split("@")
   for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
       ksearch.append("{0}@pm.me".format(uid))
else:
   ksearch.append(keyterm)

for k in ksearch:
   payload = {"op": "get", "search": k}
   try:
      r = requests.get(url, verify=True, params=payload)
      if r.ok is True:
         result = c.key_import(r.content)
      elif r.ok is False:
         result = r.content
   except Exception as e:
      result = None

   if result is not None and hasattr(result, "considered") is False:
      print("{0} for {1}".format(result.decode(), k))
   elif result is not None and hasattr(result, "considered") is True:
      num_keys = len(result.imports)
      new_revs = result.new_revocations
      new_sigs = result.new_signatures
      new_subs = result.new_sub_keys
      new_uids = result.new_user_ids
      new_scrt = result.secret_imported
      nochange = result.unchanged
```

```
      print("""
The total number of keys considered for import was: {0}

With UIDs wholely or partially matching the
 following string:

      {1}

  Number of keys revoked: {2}
Number of new signatures: {3}
   Number of new subkeys: {4}
  Number of new user IDs: {5}
Number of new secret keys: {6}
Number of unchanged keys: {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
         nochange))
      for i in range(num_keys):
         print(result.imports[i].fpr)
      print("")
   elif result is None:
      print(e)
\end{verbatim}

Both the above example, \href{../examples/howto/pmkey-import.py}{pmkey-import.py}, and a version which
prompts
for an alternative GnuPG home directory, \href{../examples/howto/pmkey-import-alt.py}{pmkey-import-alt.py}, are
available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool.  One notable difference
being
 that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.


\subsubsection{Importing with HKP for Python}
\label{sec:org592d7ab}
Performing the same tasks with the \href{https://github.com/Selfnet/hkp4py}{hkp4py module} (available via PyPI)
is not too much different, but does provide a number of options of
benefit to end users.  Not least of which being the ability to perform
some checks on a key before importing it or not.  For instance it may
be the policy of a site or project to only import keys which have not
been revoked.  The hkp4py module permits such checks prior to the
```

importing of the keys found.

\begin{verbatim}
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
  pattern = " ".join(sys.argv[1:])
elif
 len(sys.argv) == 2:
  pattern = sys.argv[1]
else:
  pattern = input("Enter the pattern to search for keys or user IDs: ")

if pattern is not None:
  try:
    key = server.search(hex(int(pattern, 16)))
    keyed = True
  except ValueError as ve:
    key = server.search(pattern)
    keyed = False

  if key is not None:
    keys.append(key[0])
    if keyed is True:
      try:
        fob = server.search(pattern)
      except:
        fob = None
      if fob is not None:
        keys.append(fob[0])
    else:
      pass
  else:
    pass

  for logrus in pattern.split():
    try:
      key = server.search(hex(int(logrus, 16)))
      hexed = True
    except ValueError as ve:

```
            key = server.search(logrus)
            hexed = False

        if key is not None:
            keys.append(key[0])
            if hexed is True:
                try:

 fob = server.search(logrus)
                except:
                    fob = None
                if fob is not None:
                    keys.append(fob[0])
            else:
                pass
        else:
            pass


if len(keys) > 0:
   for key in keys:
       import_result = c.key_import(key.key_blob)
       results.append(import_result)

for result in results:
   if result is not None and hasattr(result, "considered") is False:
       print(result)
   elif result is not None and hasattr(result, "considered") is True:
       num_keys = len(result.imports)
       new_revs = result.new_revocations
       new_sigs = result.new_signatures
       new_subs = result.new_sub_keys
       new_uids = result.new_user_ids
       new_scrt = result.secret_imported
       nochange = result.unchanged
       print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
Number of new signatures:  {2}
   Number of new subkeys:  {3}
  Number
 of new user IDs:  {4}
Number of new secret keys:  {5}
Number of unchanged keys:  {6}

The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
```

```
        nochange))
    for i in range(num_keys):
        print(result.imports[i].fpr)
    print("")
  else:
    pass
```

Since the hkp4py module handles multiple keys just as effectively as one (\texttt{keys} is a list of responses per matching key), the example above is able to do a little bit more with the returned data before anything is actually imported.

\subsubsection{Importing from ProtonMail with HKP for Python}
\label{sec:org3966a76}

Though this can provide certain benefits even when working with ProtonMail, the scope is somewhat constrained there due to the limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg" produces hundreds of results from any time the word appears in any part of
a user ID. Performing the same search on the ProtonMail keyserver returns zero results, even though there are at least two test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that server by ProtonMail to require an exact match of the full email address of the ProtonMail user whose key is being requested. Presumably this is intended to reduce breaches of privacy of their users as an email address must already be known before a key for that address can be obtained.

\begin{enumerate}
\item Import from ProtonMail via HKP for Python Example no. 1
\label{sec:org6cd15c3}

The following script is available with the rest of the examples under the somewhat less than original name, \texttt{pmkey-import-hkp.py}.

```
\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
```

```
This script searches the ProtonMail key server for the specified key and
imports it.

Usage:  pmkey-import-hkp.py [search strings]
""")

c
 = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
  keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
      ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
```

```
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
    else:
        ksearch.append(keyterm)

for k in ksearch:
    print("Checking for key for: {0}".format(k))
    try:
        keys = server.search(k)
        if isinstance(keys, list) is True:
            for key in keys:
                allkeys.append(key)
                try:
                    import_result = c.key_import(key.key_blob)

 except Exception as e:
                    import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}

    Number of new user IDs:  {5}
Number of new secret keys:  {6}
```

```
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
       for i in range(num_keys):
           print(result.imports[i].fpr)
       print("")
   elif result is None:
       pass
\end{verbatim}


\item Import from ProtonMail via HKP for Python Example no. 2
\label{sec:org3b674e5}
Like its counterpart above, this script can also be found with the
rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything
passed as a \texttt{homedir} which either does not exist or which is not a
directory, as also being a pssible user ID to check for.  It's not
guaranteed to pick up on all such cases, but it should cover most of
them.

\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server
 for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.

Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None
```

```
if len(sys.argv) > 3:
  homedir = sys.argv[1]
  keyterms = sys.argv[2:]
elif len(sys.argv) == 3:
  homedir = sys.argv[1]
  keyterm = sys.argv[2]
  keyterms.append(keyterm)
elif len(sys.argv) == 2:
  homedir = ""
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  keyterm = input("Enter the key ID, UID or search string: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
  keyterms.append(keyterm)

if len(homedir) == 0:
  homedir = None
  homeless = False

if homedir is not None:
  if homedir.startswith("~"):
     if os.path.exists(os.path.expanduser(homedir))
 is True:
        if os.path.isdir(os.path.expanduser(homedir)) is True:
           c.home_dir = os.path.realpath(os.path.expanduser(homedir))
        else:
           homeless = True
     else:
        homeless = True
  elif os.path.exists(os.path.realpath(homedir)) is True:
     if os.path.isdir(os.path.realpath(homedir)) is True:
        c.home_dir = os.path.realpath(homedir)
     else:
        homeless = True
  else:
     homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
# a search string.
if homeless is True:
  keyterms.append(homedir)
  c.home_dir = None
else:
  pass

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
```

```
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
    elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
        ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
         ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
        ksearch.append("{0}@pm.me".format(keyterm[1:]))
    elif keyterm.count("@") == 0:
        ksearch.append("{0}@protonmail.com".format(keyterm))
        ksearch.append("{0}@protonmail.ch".format(keyterm))
        ksearch.append("{0}@pm.me".format(keyterm))
    elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    elif keyterm.count("@") > 2:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    else:
        ksearch.append(keyterm)

for k in ksearch:
    print("Checking
 for key for: {0}".format(k))
    try:
        keys = server.search(k)
        if isinstance(keys, list) is True:
            for key in keys:
                allkeys.append(key)
                try:
                    import_result = c.key_import(key.key_blob)
                except Exception as e:
                    import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
```

```
  elif result is not None and hasattr(result, "considered") is True:
      num_keys = len(result.imports)
      new_revs = result.new_revocations
      new_sigs = result.new_signatures
      new_subs = result.new_sub_keys
      new_uids = result.new_user_ids
      new_scrt = result.secret_imported
       nochange = result.unchanged
      print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

      {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
         nochange))
      for i in range(num_keys):
          print(result.imports[i].fpr)
      print("")
  elif result is None:
      pass
\end{verbatim}
\end{enumerate}


\subsection{Exporting keys}
\label{sec:org4596a77}
Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine.  Two of those functions are for exporting public keys and the
third is for exporting secret keys.


\subsubsection{Exporting
 public keys}
\label{sec:org873704f}
There are two methods of exporting public keys, both of which are very
similar to the other.  The default method, \texttt{key\_export()}, will export
a public key or keys matching a specified pattern as normal.  The
```

alternative, the \texttt{key_export_minimal()} method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

\begin{verbatim}
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the
 GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export(pattern=logrus)
except:
  result = c.key_export(pattern=None)

```
if result is not None:
   with open(keyfile, "wb") as f:
      f.write(result)
else:
   pass
\end{verbatim}

It should be noted that the result will only return \texttt{None} when a
search pattern has been entered, but has not matched any keys.  When
the search pattern itself is set to \texttt{None} this triggers the exporting
of the entire public keybox.

\begin{verbatim}
import
 gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = sys.argv[3]
elif len(sys.argv) == 3:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
   keyfile = sys.argv[1]
   logrus = input("Enter the UID matching the key(s) to export: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")
else:
   keyfile = input("Enter the path and filename to save the secret key to: ")
   logrus = input("Enter the UID matching the key(s) to export: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
   if os.path.exists(os.path.expanduser(homedir)) is True:
      c.home_dir = os.path.expanduser(homedir)
   else:
      pass
elif os.path.exists(homedir)
```

```
 is True:
   c.home_dir = homedir
else:
   pass

try:
   result = c.key_export_minimal(pattern=logrus)
except:
   result = c.key_export_minimal(pattern=None)

if result is not None:
   with open(keyfile, "wb") as f:
      f.write(result)
else:
   pass
\end{verbatim}


\subsubsection{Exporting secret keys}
\label{sec:org6c28d3d}
Exporting secret keys is, functionally, very similar to exporting
public keys; save for the invocation of \texttt{pinentry} via \texttt{gpg-agent} in
order to securely enter the key's passphrase and authorise the export.

The following example exports the secret key to a file which is then
set with the same permissions as the output files created by the
command line secret key export options.

\begin{verbatim}
import gpg
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
   keyfile
 = sys.argv[1]
   logrus = sys.argv[2]
   homedir = sys.argv[3]
elif len(sys.argv) == 3:
```

```
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
    homedir = os.path.realpath(userdir)
  else:
    homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir =
 None
else:
  if os.path.isdir(homedir) is False:
    homedir = None
  else:
    pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
```

\end{verbatim}

Alternatively the approach of the following script can be used. This
longer example saves the exported secret key(s) in files in the GnuPG
home directory, in addition to setting the file permissions as only
readable and writable by the user. It also exports the secret key(s)
twice in order to output both GPG binary (\texttt{.gpg}) and ASCII armoured
(\texttt{.asc}) files.

\begin{verbatim}
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the
 user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
  gpgconfcmd = "gpgconf --list-dirs homedir"

a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")

```
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir)
 == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

if c.home_dir is not None:
  if c.home_dir.endswith("/"):
     gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
     ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
     gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
     ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
     hd = os.environ["GNUPGHOME"]
  else:
     try:
        hd = subprocess.getoutput(gpgconfcmd)
     except:
        process = subprocess.Popen(gpgconfcmd.split(),
                                   stdout=subprocess.PIPE)
        procom = process.communicate()
        if sys.version_info[0] == 2:
           hd = procom[0].strip()
        else:
           hd = procom[0].decode().strip()
```

```
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)

try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
     f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
     f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
\end{verbatim}


\subsubsection{Sending public keys to the SKS Keyservers}
\label{sec:org82d4958}
As with the previous section on importing
 keys, the \texttt{hkp4py} module
adds another option with exporting keys in order to send them to the
public keyservers.

The following example demonstrates how this may be done.

\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
```

```
if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
    export_result = c.key_export(pattern=logrus)
  except Exception as e:
    print(e)
    export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
    try:
      send_result = server.add(export_result)
    except:
       send_result = server.add(export_result.decode())
    if send_result is not None:
      print(send_result)
    else:
      pass
  except Exception as e:
    print(e)
else:
  pass
\end{verbatim}

An expanded version of this script with additional functions for
specifying an alternative homedir location is in the examples
directory as \texttt{send-key-to-keyserver.py}.

The \texttt{hkp4py} module appears to handle both string and byte literal text
data equally well, but the GPGME bindings deal primarily with byte
literal data only and so this script sends in that format first, then
tries the string literal form.


\section{Basic Functions}
\label{sec:orgb40b488}
The most frequently called features of any cryptographic library will
be the most fundamental tasks for encryption software.  In this
section we will look at how to programmatically encrypt data, decrypt
```

it, sign it and verify signatures.

\subsection{Encryption}
\label{sec:org3170365}
Encrypting
 is very straight forward. In the first example below the
message, \texttt{text}, is encrypted to a single recipient's key. In the
second example the message will be encrypted to multiple recipients.

\subsubsection{Encrypting to one key}
\label{sec:org8098c64}
Once the the Context is set the main issues with encrypting data is
essentially reduced to key selection and the keyword arguments
specified in the \texttt{gpg.Context().encrypt()} method.

Those keyword arguments are: \texttt{recipients}, a list of keys encrypted to
(covered in greater detail in the following section); \texttt{sign}, whether
or not to sign the plaintext data, see subsequent sections on signing
and verifying signatures below (defaults to \texttt{True}); \texttt{sink}, to write
results or partial results to a secure sink instead of returning it
(defaults to \texttt{None}); \texttt{passphrase}, only used when utilising symmetric
encryption (defaults to \texttt{None}); \texttt{always_trust}, used to override
 the
trust model settings for recipient keys (defaults to \texttt{False});
\texttt{add_encrypt_to}, utilises any preconfigured \texttt{encrypt-to} or
\texttt{default-key} settings in the user's \texttt{gpg.conf} file (defaults to
\texttt{False}); \texttt{prepare}, prepare for encryption (defaults to \texttt{False});
\texttt{expect_sign}, prepare for signing (defaults to \texttt{False}); \texttt{compress},
compresses the plaintext prior to encryption (defaults to \texttt{True}).

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:

```
    afile.write(ciphertext)
\end{verbatim}

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the \texttt{gpg.conf} file:

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"

with open("secret_plans.txt", "rb") as afile:
   text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                    always_trust=True,
                                    add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
   afile.write(ciphertext)
\end{verbatim}

If the \texttt{recipients} parameter is empty then the plaintext is encrypted
symmetrically.  If no \texttt{passphrase} is supplied as a parameter or via a
callback registered with
 the \texttt{Context()} then an out-of-band prompt
for the passphrase via pinentry will be invoked.


\subsubsection{Encrypting to multiple keys}
\label{sec:orgdcf6e47}
Encrypting to multiple keys essentially just expands upon the key
selection process and the recipients from the previous examples.

The following example encrypts a message (\texttt{text}) to everyone with an
email address on the \texttt{gnupg.org} domain,\footnote{You probably don't really want to do this.  Searching the
keyservers for "gnupg.org" produces over 400 results, the majority of
which aren't actually at the gnupg.org domain, but just included a
comment regarding the project in their key somewhere.} but does \emph{not} encrypt
to a default key or other key which is configured to normally encrypt
to.

\begin{verbatim}
import gpg
```

text = b"""Oh look, another test message.

The same rules apply as with the previous example and more likely
than not, the message will actually be drawn from reading the
contents
 of a file or, maybe, from entering data at an input()
prompt.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data
format.
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
     logrus.append(rpattern[i])

ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
\end{verbatim}

All it would take to change the above example to sign the message
and also encrypt the message to any configured default keys would
be to change the \texttt{c.encrypt} line to this:

\begin{verbatim}
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,

                        always_trust=True,
                                  add_encrypt_to=True)
\end{verbatim}

The only keyword arguments requiring modification are those for which
the default values are changing. The default value of \texttt{sign} is
\texttt{True}, the default of \texttt{always_trust} is \texttt{False}, the default of
\texttt{add_encrypt_to} is \texttt{False}.

If \texttt{always_trust} is not set to \texttt{True} and any of the recipient keys
are not trusted (e.g. not signed or locally signed) then the

encryption will raise an error. It is possible to mitigate this
somewhat with something more like this:

```
\begin{verbatim}
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
     logrus.append(rpattern[i])

  try:
     ciphertext, result,
 sign_result = c.encrypt(text, recipients=logrus,
                                      add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
     for i in range(len(e.recipients)):
        for n in range(len(logrus)):
           if logrus[n].fpr == e.recipients[i].fpr:
              logrus.remove(logrus[n])
           else:
              pass
     try:
        ciphertext, result, sign_result = c.encrypt(text,
                                          recipients=logrus,
                                          add_encrypt_to=True)
        with open("secret_plans.txt.asc", "wb") as afile:
           afile.write(ciphertext)
     except:
        pass
\end{verbatim}
```

This will attempt to encrypt to all the keys searched for, then remove
invalid recipients if it fails and try again.

```
\subsection{Decryption}
\label{sec:org1282b3d}
```

Decrypting something encrypted to a key in one's secret
 keyring is
fairly straight forward.

In this example code, however, preconfiguring either \texttt{gpg.Context()}
or \texttt{gpg.core.Context()} as \texttt{c} is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to \texttt{c} simply adds lines for no
gain.

\begin{verbatim}
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
  try:
     plaintext, result, verify_result = gpg.Context().decrypt(cfile)
  except gpg.errors.GPGMEError as e:
     plaintext = None
     print(e)

if plaintext is not None:
  with open(newfile, "wb") as nfile:
    nfile.write(plaintext)
  else:
     pass
\end{verbatim}

The data available in \texttt{plaintext} in this example is the decrypted
content as a byte object, the recipient key IDs and algorithms
 in
\texttt{result} and the results of verifying any signatures of the data in
\texttt{verify_result}.

If \texttt{gpg.Context().decrypt(cfile, verify=False)} is called instead,
then \texttt{verify_result} will be returned as \texttt{None} and the rest remains
as described here.

\subsection{Signing text and files}
\label{sec:org59f1262}
The following sections demonstrate how to specify keys to sign with.

\subsubsection{Signing key selection}
\label{sec:org909cb3c}
By default GPGME and the Python bindings will use the default key
configured for the user invoking the GPGME API. If there is no
default key specified and there is more than one secret key available
it may be necessary to specify the key or keys with which to sign

messages and files.

\begin{verbatim}
import gpg

logrus = input("Enter the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
\end{verbatim}

The signing examples in the
following sections include the explicitly
designated \texttt{signers} parameter in two of the five examples; once where
the resulting signature would be ASCII armoured and once where it
would not be armoured.

While it would be possible to enter a key ID or fingerprint here to
match a specific key, it is not possible to enter two fingerprints and
match two keys since the patten expects a string, bytes or None and
not a list. A string with two fingerprints won't match any single
key.

\subsubsection{Normal or default signing messages or files}
\label{sec:org6ee259d}
The normal or default signing process is essentially the same as is
most often invoked when also encrypting a message or file. So when
the encryption component is not utilised, the result is to produce an
encoded and signed output which may or may not be ASCII armoured and
which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the
plaintext is already compressed. ASCII armouring
will be determined
according to the value of \texttt{gpg.Context().armor}.

The compression algorithm is selected in much the same way as the
symmetric encryption algorithm or the hash digest algorithm is when
multiple keys are involved; from the preferences saved into the key
itself or by comparison with the preferences with all other keys
involved.

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""

```
text = text0.encode()

c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}
```

Though everything in this example is accurate, it is more likely that reading the input data from another file and writing the result to a new file will be performed more like the way it is done in the next example. Even if the output format is ASCII armoured.

```
\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}
```

```
\subsubsection{Detached signing messages and files}
\label{sec:org51049d4}
```

Detached signatures will often be needed in programmatic uses of GPGME, either for signing files (e.g. tarballs of code releases) or as a component of message signing (e.g. PGP/MIME encoded email).

```
\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
```

\end{verbatim}

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}

\subsubsection{Clearsigning messages or text}
\label{sec:orgf528a20}
Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}

In spite of the appearance of a clear-signed message, the data handled
by GPGME in signing it must still be byte literals.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",

```
 "rb") as tfile:
   text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
   afile.write(signed_data)
\end{verbatim}
```

```
\subsection{Signature verification}
\label{sec:org6cd81af}
```

Essentially there are two principal methods of verification of a signature. The first of these is for use with the normal or default signing method and for clear-signed messages. The second is for use with files and data with detached signatures.

The following example is intended for use with the default signing method where the file was not ASCII armoured:

```
\begin{verbatim}
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"

c = gpg.Context()

try:
   data, result = c.verify(open(gpg_file))
   verified = True
except gpg.errors.BadSignatures as e:
   verified = False
   print(e)

if verified is True:
   for i in range(len(result.signatures)):

      sign = result.signatures[i]
       print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
          time.ctime(sign.timestamp)))
else:
```

```
  pass
\end{verbatim}
```

Whereas this next example, which is almost identical would work with
normal ASCII armoured files and with clear-signed files:

```
\begin{verbatim}
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}
```

In both of the previous examples it is also possible to compare the
original data that was signed
 against the signed data in \texttt{data} to see
if it matches with something like this:

```
\begin{verbatim}
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
else:
  pass
```

\end{verbatim}

The following two examples, however, deal with detached signatures.
With his method of verification the data that was signed does not get
returned since it is already being explicitly referenced in the first
argument of \texttt{c.verify}. So \texttt{data} is \texttt{None} and only the information
in \texttt{result} is available.

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with
 key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:

```
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}


\section{Creating keys and subkeys}
\label{sec:org754c6df}
The one thing, aside from GnuPG itself, that GPGME depends on, of
course, is the keys themselves.  So it is necessary to be able to
generate them and modify them by adding subkeys, revoking or disabling
them, sometimes
 deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's
greatest secret agent, Danger Mouse.  Since Danger Mouse is a secret
agent he needs to be able to protect information to \texttt{SECRET} level
clearance, so his keys will be 3072-bit keys.

The pre-configured \texttt{gpg.conf} file which sets cipher, digest and other
preferences contains the following configuration parameters:

\begin{verbatim}
expert
allow-freeform-uid
allow-secret-key-import
trust-model tofu+pgp
tofu-default-policy unknown
enable-large-rsa
enable-dsa2
cert-digest-algo SHA512
default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP
Uncompressed
```

personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES
personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
personal-compress-preferences
ZLIB BZIP2 ZIP Uncompressed
\end{verbatim}

\subsection{Primary key}
\label{sec:org0185c23}
Generating a primary key uses the \texttt{create_key} method in a Context.
It contains multiple arguments and keyword arguments, including:
\texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires}, \texttt{sign}, \texttt{encrypt},
\texttt{certify}, \texttt{authenticate}, \texttt{passphrase} and \texttt{force}. The defaults for
all of those except \texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires} and
\texttt{passphrase} is \texttt{False}. The defaults for \texttt{algorithm} and
\texttt{passphrase} is \texttt{None}. The default for \texttt{expires_in} is \texttt{0}. The
default for \texttt{expires} is \texttt{True}. There is no default for \texttt{userid}.

If \texttt{passphrase} is left as \texttt{None} then the key will not be generated
with a passphrase, if \texttt{passphrase} is set to a string then that will
be the passphrase and if
\texttt{passphrase} is set to \texttt{True} then gpg-agent
will launch pinentry to prompt for a passphrase. For the sake of
convenience, these examples will keep \texttt{passphrase} set to \texttt{None}.

\begin{verbatim}
import gpg

c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
                     sign=True, certify=True)
\end{verbatim}

One thing to note here is the use of setting the \texttt{c.home_dir}
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this
example in a separate location rather than adding it to existing and
active key store data. As with the default directory, \texttt{\textasciitilde{}/.gnupg}, any
temporary or separate directory needs the permissions set to only
permit access by the directory owner. On posix systems this means
setting the directory permissions to
700.

The \texttt{temp-homedir-config.py} script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
\texttt{GenkeyResult} object, which includes the following data:

\begin{verbatim}
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
        dmkey.uid))
\end{verbatim}

Alternatively the information can be confirmed using the command line
program:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid   [ultimate] Danger Mouse <dm@secret.example.net>

bash-4.4$
\end{verbatim}

As with generating keys manually,
 to preconfigure expanded preferences
for the cipher, digest and compression algorithms, the \texttt{gpg.conf} file
must contain those details in the home directory in which the new key
is being generated. I used a cut down version of my own \texttt{gpg.conf}
file in order to be able to generate this:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
quit
Secret key is available.

sec rsa3072/026D2F19E99E63AA
   created: 2018-03-15 expires: 2019-03-15 usage: SC
   trust: ultimate   validity: ultimate

[ultimate] (1). Danger Mouse <dm@secret.example.net>

[ultimate] (1). Danger Mouse <dm@secret.example.net>
   Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH, IDEA, CAST5, 3DES
   Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
   Compression: ZLIB, BZIP2, ZIP, Uncompressed
   Features: MDC, Keyserver no-modify

bash-4.4$
\end{verbatim}

\subsection{Subkeys}
\label{sec:org5e2acbc}
Adding
 subkeys to a primary key is fairly similar to creating the
primary key with the \texttt{create_subkey} method. Most of the arguments
are the same, but not quite all. Instead of the \texttt{userid} argument
there is now a \texttt{key} argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key. Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
\end{verbatim}

As with the primary key, the results here can be checked with:

\begin{verbatim}
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}

""".format(dmsub.fpr,
 dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
        dmsub.uid))
\end{verbatim}

As well as on the command line with:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid   [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}

\subsection{User IDs}
\label{sec:org4869c58}
\subsubsection{Adding User IDs}
\label{sec:orgebb13ca}
By comparison to creating primary keys and subkeys, adding a new user
ID to an existing key is much simpler. The method used to do this is
\texttt{key_add_uid} and the only arguments it takes are for the \texttt{key} and
the new \texttt{uid}.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid
 = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
\end{verbatim}

Unsurprisingly the result of this is:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx

```
----------------------
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
      177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid           [ultimate] Danger Mouse <danger.mouse@secret.example.net>
uid           [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}


\subsubsection{Revoking User IDs}
\label{sec:org1683695}
Revoking a user ID is a fairly similar process, except that it uses
the \texttt{key\_revoke\_uid} method.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
\end{verbatim}


\subsection{Key certification}
\label{sec:orgf431bf8}
Since
 key certification is more frequently referred to as key signing,
the method used to perform this function is \texttt{key\_sign}.

The \texttt{key\_sign} method takes four arguments: \texttt{key}, \texttt{uids},
\texttt{expires\_in} and \texttt{local}.  The default value of \texttt{uids} is \texttt{None} and
which results in all user IDs being selected.  The default value of
both \texttt{expires\_in} and \texttt{local} is \texttt{False}; which results in the
signature never expiring and being able to be exported.

The \texttt{key} is the key being signed rather than the key doing the
signing.  To change the key doing the signing refer to the signing key
selection above for signing messages and files.

If the \texttt{uids} value is not \texttt{None} then it must either be a string to
match a single user ID or a list of strings to match multiple user
```

IDs. In this case the matching of those strings must be precise and
it is case sensitive.

To sign Danger
 Mouse's key for just the initial user ID with a
signature which will last a little over a month, do this:

\begin{verbatim}
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
\end{verbatim}

\subsubsection{Verifying key certifications}
\label{sec:org87abdd3}
\begin{verbatim}
import gpg
import time

c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
          sig.uid)
\end{verbatim}

Which for Danger Mouse displays the following:

\begin{verbatim}
0x92E3F6115435C65A Thu Mar 15 13:17:44 2018 Danger Mouse <dm@secret.example.net>
0x321E4E2373590E5D Mon Nov 26 12:46:05 2018 Ben McGinnes <ben@adversary.org>
\end{verbatim}

The
 two key signatures listed are for the self-certification of Danger
Mouse's key made when the key was created in March, 2018; and the
second is a signature made by the author and set to expire at the end
of the year. Note that the second signature was made with the

following code (including the preceding code to display the output of
the certifications or key signatures):

```
\begin{verbatim}
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
ts = tp.total_seconds()
total_secs = math.ceil(ts)
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
keys = list(c.keylist(pattern=dmuid,
 mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
   for sig in user.signatures:
      print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
           sig.uid)
\end{verbatim}
```

Note that this final code block includes the use of a module which is
\emph{not} part of Python's standard library, the \href{https://pendulum.eustace.io/}{pendulum module}. Unlike
the standard datetime module, pendulum makes working with dates and
times significantly easier in Python; just as the requests module
makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using
the GPGME Python bindings, they are both highly recommended more
generally.

\section{Advanced or Experimental Use Cases}
\label{sec:org944cc00}

\subsection{C plus Python plus SWIG plus Cython}
\label{sec:org3b53926}
In spite of the apparent incongruence of using Python bindings to a C
interface only to generate
 more C from the Python; it is in fact quite
possible to use the GPGME bindings with \href{http://docs.cython.org/en/latest/index.html}{Cython}. Though in many cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable. One of the better and easier examples being the one of
the early examples in this HOWTO, the \hyperref[sec:org63a3d62]{key counting} code. Running that
example as an executable Python script, \texttt{keycount.py} (available in
the \texttt{examples/howto/} directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically and timed it using
\texttt{time} utility, with the following results:

\begin{verbatim}
bash-4.4$
 time keycount.py

Number of secret keys: 23
Number of public keys: 12112

real 11m52.945s
user 0m0.913s
sys 0m0.752s

bash-4.4$
\end{verbatim}

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the \href{http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html}{Cython Basic Tutorial} to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the \texttt{gpg} module to the end of the script:

\begin{verbatim}
import gpg

```
c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys:  {0}
   Number of public keys:  {1}

""".format(secnum, pubnum))
```

Save
 that into a file called \texttt{keycount.pyx} and then create a
\texttt{setup.py} file which contains this:

```
from distutils.core import setup
from Cython.Build import cythonize

setup(
   ext_modules = cythonize("keycount.pyx")
)
```

Compile it:

```
bash-4.4$ python setup.py build_ext --inplace
bash-4.4$
```

Then run it in a similar manner to \texttt{keycount.py}:

```
bash-4.4$ time python3.7 -c "import keycount"

Number of secret keys:  23
Number of public keys:  12113


real 6m47.905s
```

user 0m0.785s
sys 0m0.331s

bash-4.4$
\end{verbatim}

Cython turned \texttt{keycount.pyx} into an 81KB \texttt{keycount.o} file in the
\texttt{build/} directory, a 24KB \texttt{keycount.cpython-37m-darwin.so} file to be
imported into Python 3.7 and a 113KB \texttt{keycount.c} generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the \texttt{keycount.pyx} file or the full 1,452 bytes
 of the
full executable \texttt{keycount.py} example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The \texttt{keycount.pyx} and \texttt{setup.py} files used to generate this example
have been added to the \texttt{examples/howto/advanced/cython/} directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the
\href{http://docs.cython.org/en/latest/src/tutorial/pure.html\#magic-attributes-within-the-pxd}{Magic Attributes}
section of the Cython documentation.

\section{Miscellaneous extras and work-arounds}
\label{sec:orgd72f7de}
Most of the things in the following sections are here simply because
there was no better place to put them, even though some are only
peripherally related to the GPGME Python bindings. Some are also
workarounds for functions not integrated
 with GPGME as yet. This is
especially true of the first of these, dealing with \hyperref[sec:org83f4d00]{group lines}.

\subsection{Group lines}
\label{sec:org83f4d00}
There is not yet an easy way to access groups configured in the
gpg.conf file from within GPGME. As a consequence these central
groupings of keys cannot be shared amongst multiple programs, such as
MUAs readily.

The following code, however, provides a work-around for obtaining this
information in Python.

\begin{verbatim}
import subprocess

```
import sys

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
  gpgconfcmd = "gpgconf --list-options gpg"

process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
  lines = procom[0].splitlines()
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
     break

groups = line.split(":")[-1].replace("", "").split(',')

group_lines
 = []
group_lists = []

for i in range(len(groups)):
  group_lines.append(groups[i].split("="))
  group_lists.append(groups[i].split("="))

for i in range(len(group_lists)):
  group_lists[i][1] = group_lists[i][1].split()
\end{verbatim}

The result of that code is that \texttt{group\_lines} is a list of lists where
\texttt{group\_lines[i][0]} is the name of the group and \texttt{group\_lines[i][1]}
is the key IDs of the group as a string.

The \texttt{group\_lists} result is very similar in that it is a list of
lists.  The first part, \texttt{group\_lists[i][0]} matches
\texttt{group\_lines[i][0]} as the name of the group, but \texttt{group\_lists[i][1]}
is the key IDs of the group as a list.

A demonstration of using the \texttt{groups.py} module is also available in
the form of the executable \texttt{mutt-groups.py} script.  This second
script reads all the group entries in a user's \texttt{gpg.conf} file and
converts them into crypt-hooks suitable for use
 with the Mutt and
Neomutt mail clients.
```

\subsection{Keyserver access for Python}
\label{sec:org5ad99aa}
The \href{https://github.com/Selfnet/hkp4py}{hkp4py} module by Marcel Fest was originally a port of the old
\href{https://github.com/dgladkov/python-hkp}{python-hkp} module from Python 2 to Python 3 and updated to use
the
\href{http://docs.python-requests.org/en/latest/index.html}{requests} module instead. It has since been modified to
provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the \texttt{hkp} protocol prefix as \texttt{http} and \texttt{hkps} as
\texttt{https}, the module is able to be used even with servers which do not
support the full scope of keyserver functions.\footnote{Such as with ProtonMail servers. This also means that
restricted servers which only advertise either HTTP or HTTPS end
points and not HKP or HKPS end points must still be identified as as
HKP or HKPS within the Python Code. The \texttt{hkp4py} module will rewrite
these
 appropriately when the connection is made to the server.} It also works quite
readily when incorporated into a \hyperref[sec:org3b53926]{Cython} generated and compiled version
of any code.

\subsubsection{Key import format}
\label{sec:org1e47c97}
The hkp4py module returns key data via requests as string literals
(\texttt{r.text}) instead of byte literals (\texttt{r.content}). This means that
the retrurned key data must be encoded to UTF-8 when importing that
key material using a \texttt{gpg.Context().key_import()} method.

For this reason an alternative method has been added to the \texttt{search}
function of \texttt{hkp4py.KeyServer()} which returns the key in the correct
format as expected by \texttt{key_import}. When importing using this module,
it is now possible to import with this:

\begin{verbatim}
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
\end{verbatim}

Without that recent addition it would
 have been necessary to encode
the contents of each \texttt{hkp4py.KeyServer().search()[i].key} in
\texttt{hkp4py.KeyServer().search()} before trying to import it.

An example of this is included in the \hyperref[sec:org1ad598a]{Importing Keys} section of this
HOWTO and the corresponding executable version of that example is
available in the \texttt{lang/python/examples/howto} directory as normal; the
executable version is the \texttt{import-keys-hkp.py} file.

\subsection{GPGME version checking}
\label{sec:org18b8ef8}
For various reasons it may be necessary to check which version of
GPGME the bindings have been built against; including whether a
minimum required version of GPGME is in use.

For the most part the \texttt{gpg.version.versionstr} and
\texttt{gpg.version.versionlist} methods have been quite sufficient. The
former returns the same string as \texttt{gpgme-config -{}-version}, while the
latter returns the major, minor and patch values in a list.

To check if the installed bindings
 have actually been built against
the current installed libgpgme version, this check can be performed:

\begin{verbatim}
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,
                                      stderr=subprocess.PIPE)
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0] >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
    print("The GPGME Python bindings match libgpgme.")
  else:
    print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
\end{verbatim}

For many developers, however, the preferred checking means checking

for a minimum
 version or point release. This is now readily available
via the \texttt{gpg.version.versionintlist} method (added in version
\texttt{1.12.1-beta79}). It is also now possible to easily check whether the
installed GPGME Python bindings were built from a development or beta
branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

\begin{verbatim}
import gpg

try:
  if gpg.version.is_beta is True:
     print("The installed GPGME Python bindings were built from beta code.")
  else:
     print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
     if gpg.version.versionintlist[1] == 12:
        if gpg.version.versionintlist[2] == 1:
           print("This is the minimum version for using versionintlist.")
        elif gpg.version.versionintlist[2] > 1:
           print("The versionintlist method is available.")

        else:
           pass
     elif gpg.version.versionintlist[1] > 12:
        print("The versionintlist method is available.")
     else:
        pass
  elif gpg.version.versionintlist[0] > 1:
     print("The versionintlist method is available.")
  else:
     pass
except Exception as e:
  print(e)
\end{verbatim}

The points where \texttt{pass} is used in the above example will most likely
also produce an \texttt{Exception} error since those results should only
occur in versions which do not have the \texttt{gpgme.version.is_beta} and
\texttt{gpgme.version.versionintlist} methods available.

\section{Copyright and Licensing}
\label{sec:org9d52a23}
\subsection{Copyright}
\label{sec:org26ed04d}
Copyright The GnuPG Project, 2018.

Copyright (C) The GnuPG Project, 2018.

\subsection{Draft Editions of this HOWTO}
\label{sec:org080a94a}
Draft editions of this HOWTO may be periodically available directly
from the author at any of the following URLs:

\begin{itemize}
\item
 \href{https://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 SSL)}
\item \href{http://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 no SSL)}
\item \href{https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 SSL)}
\item \href{http://files.au.adversary.org/crypto/gpgme-python-howto/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 no SSL)}
\end{itemize}

All of these draft versions except for one have been generated from
this document via GNU Emacs \href{https://orgmode.org/}{Org mode} and
\href{https://www.gnu.org/software/texinfo/}{GNU Texinfo}. Though it is
likely that the specific \href{https://files.au.adversary.org/crypto/gpgme-python-howto}{file}
\href{http://files.au.adversary.org/crypto/gpgme-python-howto.org}{version}
 used will be on the same server
with the generated output formats.

The GNU Texinfo and reStructured Text versions ship with the software,
while the GNU Emacs Info verseion is generated from the Texinfo
version using GNU Texinfo or GNU Makeinfo. The Texinfo format is
generated from the original Org mode source file in Org mode itself
either within GNU Emacs or via the command line by invoking Emacs in
batch mode:

\begin{verbatim}
emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
\end{verbatim}

The reStructuredText format is also generated from the Org-mode source
file, except it is generated using \href{https://pandoc.org}{Pandoc} with either of the following

commands:

\begin{verbatim}
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto.org
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
\end{verbatim}

In addition to these there is
a significantly less frequently updated
version as a HTML \href{https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html}{WebHelp site} (AWS S3 SSL); generated from DITA XML
source files, which can be found in \href{https://dev.gnupg.org/source/gpgme/browse/ben\%252Fhowto-dita/}{an alternative branch} of the GPGME
git repository.

Various generated output formats may occasionally be found in
subdirectories of the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python}{gpgme-python} directory. In particular within
the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita}{DITA},
\href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst}{reStructuredText} and
\href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo}{Texinfo} subdirectories. The \texttt{rst}
directory contains output files generated with Sphix and may include a
considerable number of its possible output formats.

These
draft editions are not official documents and the version of
documentation in the master branch or which ships with released
versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding that they may contain errors or may contain content
subject to change prior to an official release.

\subsection{License GPL compatible}
\label{sec:orge78f3b7}
This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
\end{document}
This is a template. The dist target uses it to create the real file.
Summary: GPGME - GnuPG Made Easy

```
Name: gpgme
Version: 1.15.1
Release: 1
URL: https://gnupg.org/gpgme.html
Source: https://www.gnupg.org/ftp/gcrypt/gpgme/%{name}-%{version}.tar.gz
Group: Development/Libraries
Copyright: GPL
BuildRoot: %{_tmppath}/%{name}-%{version}
BuildRequires: make
Prereq: /sbin/ldconfig /sbin/install-info
Requires: gnupg

%description
GnuPG Made Easy (GPGME) is a library designed to make access to GnuPG easier
for applications. It provides a High-Level Crypto API for encryption,
decryption, signing, signature verification and key management.

%prep
%setup -q

%build
CFLAGS="$RPM_OPT_FLAGS"; export CFLAGS
./configure --prefix=/usr
make

%install
rm -fr $RPM_BUILD_ROOT
mkdir -p $RPM_BUILD_ROOT
make install prefix=$RPM_BUILD_ROOT/usr infodir=$RPM_BUILD_ROOT%{_infodir}
rm -f $RPM_BUILD_ROOT%{_infodir}/dir

%clean
rm -fr $RPM_BUILD_ROOT
make distclean

%post
/sbin/ldconfig
/sbin/install-info %{_infodir}/gpgme.info.gz
 %{_infodir}/dir
/sbin/install-info %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir

%preun
if [ "$1" = 0 ]; then
/sbin/install-info --delete %{_infodir}/gpgme.info.gz %{_infodir}/dir
/sbin/install-info --delete %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir
fi

%postun
```

/sbin/ldconfig

%files
%defattr(-,root,root)
%doc COPYING COPYING.LESSER AUTHORS README INSTALL NEWS ChangeLog TODO THANKS
%attr(0755,root,root) %{_bindir}/gpgme-config
%attr(0755,root,root) %{_libdir}/*gpgme.so*
%attr(0755,root,root) %{_libdir}/*gpgme.la
%attr(0644,root,root) %{_libdir}/*gpgme.a
%{_includedir}/gpgme.h
%{_datadir}/aclocal/gpgme.m4
%{_infodir}/gpgme.info*
%{_infodir}/gpgme-python-howto.info*

%changelog
* Sat Aug 30 2003 Robert Schiele <rschiele@uni-mannheim.de>
- %{_infodir}/dir is not packaged, remove to prevent checking failure
* Mon Jul 01 2002 Wojciech Polak <polak@lodz.pdi.net>
- initial specfile release for GPGME.

EOF

1.56 gzip 1.12-1.el9

1.56.1 Available under license :

GNU Free Documentation License
Version 1.3, 3 November 2008

Copyright (C) 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
<http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document "free" in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of "copyleft", which means that derivative
works of the document must themselves be free in the same sense. It

complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you". You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant

Sections then there are none.

The "Cover Texts" are certain short passages of text that are listed,
as Front-Cover Texts or Back-Cover Texts, in the notice that says that
the Document is released under this License. A Front-Cover Text may
be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy,
represented in a format whose specification is available to the
general public, that is suitable for revising the document
straightforwardly with generic text editors or (for images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters
 or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain
ASCII without markup, Texinfo input format, LaTeX input format, SGML
or XML using a publicly available DTD, and standard-conforming simple
HTML, PostScript or PDF designed for human modification. Examples of
transparent image formats include PNG, XCF and JPG. Opaque formats
include proprietary formats that can be read and edited only by
proprietary word processors, SGML or XML for which the DTD and/or
processing tools are not generally available, and the
machine-generated HTML, PostScript or PDF produced by some
 word
processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, "Title Page" means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The "publisher" means any person or entity that distributes copies of
the Document to the public.

A section "Entitled XYZ" means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in another language. (Here XYZ stands for a
specific section name mentioned below, such as "Acknowledgements",
"Dedications", "Endorsements", or "History".) To "Preserve the Title"

of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before
redistributing any large number of copies, to
give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.
B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of
the modifications in the Modified
Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.
C. State on the Title page the name of the publisher of the Modified Version, as the publisher.
D. Preserve all the copyright notices of the Document.
E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.
F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the

terms of this License, in the form shown in the Addendum below.
G. Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the Document's license notice.
H. Include an unaltered copy of this License.
I. Preserve the section Entitled "History", Preserve its Title, and add
to it an item stating at least the title, year,
new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled "History" in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.
J. Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the "History" section.
You may omit a network location for a work that was published at
least four years before the Document itself, or if the original
publisher of the version it refers to gives permission.
K. For any section Entitled "Acknowledgements" or "Dedications",
Preserve the Title of the section, and preserve in the section all
the substance and tone of each of the contributor
acknowledgements
and/or dedications given therein.
L. Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.
M. Delete any section Entitled "Endorsements". Such a section
may not be included in the Modified Version.
N. Do not retitle any existing section to be Entitled "Endorsements"
or to conflict in title with any Invariant Section.
O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document, you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains
nothing but
endorsements of your Modified Version by various
parties--for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a

passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING
DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections
Entitled "History"
in the various original documents, forming one section Entitled "History"; likewise combine any sections Entitled "Acknowledgements", and any sections Entitled "Dedications". You must delete all sections Entitled "Endorsements".

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all

other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives
with other separate
and independent documents or works, in or on a volume of a storage or distribution medium, is called an "aggregate" if the copyright resulting from the compilation is not used to limit the legal rights of the compilation's users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under
the terms of section 4.
Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements", "Dedications", or "History", the requirement (section 4) to Preserve

its Title (section 1) will typically require changing the actual
title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document
except as expressly provided under this
License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies
or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the
GNU Free Documentation License from time to time. Such new versions
will be similar in spirit to the present version, but may differ in
detail to address new problems or concerns. See
http://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number.
If the Document specifies that a particular numbered version of this
License "or any later version" applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version

number of this License, you may choose any version
ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

11. RELICENSING

"Massive Multiauthor Collaboration Site" (or "MMC Site") means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
"Massive Multiauthor Collaboration" (or "MMC") contained in the site
means any set of copyrightable works thus published on the MMC site.

"CC-BY-SA" means the Creative Commons Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by
that same organization.

"Incorporate" means to publish or republish a Document, in whole or in
part, as part of another Document.

An MMC is "eligible for relicensing" if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole or
in part into the MMC, (1) had no cover texts or invariant sections, and
(2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the MMC is eligible for relicensing.

ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

Copyright (c) YEAR YOUR NAME.
Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU Free Documentation License, Version 1.3
or any later version published by the Free Software Foundation;

with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts.
A copy of the license is included in the section entitled "GNU
Free Documentation License".

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the "with...Texts." line with this:

with the Invariant Sections being LIST THEIR TITLES, with the
Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you

these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of
packaging a Major Component, but which is not part of that Major
Component, and (b) serves only to enable use of the work with that
Major Component, or to implement a Standard Interface for which an
implementation is available to the public in source code form. A
"Major Component", in this context, means a major essential component
(kernel, window system, and so on) of the specific operating system
(if any) on which the executable work runs, or a compiler used to
produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all
the source code needed to generate, install, and (for an executable
work) run the object code and to modify the work, including scripts to
control those activities. However, it does not include the work's
System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source
includes interface definition files associated with source files for
the work, and the source code for shared libraries and dynamically
linked subprograms that the work is specifically designed to require,
such as by intimate data communication or control flow between those
subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose

of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a

written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status

of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent

that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or
limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms

of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However,

nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor
version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily

for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program

into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
 do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.57 python3-inotify 0.9.6-25.el9

1.57.1 Available under license :

Copyright (c) 2010 Sebastien Martini <seb@dbzteam.org>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
 IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.58 libgpg-error 1.42-5.el9

1.58.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim
copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively

when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably
considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work
based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer

to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to

this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version
number of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the
License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these

rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether
gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it

does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms

of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the
work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly
with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot

impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will
be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301

USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.59 python3-iniparse 0.4-45.el9

1.59.1 Available under license :

Copyright (c) 2001, 2002, 2003 Python Software Foundation
Copyright (c) 2004-2008 Paramjit Oberoi <param.cs.wisc.edu>
Copyright (c) 2007 Tim Lauridsen <tla@rasmil.dk>
All Rights Reserved.

iniparse/compat.py and tests/test_compat.py contain code derived from
lib/python-2.3/ConfigParser.py and lib/python-2.3/test/test_cfgparse.py
respectively. Other code may contain small snippets from those two files
as well. The Python license (LICENSE-PSF) applies to that code.

The MIT License

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The
 above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL

THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

A. HISTORY OF THE SOFTWARE

==========

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes

2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

PSF LICENSE AGREEMENT FOR PYTHON 2.3
---

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 2.3 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 2.3 alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright (c) 2001, 2002, 2003 Python Software Foundation; All Rights Reserved" are retained in Python 2.3 alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on

or incorporates Python 2.3 or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python 2.3.

4. PSF is making Python 2.3 available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 2.3 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
2.3 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING,
 OR OTHERWISE USING PYTHON 2.3,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 2.3, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an
office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee")
 accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and

otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE
OR ANY OTHER USERS OF THE
SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS
AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY
DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all
respects by the law of the State of California, excluding conflict of
law provisions. Nothing in this License Agreement shall be deemed to
create any relationship of agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant
permission to use BeOpen trademarks or trade names in a trademark
sense to endorse or promote products or services of Licensee, or any
third party. As an exception, the "BeOpen Python" logos available at
http://www.pythonlabs.com/logos.html may be used according to the
permissions granted on that web page.

7.
By copying, installing or otherwise using the software, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National
Research Initiatives, having an office at 1895 Preston White Drive,
Reston, VA 20191 ("CNRI"), and the Individual or Organization
("Licensee") accessing and otherwise using Python 1.6.1 software in
source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI
hereby grants Licensee a nonexclusive, royalty-free, world-wide

license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c) 1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis.
CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License

Agreement only as to issues arising under or with respect to
Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this
License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture between CNRI and Licensee. This
License Agreement does not grant permission to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or
services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying,
installing or otherwise using Python 1.6.1, Licensee agrees to be
bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright
(c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE
OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.60 gpg-pubkey fd431d51-4ae0493b

1.60.1 Available under license :

Here is a list with collected copyright notices. For details see the
description of each individual package. [Compiled by wk 2017-11-07]

GNUPG is

Copyright (C) 1997-2017 Werner Koch
Copyright (C) 1994-2017 Free Software Foundation, Inc.
Copyright (C) 2003-2017 g10 Code GmbH
Copyright (C) 2002 Klarlvdalens Datakonsult AB
Copyright (C) 1995-1997, 2000-2007 Ulrich Drepper <drepper@gnu.ai.mit.edu>
Copyright (C) 1994 X Consortium
Copyright (C) 1998 by The Internet Society.
Copyright (C) 1998-2004 The OpenLDAP Foundation
Copyright (C) 1998-2004 Kurt D. Zeilenga.
Copyright (C) 1998-2004 Net Boolean Incorporated.
Copyright (C) 2001-2004 IBM Corporation.
Copyright (C) 1999-2003 Howard Y.H. Chu.
Copyright (C) 1999-2003 Symas Corporation.
Copyright (C) 1998-2003 Hallvard B. Furuseth.
Copyright (C) 1992-1996 Regents of the University of Michigan.
Copyright (C) 2000 Dimitrios Souflis
Copyright (C) 2008,2009,2010,2012-2016 William Ahern

GnuPG is free software;
you can redistribute it and/or modify it
under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

GnuPG is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY
or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public
License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <https://www.gnu.org/licenses/>.

LIBGCRYPT is

Copyright (C) 1989,1991-2017 Free Software Foundation, Inc.
Copyright (C) 1994 X Consortium
Copyright (C) 1996 L. Peter Deutsch
Copyright (C) 1997 Werner Koch
Copyright (C) 1998 The Internet Society
Copyright (C) 1996-1999 Peter Gutmann, Paul Kendall, and Chris Wedgwood
Copyright (C) 1996-2006 Peter Gutmann, Matt Thomlinson and Blake Coverett
Copyright (C) 2003 Nikos Mavroyanopoulos
Copyright (C) 2006-2007 NTT (Nippon Telegraph and Telephone Corporation)
Copyright (C) 2012-2017 g10 Code GmbH
Copyright (C) 2012 Simon Josefsson, Niels Mller

Copyright (c) 2012 Intel Corporation
Copyright (C) 2013 Christian Grothoff
Copyright (C) 2013-2017 Jussi Kivilinna
Copyright (C) 2013-2014 Dmitry Eremin-Solenikov
Copyright (C) 2014 Stephan Mueller
Copyright (C) 2017 Bundesamt fr Sicherheit in der Informationstechnik

Libgcrypt is free software; you can redistribute it and/or modify
it under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

Libgcrypt is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU Lesser General Public License for more details.

You should have received a copy of the
GNU Lesser General Public
License along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBGPG-ERROR is

Copyright (C) 2003-2004, 2010, 2013-2017 g10 Code GmbH

libgpg-error is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public License
as published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

libgpg-error is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBASSUAN is

Copyright (C) 1992-2013 Free Software Foundation, Inc.
Copyright (C) 1994 X Consortium
Copyright (C) 2000 Werner Koch (dd9jn)
Copyright (C)
2001-2016 g10 Code GmbH
Copyright (C) 2004 Simon Josefsson

Assuan is free software; you can redistribute it and/or modify
under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

Assuan is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBKSBA is

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2010, 2011
      2012, 2013, 2014, 2015 g10 Code GmbH
Copyright (C) 2001, 2002, 2003, 2007 Free Software Foundation, Inc.
Copyright (C) 2000, 2001 Fabio Fiorina

The library and the header files are distributed under
the following
terms (LGPLv3+/GPLv2+):

KSBA is free software; you can redistribute it and/or modify
it under the terms of either

 - the GNU Lesser General Public License as published by the Free
   Software Foundation; either version 3 of the License, or (at
   your option) any later version.

or

 - the GNU General Public License as published by the Free
   Software Foundation; either version 2 of the License, or (at
   your option) any later version.

or both in parallel, as here.

KSBA is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY
or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public
License for more details.

The other parts (e.g. manual, build system, tests) are distributed
under the following terms (GPLv3):

KSBA is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the
Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

KSBA is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

NPTH is

Copyright (C) 2011, 2012, 2014, 2015, 2017 g10 Code GmbH

nPth is free software; you can redistribute it and/or modify
it under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

nPth is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See
the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this program;
if not, see <https://www.gnu.org/licenses/>.

NTBTLS is

Copyright (C) 2006-2014 Brainspark B.V.
Copyright (C) 2014-2017 g10 Code GmbH

NTBTLS is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

NTBTLS is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License

along with this program; if not, see <http://www.gnu.org/licenses/>.

PINENTRY is

Copyright (C) 1999 Robert Bihlmeyer <robbe@orcus.priv.at>
Copyright (C) 2001-2004, 2007-2008, 2010, 2015-2016 g10 Code GmbH
Copyright (C) 2002, 2008 Klarlvdalens Datakonsult AB (KDAB)
Copyright (C) 2004 by Albrecht
Dre <albrecht.dress@arcor.de>
Copyright 2007 Ingo Klcker
Copyright (C) 2014 Serge Voilokov
Copyright (C) 2015 Daiki Ueno
Copyright (C) 2015 Daniel Kahn Gillmor <dkg@fifthhorseman.net>
Copyright 2016 Intevation GmbH

PINENTRY is free software; you can redistribute it and/or modify it
under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

PINENTRY is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <https://www.gnu.org/licenses/>.

GPGME is

Copyright (C) 1991-2013 Free Software Foundation, Inc.
Copyright (C) 2000-2001 Werner Koch
Copyright (C) 2001-2017 g10 Code GmbH

Copyright (C) 2002 Klarlvdalens Datakonsult AB
Copyright (C) 2004-2008 Igor Belyi
Copyright (C) 2002 John Goerzen
Copyright (C) 2014, 2015 Martin Albrecht
Copyright (C) 2015 Ben McGinnes
Copyright (C) 2015-2016 Bundesamt fr Sicherheit in der Informationstechnik
Copyright (C) 2016 Intevation GmbH

GPGME is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

GPGME is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

NSIS is

Copyright 1999-2009 Nullsoft and Contributors
Copyright 2002-2008 Amir Szekely
Copyright 2003 Ramon

This license applies to everything in the NSIS package, except where
otherwise noted.

This software is provided 'as-is', without any express or implied
warranty. In no event will the authors be held liable for any
damages arising from the use of this software.

Permission is granted to anyone to use this software for any
purpose, including commercial applications, and to alter it and
redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must
   not claim that you wrote the original software. If you use this
   software in a product, an acknowledgment in the product
   documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such, and must
   not be misrepresented as being the original software.

3. This notice may not be removed or altered from any source
   distribution.

The user interface used with the installer is

Copyright 2002-2009 Joost Verburg

[It is distributed along with NSIS and the same conditions as stated
above apply]

TinySCHEME is part of the GnuPG package and is

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

Neither the name of Dimitrios Souflis nor the names of the
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED
BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

LIBDNS is part of the GnuPG package and is

Copyright (c) 2008, 2009, 2010, 2012-2016 William Ahern

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"),
to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

ZLIB is

(C) 1995-2013 Jean-loup Gailly and Mark Adler

This software is provided
'as-is', without any express or implied
warranty. In no event will the authors be held liable for any damages
arising from the use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not
   claim that you wrote the original software. If you use this software
   in a product, an acknowledgment in the product documentation would be
   appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be
   misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

BZIP2 is

This program, "bzip2", the associated library "libbzip2", and all
documentation,
are copyright (C) 1996-2010 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
not claim that you wrote the original software. If you use this
software in a product, an acknowledgment in the product
documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS
OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

SQLITE has

been put into the public-domain by its author D. Richard Hipp:
The author disclaims copyright to this source code. In place of
a legal notice, here is a blessing:

May you do good and not evil.
May you find forgiveness for yourself and forgive others.
May you share freely, never taking more than you give.
[Note that only a few files are distributed under this license.]

Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE
LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN
ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS
INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES
REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS
PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM
THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED

HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing
to a commons of creative, cultural and
scientific works ("Commons") that the public can reliably and without fear of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright
and Related Rights in the
Work and the meaning and intended legal effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection

of databases, and under any national implementation thereof, including any amended or successor version of such directive); and

vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer
are waived, abandoned,
surrendered, licensed or otherwise affected by this document.
b. Affirmer offers the Work as-is and makes no representations or
warranties of any kind concerning the Work, express, implied,
statutory or otherwise, including without limitation warranties of
title, merchantability, fitness for a particular purpose, non
infringement, or the absence of latent or other defects, accuracy, or
the present or absence of errors, whether or not discoverable, all to
the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons
that may apply to the Work or any use thereof, including without
limitation any person's Copyright and Related Rights in the Work.
Further, Affirmer disclaims responsibility for obtaining any necessary
consents, permissions or other rights required for any use of the
Work.
d. Affirmer understands and acknowledges that Creative Commons is
not a
party to this document and has no duty or obligation with respect to
this CC0 or use of the Work.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for

them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer
you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those
domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To
"modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate
Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than
the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing
those activities but
which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content,

constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any

tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute
modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information
does not include a
requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included
in this License, to the extent
that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional

terms are considered "further
restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may
not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your
receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted

by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered

work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or that patent license was granted, prior to 28 March
2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License,
you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the

Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms,

reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea
of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY
NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands

might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read <https://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether

gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the
Program does.

1. You may copy and distribute verbatim copies of the Program's

source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the

integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES

PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

```
  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute
it
  under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

```
 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
 is what you want to do, use the GNU Lesser General
Public License instead of this License.
[Note that only a few files are distributed under this license.]

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

^L
Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

^L

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies
of the Library's
complete source code as you receive it, in any medium, provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the
work to be licensed at no
charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable
sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you

distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the
scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.
^L
Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the

Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than
copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the
materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

^L
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement

or
otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole
purpose of protecting the
integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written
in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and

conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the
Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY
OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS
^L
How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms
of the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It
is safest to attach them to the start of each source file to most
effectively convey the exclusion of warranty; and each file should
have at least the "copyright" line and a pointer to where the full
notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free
Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
LICENSE TERMS

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are

met:

Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

Neither the name of Dimitrios Souflis nor the names of the
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2010, Matt McInerney (matt@pixelspread.com),
Copyright (c) 2011, Pablo Impallari (www.impallari.com|impallari@gmail.com),
Copyright (c) 2011, Rodrigo Fuenzalida (www.rfuenzalida.com|hello@rfuenzalida.com), with Reserved Font Name Raleway
This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide
development of collaborative font projects, to support the font creation
efforts of academic and linguistic communities, and to provide a free and
open framework in which fonts may be shared and improved in partnership
with others.

The OFL allows the licensed fonts to be used, studied, modified and
redistributed freely as

long as they are not sold by themselves. The
fonts, including any derivative works, can be bundled, embedded,
redistributed and/or sold with any software provided that any reserved
names are not used by derivative works. The fonts and derivatives,
however, cannot be released under any other type of license. The
requirement for fonts to remain under this license does not apply
to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright
Holder(s) under this license and clearly marked as such. This may
include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the
copyright statement(s).

"Original Version" refers to the collection of Font Software components as
distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting,
or substituting -- in part or in whole -- any of the components of the
Original
Version, by changing formats or by porting the Font Software to a
new environment.

"Author" refers to any designer, engineer, programmer, technical
writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining
a copy of the Font Software, to use, study, copy, merge, embed, modify,
redistribute, and sell modified and unmodified copies of the Font
Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components,
in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled,
redistributed and/or sold with any software, provided that each copy
contains the above copyright notice and this license. These can be
included either as stand-alone text files, human-readable headers or
in the appropriate machine-readable metadata fields within text or
binary files as long as those fields
can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font
Name(s) unless explicit written permission is granted by the corresponding
Copyright Holder. This restriction only applies to the primary font name as

presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font Software shall not be used to promote, endorse or advertise any Modified Version, except to acknowledge the contribution(s) of the Copyright Holder(s) and the Author(s) or with their explicit written permission.

5) The Font Software, modified or unmodified, in part or in whole, must be distributed entirely under this license, and must not be distributed under any other license. The requirement for fonts to remain under this license does not apply to any document created using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are not met.

DISCLAIMER
THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT
WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.
Copyright 2008 The Bungee Project Authors (david@djr.com)
This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide development of collaborative font projects, to support the font creation efforts of academic and linguistic communities, and to provide a free and open framework in which fonts may be shared and improved in partnership with others.

The OFL allows the licensed fonts to be used, studied, modified and redistributed freely as long as they are not sold by themselves. The

fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names are not
used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part or in whole -- any of the components of the Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed
to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components, in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled, redistributed and/or sold with any software, provided that each copy contains the above copyright notice and this license. These can be included either as stand-alone text files, human-readable headers or in the appropriate machine-readable metadata fields within text or binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font Name(s) unless explicit written permission is granted by the corresponding Copyright Holder.

This restriction only applies to the primary font name as
presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font
Software shall not be used to promote, endorse or advertise any
Modified Version, except to acknowledge the contribution(s) of the
Copyright Holder(s) and the Author(s) or with their explicit written
permission.

5) The Font Software, modified or unmodified, in part or in whole,
must be distributed entirely under this license, and must not be
distributed under any other license. The requirement for fonts to
remain under this license does not apply to any document created
using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are
not met.

DISCLAIMER
THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT
OF COPYRIGHT, PATENT, TRADEMARK,
OR OTHER RIGHT. IN NO EVENT SHALL THE
COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL
DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM
OTHER DEALINGS IN THE FONT SOFTWARE.
[Note that only a few files are distributed under this license.]

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU

General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without
being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or

any later version"
applies to it, you have the option of following the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser
General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.
Unless explicitly stated, all files within Jim repository are released
under following license:

/* Jim - A small embeddable Tcl interpreter
*
* Copyright 2005 Salvatore Sanfilippo <antirez@invece.org>
* Copyright 2005 Clemens Hintze <c.hintze@gmx.net>
* Copyright 2005 patthoyts - Pat Thoyts <patthoyts@users.sf.net>
* Copyright 2008 oharboe - yvind Harboe - oyvind.harboe@zylin.com
* Copyright 2008 Andrew Lunn <andrew@lunn.ch>
* Copyright 2008 Duane Ellis <openocd@duaneellis.com>
* Copyright 2008 Uwe Klein <uklein@klein-messgeraete.de>
* Copyright 2008 Steve Bennett <steveb@workware.net.au>
* Copyright 2009 Nico Coesel <ncoesel@dealogic.nl>
* Copyright 2009 Zachary T Welch zw@superlucidity.net
* Copyright 2009 David Brownell
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
*
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions
and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above
*   copyright notice, this list of conditions and the following
*   disclaimer in the documentation and/or other materials
*   provided with the distribution.
*
* THIS SOFTWARE IS PROVIDED BY THE JIM TCL PROJECT ``AS IS'' AND ANY
* EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
* THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
* PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
* JIM TCL PROJECT OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
* INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES

* (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
* ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF
*
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*
* The views and conclusions contained in the software and documentation
* are those of the authors and should not be interpreted as representing
* official policies, either expressed or implied, of the Jim Tcl Project.
*/
COPYING.other -*- org -*-
#+TITLE: List of code with permissive licenses as used by GnuPG.
#+STARTUP: showall

* DNS resolver (dirmngr/dns.c)

dns.c - Recursive, Reentrant DNS Resolver.

Copyright (c) 2008, 2009, 2010, 2012-2016 William Ahern

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY
OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN
NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE
USE OR OTHER DEALINGS IN THE SOFTWARE.

* TinySCHEME (tests/gpgscm/LICENSE.TinySCHEME)

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided
with the distribution.

Neither the name of Dimitrios Souflis nor the names of the
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* Regular
expression support

regexp/jimregexp.[ch]:

Originally:

  Copyright (c) 1986 by University of Toronto.
  Written by Henry Spencer. Not derived from licensed software.

Subsequently modified by:

  1986 John Gilmore hoptoad!gnu
  1987 James A. Woods ames!jaw
  1993 Christopher Seiwald seiwald@vix.com
  2000, 2002 Christopher Seiwald <seiwald@perforce.com>
  2010 Steve Bennett <steveb@workware.net.au>
  2020 NIIBE Yutaka <gniibe@fsij.org>

Permission is granted to anyone to use this software for any
purpose on any computer system, and to redistribute it freely,

subject to the following restrictions:

1. The author is not responsible for the consequences of use of
   this software, no matter how awful, even if they arise
   from defects in it.

2. The origin of this software must not be misrepresented, either
   by explicit claim or by omission.

3. Altered versions must be plainly marked as such, and must not
   be misrepresented as being the
original software.

regexp/utf8.[ch] (see regexp/LICENSE):

(c) 2010-2016 Steve Bennett <steveb@workware.net.au>

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or other materials
   provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE JIM TCL PROJECT ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
JIM TCL PROJECT OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The views and conclusions contained in the software and documentation
are those of the authors and should not be interpreted as representing
official policies, either expressed or implied, of the Jim Tcl Project.

UnicodeData.txt:

Copyright 1991-2020 Unicode, Inc. All rights reserved.
Distributed under the Terms of Use in https://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining
a copy of the Unicode data files and any associated documentation
(the "Data Files") or Unicode software and any associated documentation
(the "Software")
to deal in the Data Files or Software
without restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, and/or sell copies of
the Data Files or Software, and to permit persons to whom the Data Files
or Software are furnished to do so, provided that either
(a) this copyright and permission notice appear with all copies
of the Data Files or Software, or
(b) this copyright and permission notice appear in associated
Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF
ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT OF THIRD PARTY RIGHTS.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS
NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL
DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE,
DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER
TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder
shall not be used in advertising or otherwise to promote the sale,
use or other dealings in these Data Files or Software without prior
written authorization of the copyright holder.

1.61 libcomps 0.1.18-1.el9

1.61.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further

restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will

be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program

`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.62 psmisc 23.4-3.el9

1.62.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute
verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish,
that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can
be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program
(or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as

distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute
software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies
a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version
2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.63 githubcommitchellhmapstructure 1.5.0

1.63.1 Available under license :

The MIT License (MIT)

Copyright (c) 2013 Mitchell Hashimoto

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.64 subscription-manager-rhsm-certificates 20220623-1.el9

1.64.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it

if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component

itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals

of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.65 python3-libcomps 0.1.18-1.el9

1.65.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable

source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the

Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY

YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
 is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.66 passwd 0.80-12.el9

1.66.1 Available under license :

 Copyright Red Hat, Inc., 1998, 1999, 2001, 2002.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
   notice, and the entire permission notice in its entirety,
   including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
   products derived from this software without specific prior
   written permission.

ALTERNATIVELY, this product may be distributed under the terms of
the GNU Public License, in which case the provisions of the GPL are
required INSTEAD OF the above restrictions. (This clause is
necessary due to a potential bad interaction between
 the GPL and
the restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED

WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

The full text of the GNU GENERAL PUBLIC LICENSE Version 2 is included
below.

GNU GENERAL PUBLIC LICENSE
Version 2,
June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute
copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.

These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each
author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright
holder saying it may be distributed
under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the

Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable
form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord
with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering

access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to

apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose
that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later
version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED
OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the

GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts
of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.67 libzstd 1.5.1-2.el9

1.67.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free

program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause

any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete

machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the

Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if

necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
BSD License

For Zstandard software

Copyright (c) 2016-present, Facebook, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

* Neither the name Facebook nor the names of its contributors may be used to
  endorse or promote products derived from this software without specific
  prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.68 langpacks-en 3.0-16.el9

1.68.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPLv2+

Found in path(s):
* /langpacks-3.0-16.el9.src.rpm-cosi-expand-archive-KILLXEkg/langpacks.spec

1.69 github.com/x448/float16 0.8.4

1.69.1 Available under license :

MIT License

Copyright (c) 2019 Montgomery Edwards and Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
 OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.70 tre 0.8.0-r2

1.70.1 Available under license :

This is the license, copyright notice, and disclaimer for TRE, a regex
matching package (library and tools) with support for approximate
matching.

Copyright (c) 2001-2009 Ville Laurikari <vl@iki.fi>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.71 iconv 2.34

1.71.1 Available under license :

This is the Debian prepackaged version of the GNU C Library version 2.23.

It was put together by the GNU Libc Maintainers <debian-glibc@lists.debian.org>
from <https://sourceware.org/git/glibc.git>

* Most of the GNU C library is under the following copyright:

  Copyright (C) 1991-2015 Free Software Foundation, Inc.

  The GNU C Library is free software; you can redistribute it and/or
  modify it under the terms of the GNU Lesser General Public
  License as published by the Free Software Foundation; either
  version 2.1 of the License, or (at your option) any later version.

  The GNU C Library is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
  Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with the GNU C Library; if not, write to the Free
Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA
02110-1301 USA

On Debian systems, the complete text of the GNU Library
General Public License can be found in `/usr/share/common-licenses/LGPL-2.1'.

* The utilities associated with GNU C library is under the following
copyright:

Copyright (C) 1991-2015 Free Software Foundation, Inc.

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published
by the Free Software Foundation; version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation,
Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA.

On Debian systems, the complete text of the GNU Library
General Public License can be found in `/usr/share/common-licenses/GPL-2'.

* All code incorporated from 4.4 BSD is distributed under the following
license:

Copyright (C) 1991 Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. [This condition was removed.]

4. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

* The DNS resolver code, taken from BIND 4.9.5, is copyrighted both by
UC Berkeley and by
Digital Equipment Corporation. The DEC portions
are under the following license:

Portions Copyright (C) 1993 by Digital Equipment Corporation.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies, and
that the name of Digital Equipment Corporation not be used in
advertising or publicity pertaining to distribution of the document or
software without specific, written prior permission.

THE SOFTWARE IS PROVIDED ``AS IS'' AND DIGITAL EQUIPMENT CORP.
DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL
DIGITAL EQUIPMENT CORPORATION BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING
FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION
WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

* The ISC portions are under the following license:

Portions Copyright (c) 1996-1999 by Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS

ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS
SOFTWARE.

* The Sun RPC support (from rpcsrc-4.0) is covered by the following license:

Copyright (c) 2010, Oracle America, Inc.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of the "Oracle America, Inc." nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* The following CMU license covers some of the support code for Mach, derived from Mach 3.0:

Mach Operating System
Copyright (C) 1991,1990,1989 Carnegie Mellon University
All Rights Reserved.

Permission to use, copy, modify and
distribute this software and its
documentation is hereby granted, provided that both the copyright
notice and this permission notice appear in all copies of the
software, derivative works or modified versions, and any portions
thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS ``AS IS''
CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR
ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Carnegie Mellon requests users of this software to return to

Software Distribution Coordinator
School of Computer Science
Carnegie Mellon University
Pittsburgh PA 15213-3890

or Software.Distribution@CS.CMU.EDU any improvements or
extensions that they make and grant Carnegie Mellon the rights to
redistribute these changes.

* The file if_ppp.h is under the following CMU license:

Redistribution and use in source and binary forms,
with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CARNEGIE MELLON UNIVERSITY AND
CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE UNIVERSITY OR CONTRIBUTORS
BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR

OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* The following license covers the files from Intel's "Highly Optimized Mathematical Functions for Itanium" collection:

Intel License Agreement

Copyright (c) 2000, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* The name of Intel Corporation may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* The files inet/getnameinfo.c and sysdeps/posix/getaddrinfo.c are copyright (C) by Craig Metz and are distributed under the following license:

/* The Inner Net License, Version 2.00

The author(s) grant permission for redistribution and use in source and binary forms, with or without modification, of the software and documentation provided that the following conditions are met:

0. If you receive a version of the software that is specifically labelled
as not being for redistribution (check the version message and/or README),
you are not permitted to redistribute that version of the software in any
way or form.
1. All terms of the all other applicable copyrights and licenses must be
followed.
2. Redistributions of source code must retain the authors' copyright
notice(s), this list of conditions, and the following disclaimer.
3. Redistributions in binary form must reproduce the authors' copyright
notice(s), this list of conditions, and the following disclaimer in the
documentation and/or other materials provided with the distribution.
4. [The copyright holder has authorized the removal of this clause.]
5. Neither the name(s) of the author(s) nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ITS AUTHORS AND CONTRIBUTORS ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

If these license terms cause you a real problem, contact the author. */

* The file sunrpc/des_impl.c is copyright Eric Young:

Copyright (C) 1992 Eric Young
Collected from libdes and modified for SECURE RPC by Martin Kuck 1994
This file is distributed under the terms of the GNU Lesser General
Public License, version 2.1 or later - see the file COPYING.LIB for details.
If you did not receive a copy of the license with this program, please
see <http://www.gnu.org/licenses/> to obtain a copy.

* The libidn code is copyright Simon Josefsson, with portions copyright
The Internet Society, Tom Tromey
and Red Hat, Inc.:

Copyright (C) 2002, 2003, 2004, 2011 Simon Josefsson

This file is part of GNU Libidn.

GNU Libidn is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

GNU Libidn is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with GNU Libidn; if not, see <http://www.gnu.org/licenses/>.

* The following notice applies to portions of libidn/nfkc.c:

This file contains functions from GLIB, including gutf8.c and
gunidecomp.c, all licensed under LGPL and copyright hold by:

Copyright (C)
1999, 2000 Tom Tromey
Copyright 2000 Red Hat, Inc.

* The following applies to portions of libidn/punycode.c and
libidn/punycode.h:

This file is derived from RFC 3492bis written by Adam M. Costello.

Disclaimer and license: Regarding this entire document or any
portion of it (including the pseudocode and C code), the author
makes no guarantees and is not responsible for any damage resulting
from its use. The author grants irrevocable permission to anyone
to use, modify, and distribute it in any way that does not diminish
the rights of anyone else to use, modify, and distribute it,
provided that redistributed derivative works do not contain
misleading author or version information. Derivative works need
not be licensed under similar terms.

Copyright (C) The Internet Society (2003). All Rights Reserved.

This document and translations of it may be copied and furnished to
others, and derivative works that comment on or otherwise
explain it
or assist in its implementation may be prepared, copied, published
and distributed, in whole or in part, without restriction of any
kind, provided that the above copyright notice and this paragraph are
included on all such copies and derivative works. However, this
document itself may not be modified in any way, such as by removing
the copyright notice or references to the Internet Society or other

Internet organizations, except as needed for the purpose of
developing Internet standards in which case the procedures for
copyrights defined in the Internet Standards process must be
followed, or as required to translate it into languages other than
English.

The limited permissions granted above are perpetual and will not be
revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an
"AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING
TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING
BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION
HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF
MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

* The file inet/rcmd.c is under a UCB copyright and the following:

Copyright (C) 1998 WIDE Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the project nor the names of its contributors

may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

* The file posix/runtests.c is copyright Tom Lord:

Copyright 1995 by Tom Lord

All Rights Reserved

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of the copyright holder not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission.

Tom Lord DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO
EVENT SHALL TOM LORD BE LIABLE FOR ANY SPECIAL, INDIRECT OR
CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF
USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.

*

The posix/rxspencer tests are copyright Henry Spencer:

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
   software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
   explicit claim or by omission. Since few users ever read sources,
   credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
   misrepresented as being the original software. Since few users
   ever read sources, credits must
appear in the documentation.

4. This notice may not be removed or altered.

* The file posix/PCRE.tests is copyright University of Cambridge:

Copyright (c) 1997-2003 University of Cambridge

Permission is granted to anyone to use this software for any purpose on any computer system, and to redistribute it freely, subject to the following restrictions:

1. This software is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2. The origin of this software must not be misrepresented, either by explicit claim or by omission. In practice, this means that if you use PCRE in software that you distribute to others, commercially or otherwise, you must put a sentence like this

Regular expression support is provided by the PCRE library package, which is open source software, written by Philip Hazel, and copyright by the University of Cambridge, England.

somewhere reasonably visible in your documentation and in any relevant files or online help data or similar. A reference to the ftp site for the source, that is, to

ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/

should also be given in the documentation. However, this condition is not intended to apply to whole chains of software. If package A includes PCRE, it must acknowledge it, but if package B is software that includes package A, the condition is not imposed on package B (unless it uses PCRE independently).

3. Altered versions must be plainly marked as such, and must not be misrepresented as being the original software.

4. If PCRE is embedded in any software that is released under the GNU General Purpose Licence (GPL), or Lesser General Purpose Licence (LGPL), then the terms of that licence shall supersede any condition above with which it is incompatible.

* Files from Sun fdlibm are copyright Sun Microsystems, Inc.:

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems, Inc. business.
Permission to use, copy, modify, and distribute this software is freely granted, provided that this notice

is preserved.

* Part of stdio-common/tst-printf.c is copyright C E Chew:

(C) Copyright C E Chew

Feel free to copy, use and distribute this software provided:

1. you do not pretend that you wrote it
2. you leave this copyright notice intact.

* Various long double libm functions are copyright Stephen L. Moshier:

Copyright 2001 by Stephen L. Moshier <moshier@na-net.ornl.gov>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License,
or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, see
<http://www.gnu.org/licenses/>. */

The following applies to the GNU C Library Reference Manual (libc.info):

Copyright (C) 1993-2017 Free Software Foundation, Inc.

Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU Free Documentation License, Version 1.3 or
any later version published by the Free Software Foundation; with the
Invariant Sections being "Free Software Needs Free Documentation" and
"GNU Lesser General Public License", the Front-Cover texts being "A
GNU Manual", and with the Back-Cover
Texts as in (a) below. A copy of
the license is included in the section entitled "GNU Free
Documentation License".

(a) The FSFs Back-Cover Text is: "You have the freedom to copy and
modify this GNU manual. Buying copies from the FSF supports it in
developing GNU and promoting software freedom."

On Debian systems, the complete text of the GNU Free Documentation
License Version 1.3 can be found in `/usr/share/common-licenses/GFDL-1.3'.

1.72 attr 2.5.1-3.el9

1.72.1 Available under license :

Most components of the "attr" package are licensed under
Version 2.1 of the GNU Lesser General Public License (see below).
below.

Some components (as annotated in the source) are licensed
under Version 2 of the GNU General Public License (see COPYING).

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your
freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of

it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the

entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed
under these terms. A "work based on the
Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use
of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be

a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do

this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library
into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of
the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file
is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of
this License. If the work
during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library
mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is

interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate
distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any

attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such
parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a
consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made

generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution
limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs
whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE
COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these
terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License
for more details.

You should have received a copy of the GNU Lesser General Public

License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Most components of the "attr" package are licensed under
Version 2.1 of the GNU Lesser General Public License (see COPYING.LGPL).

Some components (as annotated in the source) are licensed
under Version 2 of the GNU General Public License (see below),

---

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software
and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for

this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients
all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that
any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in

the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works
based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections
1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include

anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by

all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author

to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision
will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify

it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts
in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License
does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.73 libcap-ng 0.8.2-7.el9

1.73.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors
who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,

whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally,
software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore
permits such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many

libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library
in order to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under

copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly
into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation
and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it,
in any medium, provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and
can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms
of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.
^L
Once this change is made in a given copy, it is irreversible for

that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the
complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a
"work that uses the
library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may

distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)

will operate properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy

from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.
^L
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not

signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License,
they do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software
distribution system which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN

WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS
PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source
file to most
effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor,
Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as

distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.74 sed 4.8-9.el9

1.74.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of

protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require,

such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to

the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent

works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source

may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has

been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and

finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights

granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work

in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have

permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/philosophy/why-not-lgpl.html>.

1.75 libunistring 0.9.10-15.el9

1.75.1 Available under license :

@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
 must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to use that
work under the conditions stated herein. The ``Document'', below,
refers
 to any such manual or work. Any member of the public is a
licensee, and is addressed as ``you''. You accept the license if you
copy, modify or distribute the work in a way requiring permission
under copyright law.

A ``Modified Version'' of the Document means any work containing the
Document or a portion of it, either copied verbatim, or with
modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section
of the Document that deals exclusively with the relationship of the
publishers or authors of the Document to the Document's overall
subject (or to related matters) and contains nothing that could fall

directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The ``Invariant Sections'' are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain @sc{ascii} without markup, Texinfo input format, La@TeX{} input format, @acronym{SGML} or @acronym{XML} using a publicly available @acronym{DTD}, and standard-conforming simple @acronym{HTML}, PostScript or @acronym{PDF} designed for human modification. Examples of transparent image formats include @acronym{PNG}, @acronym{XCF} and @acronym{JPG}. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, @acronym{SGML} or @acronym{XML} for which the @acronym{DTD} and/or processing tools are not generally available, and the machine-generated @acronym{HTML}, PostScript or @acronym{PDF} produced by some word processors for output purposes only.

The ``Title Page'' means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, ``Title Page'' means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in
another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'', ``Dedications'', ``Endorsements'', or ``History''.) To ``Preserve the Title'' of such a section when you modify the Document means that it remains a section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever
to those of this License. You may not use
technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have

printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible.
You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that
this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

@item
MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item

Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from
 those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities
responsible for authorship of the modifications in the Modified
Version, together with at least five of the principal authors of the
Document (all of its principal authors, if it has fewer than five),
unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the
Modified Version, as the publisher.

@item
Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications
adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice
giving the public permission to use the Modified Version under the
terms of this License, in the form shown in
 the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the Document's license notice.

@item
Include an unaltered copy of this License.

@item
Preserve the section Entitled ``History'', Preserve its Title, and add
to it an item stating at least the title, year, new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled ``History'' in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.

@item

Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the ``History'' section.
You may omit a network location for a work that was published at
least
 four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document,
 you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements'', provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list

of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf
 of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of
 each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History''
in the various original documents, forming one section Entitled
``History''; likewise combine any sections Entitled ``Acknowledgements'',
and any sections Entitled ``Dedications''. You must delete all
sections Entitled ``Endorsements.''

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents
released under this License, and replace the individual copies of this
License in the various documents with a single copy that is included in
the collection, provided that you follow the rules of this License for
verbatim copying of each of the documents in all other respects.

You may extract
a single document from such a collection, and distribute
it individually under this License, provided you insert a copy of this
License into the extracted document, and follow this License in all
other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an ``aggregate'' if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these
copies of the Document, then if the Document is less than one half of
the entire aggregate, the Document's Cover Texts may
be placed on
covers that bracket the Document within the aggregate, or the
electronic equivalent of covers if the Document is in electronic form.
Otherwise they must appear on printed covers that bracket the whole
aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may
distribute translations of the Document under the terms of section 4.
Replacing Invariant Sections with translations requires special
permission from their copyright holders, but you may include
translations of some or all Invariant Sections in addition to the
original versions of these Invariant Sections. You may include a
translation of this License, and all the license notices in the
Document, and any Warranty Disclaimers, provided that you also include
the original English version of this License and the original versions
of those notices and disclaimers. In case of a disagreement between
the translation and the original version of this License or a notice
or disclaimer, the original
version will prevail.

If a section in the Document is Entitled ``Acknowledgements'',
``Dedications'', or ``History'', the requirement (section 4) to Preserve
its Title (section 1) will typically require changing the actual
title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies
 you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See
@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that
 a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document

specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'')
 contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or
in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the
 MMC is eligible for relicensing.

@end enumerate

@page
@heading ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group

Copyright (C) @var{year} @var{your name}.
Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU Free Documentation License, Version 1.3
or any later version published by the Free Software Foundation;
with no Invariant Sections, no Front-Cover Texts, and no Back-Cover
Texts. A copy of the license is included in the section entitled ``GNU
Free Documentation License".
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts." line with this:

@smallexample
@group
  with the Invariant Sections being @var{list their titles}, with
  the Front-Cover
Texts being @var{list}, and with the Back-Cover Texts
  being @var{list}.
@end group
@end smallexample

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,

the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2)

tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that

same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you

receive it, in any medium, provided that you conspicuously and
appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other

parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided

you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and

adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some

trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that

copyright
holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify

or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),

EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
@c The GNU General Public License.
@center Version 3, 29 June 2007

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2007 Free Software Foundation, Inc. @url{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.
@end display

@heading Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom
to share and change all versions of a program---to make sure it remains
free software for all its users. We, the Free Software Foundation,
use the GNU General Public License for most of our software; it
applies also to any other work released this way by its authors. You
can

apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know
their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice
for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish

to avoid the special danger that patents applied to a free program
could make it effectively proprietary. To prevent this, the GPL
assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

@heading TERMS AND CONDITIONS

@enumerate 0
@item Definitions.

``This License'' refers to version 3 of the GNU General Public License.

``Copyright'' also means copyright-like laws that apply to other kinds
of works, such as semiconductor masks.

``The Program'' refers to any copyrightable work licensed
 under this
License. Each licensee is addressed as ``you''.  ``Licensees'' and
``recipients'' may be individuals or organizations.

To ``modify'' a work means to copy from or adapt all or part of the work
in a fashion requiring copyright permission, other than the making of
an exact copy. The resulting work is called a ``modified version'' of
the earlier work or a work ``based on'' the earlier work.

A ``covered work'' means either the unmodified Program or a work based
on the Program.

To ``propagate'' a work means to do anything with it that, without
permission, would make you directly or secondarily liable for
infringement under applicable copyright law, except executing it on a
computer or modifying a private copy. Propagation includes copying,
distribution (with or without modification), making available to the
public, and in some countries other activities as well.

To ``convey'' a work means any kind of propagation that enables other
parties to make or receive copies. Mere
 interaction with a user
through a computer network, with no transfer of a copy, is not
conveying.

An interactive user interface displays ``Appropriate Legal Notices'' to
the extent that it includes a convenient and prominently visible
feature that (1) displays an appropriate copyright notice, and (2)
tells the user that there is no warranty for the work (except to the
extent that warranties are provided), that licensees may convey the

work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

@item Source Code.

The ``source code'' for a work means the preferred form of the work for making modifications to it. ``Object code'' means any non-source form of a work.

A ``Standard Interface'' means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The ``System Libraries'' of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A ``Major Component'', in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The ``Corresponding Source'' for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

@item Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission
to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is
permitted solely under the
conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

@item Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

@item Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive
it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice;

keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

@item Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these
conditions:

@enumerate a
@item
The work must carry prominent notices stating that you modified it,
and giving a relevant date.

@item
The work must carry prominent notices stating that it is released
under this License and any conditions added
 under section 7. This
requirement modifies the requirement in section 4 to ``keep intact all
notices".

@item
You must license the entire work, as a whole, under this License to
anyone who comes into possession of a copy. This License will
therefore apply, along with any applicable section 7 additional terms,
to the whole of the work, and all its parts, regardless of how they
are packaged. This License gives no permission to license the work in
any other way, but it does not invalidate such permission if you have
separately received it.

@item
If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your work
need not make them do so.
@end enumerate

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in

or on a volume of a storage or distribution medium, is called an
``aggregate'' if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

@item Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of
sections 4 and 5, provided that you also convey the machine-readable
Corresponding Source under the terms of this License, in one of these
ways:

@enumerate a
@item
Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium customarily
used for software interchange.

@item
Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a written
offer,
valid for at least three years and valid for as long as you
offer spare parts or customer support for that product model, to give
anyone who possesses the object code either (1) a copy of the
Corresponding Source for all the software in the product that is
covered by this License, on a durable physical medium customarily used
for software interchange, for a price no more than your reasonable
cost of physically performing this conveying of source, or (2) access
to copy the Corresponding Source from a network server at no charge.

@item
Convey individual copies of the object code with a copy of the written
offer to provide the Corresponding Source. This alternative is
allowed only occasionally and noncommercially, and only if you
received the object code with such an offer, in accord with subsection
6b.

@item
Convey the object code by offering access from a designated place
(gratis or for a charge), and offer equivalent access to the
Corresponding Source in the same way through
the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to copy

the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

@item
Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

@end enumerate

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the
object code work.

A ``User Product'' is either (1) a ``consumer product'', which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, ``normally used'' refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

``Installation Information'' for a User Product means any methods, procedures, authorization keys, or other information required to install
and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a

fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in ROM).

The requirement to provide Installation Information
 does not include a
requirement to continue to provide support service, warranty, or
updates for a work that has been modified or installed by the
recipient, or for the User Product in which it has been modified or
installed. Access to a network may be denied when the modification
itself materially and adversely affects the operation of the network
or violates the rules and protocols for communication across the
network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

@item Additional Terms.

``Additional permissions'' are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the entire Program shall
be treated as though they were included
 in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders
of that material) supplement the terms of this License with terms:

@enumerate a
@item

Disclaiming warranty or limiting liability differently from the terms
of
sections 15 and 16 of this License; or

@item
Requiring preservation of specified reasonable legal notices or author
attributions in that material or in the Appropriate Legal Notices
displayed by works containing it; or

@item
Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

@item
Limiting the use for publicity purposes of names of licensors or
authors of the material; or

@item
Declining to grant rights under trademark law for use of some trade
names, trademarks, or service marks; or

@item
Requiring indemnification of licensors and authors of that material by
anyone who conveys the material (or modified versions of it) with
contractual assumptions of liability to the recipient, for any
liability that these contractual assumptions directly impose on those
licensors and authors.
@end enumerate

All other non-permissive additional terms are considered
``further
restrictions'' within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions; the

above requirements apply either way.

@item Termination.

You may not propagate or modify a
covered work except as expressly
provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination
of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

@item Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

@item Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient
automatically
receives a license from the original licensors, to run, modify and

propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An ``entity transaction'' is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or
other charge for exercise of
rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

@item Patents.

A ``contributor'' is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's ``contributor version''.

A contributor's ``essential patent claims'' are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, ``control'' includes the right to grant
patent
sublicenses in a manner consistent with the requirements of
this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a ``patent license'' is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To ``grant'' such a patent license to a

party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you
must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. ``Knowingly relying'' means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work
and works based on it.

A patent license is ``discriminatory'' if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall
be construed as excluding or limiting
any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

@item No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

@item Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any
 covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

@item Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License ``or any later version'' applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version
 published by the Free Software Foundation. If
the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any

author or copyright holder as a result of your choosing to follow a
later version.

@item Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM ``AS IS'' WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

@item Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above
cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

@end enumerate

@heading END OF TERMS AND CONDITIONS

@heading How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these
terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the ``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the program's name and a brief idea of what it does.}
Copyright
 (C) @var{year} @var{name of author}

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or (at
your option) any later version.

This program is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see @url{http://www.gnu.org/licenses/}.
@end smallexample

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

@smallexample
@var{program} Copyright (C) @var{year} @var{name of author}
This program comes with ABSOLUTELY NO WARRANTY;
 for details type @samp{show w}.
This is free software, and you are welcome to redistribute it
under certain conditions; type @samp{show c} for details.
@end smallexample

The hypothetical commands @samp{show w} and @samp{show c} should show
the appropriate parts of the General Public License. Of course, your
program's commands might be different; for a GUI interface, you would
use an ``about box''.

You should also get your employer (if you work as a programmer) or school,
if any, to sign a ``copyright disclaimer'' for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
@url{http://www.gnu.org/licenses/}.

The GNU General Public License does not permit incorporating your
program into proprietary programs. If your program is a subroutine
library, you may consider it more useful to permit linking proprietary
applications with the library. If this is what you want to do, use
the GNU Lesser General Public License instead of this License.
 But
first, please read @url{http://www.gnu.org/philosophy/why-not-lgpl.html}.
    GNU LESSER GENERAL PUBLIC LICENSE
                Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

 This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

 0. Additional Definitions.

 As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

 "The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

 An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by the Library is
 deemed a mode
of using an interface provided by the Library.

 A "Combined Work" is a work produced by combining or linking an
Application with the Library. The particular version of the Library
with which the Combined Work was made is also called the "Linked
Version".

 The "Minimal Corresponding Source" for a Combined Work means the
Corresponding Source for the Combined Work, excluding any source code
for portions of the Combined Work that, considered in isolation, are
based on the Application, and not on the Linked Version.

 The "Corresponding Application Code" for a Combined Work means the
object code and/or source code for the Application, including any data
and utility programs needed for reproducing the Combined Work from the
Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data
structure
layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this

License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following
the terms and
conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

1.76 python-inotify 0.9.6-25.el9

1.76.1 Available under license :

Copyright (c) 2010 Sebastien Martini <seb@dbzteam.org>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.77 json-glib 1.6.6-1.el9

1.77.1 Available under license :

Creative Commons Legal Code

CC0 1.0 Universal CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons") that the public can reliably
and without fear of later claims
of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright

and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal effect of CC0 on those rights.

1.
Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;

ii. moral rights retained by the original author(s) and/or performer(s);

iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;

iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;

v. rights protecting the extraction, dissemination, use and reuse of data in a Work;

vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation thereof, including any amended or successor version of such directive);
and

vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment
of Affirmer's
heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public

as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future
medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document.

b. Affirmer offers the Work as-is and makes no representations
or warranties
of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.

c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.

d. Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with respect to this CC0 or use of the Work.

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the

library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free

software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must

be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to
a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed

under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the

major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under
the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the

original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people
have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new

versions of the Lesser General Public License
from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of
all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and
a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also
get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Copyright 2019 Red Hat, Inc.,
with Reserved Font Name Red Hat.

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide development of collaborative font projects, to support the font creation efforts of academic and linguistic communities, and to provide a free and open framework in which fonts may be shared and improved in partnership with others.

The OFL allows the licensed fonts to be used, studied, modified and redistributed freely as long as they are not sold by themselves. The fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names
are not used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part or in whole -- any of the components of the Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed
to the Font Software.

PERMISSION & CONDITIONS

Permission is hereby granted, free of charge, to any person obtaining
a copy of the Font Software, to use, study, copy, merge, embed, modify,
redistribute, and sell modified and unmodified copies of the Font
Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components,
in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled,
redistributed and/or sold with any software, provided that each copy
contains the above copyright notice and this license. These can be
included either as stand-alone text files, human-readable headers or
in the appropriate machine-readable metadata fields within text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font
Name(s) unless explicit written permission is granted by the corresponding
Copyright
Holder. This restriction only applies to the primary font name as
presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font
Software shall not be used to promote, endorse or advertise any
Modified Version, except to acknowledge the contribution(s) of the
Copyright Holder(s) and the Author(s) or with their explicit written
permission.

5) The Font Software, modified or unmodified, in part or in whole,
must be distributed entirely under this license, and must not be
distributed under any other license. The requirement for fonts to
remain under this license does not apply to any document created
using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are
not met.

DISCLAIMER
THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT
OF COPYRIGHT, PATENT,
TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE
COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL
DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM
OTHER DEALINGS IN THE FONT SOFTWARE.

Creative Commons Legal Code

Attribution-ShareAlike 3.0 Unported

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS LICENSE DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE INFORMATION PROVIDED, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM ITS USE.

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

1. Definitions

a. "Adaptation" means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptations or any other form in which the Work may be recast, transformed, or adapted including in any form recognizably derived from the original, except that a work that constitutes a Collection will not be considered an Adaptation for the purpose of this License. For the avoidance of doubt, where the Work is a musical work, performance or phonogram, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered an Adaptation for the purpose of this License.

b. "Collection" means a collection of literary or artistic works, such as encyclopedias and anthologies, or performances, phonograms or broadcasts, or other works or subject matter other than works listed in Section 1(f) below, which, by reason of the selection and arrangement of their contents, constitute intellectual creations, in which the Work is included in its entirety in unmodified form along with one or more other contributions, each constituting separate and independent works in themselves, which together are assembled into a

collective whole. A work that constitutes a Collection will not be considered an Adaptation (as defined below) for the purposes of this License.

c. "Creative Commons Compatible License" means a license that is listed at https://creativecommons.org/compatiblelicenses that has been approved by Creative Commons as being essentially equivalent to this License, including, at a minimum, because that license: (i) contains terms that have the same purpose, meaning and effect as the License Elements of this License; and,

(ii) explicitly permits the relicensing of adaptations of works made available under that license under this License or a Creative Commons jurisdiction license with the same License Elements as this License.

d. "Distribute" means to make available to the public the original and copies of the Work or Adaptation, as appropriate, through sale or other transfer of ownership.

e. "License Elements" means the following high-level license attributes as selected by Licensor and indicated in the title of this License: Attribution, ShareAlike.

f. "Licensor" means the individual, individuals, entity or entities that offer(s) the Work under the terms of this License.

g. "Original Author" means, in the case of a literary or artistic work, the individual, individuals, entity or entities who created the Work or if no individual or entity can be identified, the publisher; and in addition (i) in the case of a performance the actors, singers, musicians,

dancers, and other persons who act, sing, deliver, declaim, play in, interpret or otherwise perform literary or artistic works or expressions of folklore; (ii) in the case of a phonogram the producer being the person or legal entity who first fixes the sounds of a performance or other sounds; and, (iii) in the case of broadcasts, the organization that transmits the broadcast.

h. "Work" means the literary and/or artistic work offered under the terms of this License including without limitation any production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression including digital form, such as a book, pamphlet and other writing; a lecture, address, sermon or other work of the same nature; a dramatic or dramatico-musical work; a choreographic work or entertainment in dumb show; a musical composition with or without words; a cinematographic work to which are assimilated works expressed by a

process analogous to cinematography;

a work of drawing, painting, architecture, sculpture, engraving or lithography; a photographic work to which are assimilated works expressed by a process analogous to photography; a work of applied art; an illustration, map, plan, sketch or three-dimensional work relative to geography, topography, architecture or science; a performance; a broadcast; a phonogram; a compilation of data to the

extent it is protected as a copyrightable work; or a work performed by a variety or circus performer to the extent it is not otherwise considered a literary or artistic work.

i. "You" means an individual or entity exercising rights under this License who has not previously violated the terms of this License with respect to the Work, or who has received express permission from the Licensor to exercise rights under this License despite a previous violation.

j. "Publicly Perform" means to perform public recitations of the Work and to communicate to the public those public recitations, by any means or process, including by wire or wireless means or public digital performances; to make available to the public Works in such a way that members of the public may access these Works from a place and at a place individually chosen by them; to perform the Work to the public by any means or process and the communication to the public of the performances of the Work, including by public digital performance; to broadcast and rebroadcast the Work by any means including signs, sounds or images.

k. "Reproduce" means to make copies of the Work by any means including without limitation by sound or visual recordings and the right of fixation and reproducing fixations of the Work, including storage of a protected performance or phonogram in digital form or other electronic medium.

2. Fair Dealing Rights. Nothing in this License is intended to reduce, limit, or restrict any uses free from copyright or rights arising from limitations or exceptions that are provided for in connection with the copyright protection under copyright law or other applicable laws.

3. License Grant. Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:

a. to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections;

b. to create and Reproduce Adaptations provided that any such Adaptation, including any translation in any medium, takes reasonable steps to clearly label, demarcate or otherwise identify that changes were made to the original Work. For example, a translation could be marked "The original work was translated from English to Spanish," or a modification could indicate "The original work has been modified.";

c. to Distribute and Publicly Perform the Work including as incorporated in Collections; and,

d. to Distribute and Publicly Perform Adaptations.
e. For the avoidance of doubt:

i. Non-waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme cannot be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License;
ii. Waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme can be waived, the Licensor waives the exclusive right to collect such royalties for any exercise by You of the rights granted under this License; and,
iii. Voluntary License Schemes. The Licensor waives the right to collect
royalties, whether individually or, in the event that the Licensor is a member of a collecting society that administers voluntary licensing schemes, via that society, from any exercise by You of the rights granted under this License.

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. Subject to Section 8(f), all rights not expressly granted by Licensor are hereby reserved.

4. Restrictions. The license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

a. You may Distribute or Publicly Perform the Work only under the terms of this License. You must include a copy of, or the Uniform Resource Identifier (URI) for, this License with every copy of the Work You Distribute or Publicly Perform. You may not offer or impose
any terms
on the Work that restrict the terms of this License or the ability of the recipient of the Work to exercise the rights granted to that recipient under the terms of the License. You may not sublicense the Work. You must keep intact all notices that refer to this License and to the disclaimer of warranties with every copy of the Work You Distribute or Publicly Perform. When You Distribute or Publicly Perform the Work, You may not impose any effective technological measures on the Work that restrict the ability of a recipient of the Work from You to exercise the rights granted to that recipient under the terms of the License. This Section 4(a) applies to the Work as incorporated in a Collection, but this does not require the Collection apart from the Work itself to be made subject to the terms of this License. If You create a Collection, upon notice from any Licensor You must, to the extent practicable, remove from the

Collection any credit
as required by Section 4(c), as requested. If You create an Adaptation, upon notice from any Licensor You must, to the extent practicable, remove from the Adaptation any credit as required by Section 4(c), as requested.

b. You may Distribute or Publicly Perform an Adaptation only under the terms of: (i) this License; (ii) a later version of this License with the same License Elements as this License; (iii) a Creative Commons jurisdiction license (either this or a later license version) that contains the same License Elements as this License (e.g., Attribution-ShareAlike 3.0 US)); (iv) a Creative Commons Compatible License. If you license the Adaptation under one of the licenses mentioned in (iv), you must comply with the terms of that license. If you license the Adaptation under the terms of any of the licenses mentioned in (i), (ii) or (iii) (the "Applicable License"), you must comply with the terms of the
Applicable License generally and the
following provisions: (I) You must include a copy of, or the URI for, the Applicable License with every copy of each Adaptation You Distribute or Publicly Perform; (II) You may not offer or impose any terms on the Adaptation that restrict the terms of the Applicable License or the ability of the recipient of the Adaptation to exercise the rights granted to that recipient under the terms of the Applicable License; (III) You must keep intact all notices that refer to the Applicable License and to the disclaimer of warranties with every copy of the Work as included in the Adaptation You Distribute or Publicly Perform; (IV) when You Distribute or Publicly Perform the Adaptation, You may not impose any effective technological measures on the Adaptation that restrict the ability of a recipient of the Adaptation from You to exercise the rights granted to that recipient under the terms of the Applicable
License. This Section 4(b) applies to the
Adaptation as incorporated in a Collection, but this does not require the Collection apart from the Adaptation itself to be made subject to the terms of the Applicable License.

c. If You Distribute, or Publicly Perform the Work or any Adaptations or Collections, You must, unless a request has been made pursuant to Section 4(a), keep intact all copyright notices for the Work and provide, reasonable to the medium or means You are utilizing: (i) the name of the Original Author (or pseudonym, if applicable) if supplied, and/or if the Original Author and/or Licensor designate another party or parties (e.g., a sponsor institute, publishing entity, journal) for attribution ("Attribution Parties") in Licensor's copyright notice, terms of service or by other reasonable means, the name of such party or parties; (ii) the title of the Work if supplied; (iii) to the extent reasonably practicable, the URI,
if any, that Licensor
specifies to be associated with the Work, unless such URI does not

refer to the copyright notice or licensing information for the Work; and (iv) , consistent with Ssection 3(b), in the case of an Adaptation, a credit identifying the use of the Work in the Adaptation (e.g., "French translation of the Work by Original Author," or "Screenplay based on original Work by Original Author"). The credit required by this Section 4(c) may be implemented in any reasonable manner; provided, however, that in the case of a Adaptation or Collection, at a minimum such credit will appear, if a credit for all contributing authors of the Adaptation or Collection appears, then as part of these credits and in a manner at least as prominent as the credits for the other contributing authors. For the avoidance of doubt, You may only use the credit required by this Section for the purpose of attribution in the manner set out above

and, by exercising

Your rights under this License, You may not implicitly or explicitly assert or imply any connection with, sponsorship or endorsement by the Original Author, Licensor and/or Attribution Parties, as appropriate, of You or Your use of the Work, without the separate, express prior written permission of the Original Author, Licensor and/or Attribution Parties.

d. Except as otherwise agreed in writing by the Licensor or as may be otherwise permitted by applicable law, if You Reproduce, Distribute or Publicly Perform the Work either by itself or as part of any Adaptations or Collections, You must not distort, mutilate, modify or take other derogatory action in relation to the Work which would be prejudicial to the Original Author's honor or reputation. Licensor agrees that in those jurisdictions (e.g. Japan), in which any exercise of the right granted in Section 3(b) of this License (the right to make Adaptations) would

be deemed to be a distortion, mutilation,

modification or other derogatory action prejudicial to the Original Author's honor and reputation, the Licensor will waive or not assert, as appropriate, this Section, to the fullest extent permitted by the applicable national law, to enable You to reasonably exercise Your right under Section 3(b) of this License (right to make Adaptations) but not otherwise.

5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTIBILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES,

SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability. EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Termination

a. This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Adaptations or Collections from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License.
b. Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work).
Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and this License will continue in full force and effect unless terminated as stated above.

8. Miscellaneous

a. Each time You Distribute or Publicly Perform the Work or a Collection, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License.
b. Each time You Distribute or Publicly Perform an Adaptation, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License.
c. If any provision of this License is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.
d. No term or provision of this License shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent.
e. This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings,

agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License may not be modified without the mutual written agreement of the Licensor and You.

f. The rights granted under, and the subject matter referenced, in this License were drafted utilizing the terminology of the Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), the Rome Convention of 1961, the WIPO Copyright Treaty of 1996, the WIPO Performances and Phonograms Treaty of 1996 and the Universal Copyright Convention (as revised on July 24, 1971). These rights and subject matter take effect in the relevant jurisdiction in which the License terms are sought to be enforced according to the corresponding provisions of the implementation of those treaty provisions in the applicable national law. If the standard suite of rights granted under applicable copyright law includes additional rights not granted under this License, such additional rights are deemed to be included in the License; this License is not intended to restrict the license of any rights under applicable law.

Creative Commons Notice

Creative Commons is not a party to this License, and makes no warranty whatsoever in connection with the Work. Creative Commons will not be liable to You or any party on any legal theory for any damages whatsoever, including without limitation any general, special, incidental or consequential damages arising in connection to this license. Notwithstanding the foregoing two (2) sentences, if Creative Commons has expressly identified itself as the Licensor hereunder, it shall have all rights and obligations of Licensor.

Except for the limited purpose of indicating to the public that the Work is licensed under the CCPL, Creative Commons does not authorize the use by either party of the trademark "Creative Commons" or any related trademark or logo of Creative Commons without the prior written consent of Creative Commons. Any permitted use will be in compliance with Creative Commons' then-current trademark usage guidelines, as may be published on its website or otherwise made available upon request from time to time. For the avoidance of doubt, this trademark restriction does not form part of the License.

Creative Commons may be contacted at https://creativecommons.org/.

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a

computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but

which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive

interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in

the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the

Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if

the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner

consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM

IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its

distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
The MIT License (MIT)

Copyright (c) 2014 John Hawthorn

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.78 mpfr 4.1.0-7.el9

1.78.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by
the Library is deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an
Application with the Library. The particular version of the Library
with which the Combined Work was made is also called the "Linked
Version".

The "Minimal Corresponding Source" for a Combined Work means the
Corresponding Source for the Combined Work, excluding any source code
for portions of the Combined Work that, considered in isolation, are
based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the
object code and/or source code for the Application, including any data
and utility programs needed for reproducing the Combined Work from the
Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License
without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a
facility refers to a function or data to be supplied by an Application
that uses the facility (other than as an argument passed when the
facility is invoked), then you may convey a copy of the modified
version:

a) under this License, provided that you make a good faith effort to
ensure that, in the event an Application does not supply the
function or data, the facility still operates, and performs
whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of
this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from

a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer

system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you

received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component

(kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under

the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the

Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization

keys, or other information required to install
and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own

removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically

receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to

sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any

author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.

1.79 libpwquality 1.4.4-8.el9

1.79.1 Available under license :

Unless otherwise *explicitly* stated the following text describes the
licensed conditions under which the contents of this libpwquality release
may be distributed:

Redistribution and use in source and binary forms of libpwquality, with
or without modification, are permitted provided that the following
conditions are met:

1. Redistributions of source code must retain any existing copyright
  notice, and this entire permission notice in its entirety,
  including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current
  copyright notices, this list of conditions, and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

3. The name of any author may not be used to endorse or promote
  products derived from this software without their specific prior
  written permission.

ALTERNATIVELY, this product may be distributed
 under the terms of the
GNU General Public License version 2 or later, in which case the provisions
of the GNU GPL are required INSTEAD OF the above restrictions.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

The full text of the GNU GENERAL PUBLIC LICENSE Version 2 is included
below.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and

distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish,
that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and
can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program
(or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING

OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either
version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical
commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this
License.

1.80 python-decorator 4.4.2-6.el9

1.80.1 Available under license :

BSD-style without advertising clause
Copyright (c) 2005-2018, Michele Simionato
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
Redistributions in bytecode form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDERS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,

INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.81 dbus-python 1.2.18-2.el9

1.81.1 Available under license :

As of version 0.82.4, dbus-python itself is released under the following permissive non-copyleft license (the same one that was proposed for D-Bus core but wasn't achieved):

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright holders and licensing are indicated in the source files.

The dbus-gmain/ subdirectory is under a different license: see dbus-gmain/COPYING for details.
The D-Bus GLib main loop bindings are licensed to you under your choice of the Academic Free License version 2.1, or the GNU General Public License version 2. Both licenses are included here.

In SPDX terms, this is:

SPDX-License-Identifier: AFL-2.1 OR GPL-2.0-or-later

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a
world-wide, royalty-free, non-exclusive, perpetual, sublicenseable
license to do the following:

a) to reproduce the Original Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work
and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide,
royalty-free, non-exclusive, perpetual, sublicenseable license, under
patent claims owned or controlled by the Licensor that are embodied in
the Original Work as furnished by the Licensor, to make, use, sell and
offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the
preferred form of the Original Work for making modifications to it and
all available documentation describing how to modify the Original
Work. Licensor hereby agrees to provide a machine-readable copy of the
Source Code of the Original Work along with each copy of the Original
Work that Licensor distributes. Licensor reserves the right to satisfy
this obligation by placing a machine-readable copy of the Source Code
in an information repository reasonably calculated
to permit
inexpensive and convenient access by You for as long as Licensor
continues to distribute the Original Work, and by publishing the
address of that information repository in a notice immediately
following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of

goodwill,
work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between
Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and
under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be

entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement concerning the subject matter
hereof. If any provision of this License
is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not otherwise restricted or conditioned by this License or by law, and Licensor promises not to interfere with or be responsible for such uses by You.

This
license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential differences between the Academic Free License (AFL) version 1.0 and other open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache licenses in many respects but it is intended to solve a few problems with those licenses.

* The AFL is written so as to make it clear what software is being licensed (by the inclusion of a statement following the copyright notice in the software). This way, the license functions better than a template license. The BSD, MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD and Apache
licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT, UoI/NCSA and Apache licenses rely on an implied patent license and contain no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the licensor's trademarks. The Apache license contains such a provision, but the BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the copyright or that it is distributing the software under a license. None of the other licenses contain that warranty. All other warranties are disclaimed, as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute without modification). This ensures that the owner of the copyright to the license will control changes. The Apache license contains a copyright notice, but the BSD, MIT and UoI/NCSA licenses do not.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring

to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you
this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a

special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For

example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor
to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR
THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions;
type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library
General
Public License instead of this License.

1.82 python-pysocks 1.7.1-12.el9

1.82.1 Available under license :

Copyright 2006 Dan-Haim. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.
3. Neither the name of Dan Haim nor the names of his contributors may be used
  to endorse or promote products derived from this software without specific
  prior written permission.

THIS SOFTWARE IS PROVIDED BY DAN HAIM "AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO
EVENT SHALL DAN HAIM OR HIS CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
 INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA
OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT
OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMANGE.
3proxy 0.7 Public License Agreement

(c) 2000-2014 by 3APA3A (3APA3A@security.nnov.ru)
(c) 2000-2014 by SecurityVulns.com (http://3proxy.ru/)
(c) 2000-2014 by Vladimir Dubrovin (vlad@sandy.ru)

This software uses:
 RSA Data Security, Inc. MD4 Message-Digest Algorithm
 RSA Data Security, Inc. MD5 Message-Digest Algorithm

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF

THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software is FREEWARE.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that following conditions
are met (BSD style license):

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the SecurityVulns.COM nor the names of its
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

Instead of this license, you can also use and redistribute this software under
terms of compatible license, including:

1. Apache License, Version 2.0
You may obtain a copy
of the License at

http://www.apache.org/licenses/LICENSE-2.0

2. GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/gpl.txt

3. GNU Lesser General Public License as published by the
Free Software Foundation; either version 2.1 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/lgpl.txt

1.83 gmp 4.3.4

1.83.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable

source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the

Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY

YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of

interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not

convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of
technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you
receive it, in any medium, provided that you conspicuously and
appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to

produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular

product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the

entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders of
that material) supplement the terms of this License with terms:

a) Disclaiming warranty or
limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains

a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work

occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant

patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory

patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the

GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read <http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the

Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data
structure
layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library

facilities that are not Applications and are not covered by this
License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it
is a work based on the Library, and explaining where to find the
accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions
of the GNU Lesser General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the
Library as you received it specifies that a certain numbered version
of the GNU Lesser General Public License "or any later version"
applies to it, you have the option of following
the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser
General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand

ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices"

to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users

beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for

the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the

violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for

sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a

covered work, and grant a patent license to some of the parties
receiving the covered work authorizing them to use, propagate, modify
or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the

combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF

DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short

notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/philosophy/why-not-lgpl.html>.

1.84 popt 1.18-8.el9

1.84.1 Available under license :

Copyright (c) 1998 Red Hat Software

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not be
used in advertising or otherwise to promote the sale, use or other dealings
in this Software without prior written authorization from the X Consortium.

1.85 rpm 4.16.1.3-17.ph4

1.85.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to
rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program"

means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy
an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on

the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source

code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that
version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software

Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>

Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY
WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the
freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link a program with the library, you must provide
complete object files to the recipients so that they can relink them
with the library, after making changes to the library and recompiling
it. And you must show them these terms so they know

their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free

libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains
code derived from the library, while the latter only
works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for

writing it). Whether that is true depends on what
the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent
notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square
root
function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library,

and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not

compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference

directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise

permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then

the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free

Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.86 langpacks 3.0-16.el9

1.86.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPLv2+

Found in path(s):
* /langpacks-3.0-16.el9.src.rpm-cosi-expand-archive-8GtWXIy0/langpacks.spec

1.87 dejavu-fonts 2.37-18.el9

1.87.1 Available under license :

Fonts are (c) Bitstream (see below). DejaVu changes are in public domain.
Glyphs imported from Arev fonts are (c) Tavmjong Bah (see below)

Bitstream Vera Fonts Copyright

Copyright (c) 2003 by Bitstream, Inc. All Rights Reserved. Bitstream Vera is a trademark of Bitstream, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of the fonts accompanying this license ("Fonts") and associated documentation files (the "Font Software"), to reproduce and distribute the Font Software, including without limitation the rights to use, copy, merge, publish, distribute, and/or sell copies of the Font Software, and to permit persons to whom the Font Software is furnished to do so, subject to the following conditions:

The above copyright and trademark notices and this permission notice shall be included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular the
designs of glyphs or characters in the Fonts may be modified and additional glyphs or characters may be added to the Fonts, only if the fonts are renamed to names not containing either the words "Bitstream" or the word "Vera".

This License becomes null and void to the extent applicable to Fonts or Font Software that has been modified and is distributed under the "Bitstream Vera" names.

The Font Software may be sold as part of a larger software package but no copy of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL BITSTREAM OR THE GNOME FOUNDATION BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the names of Gnome, the Gnome Foundation, and Bitstream Inc., shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Font Software without prior written authorization from the Gnome Foundation or Bitstream Inc., respectively. For further information, contact: fonts at gnome dot org.

Arev Fonts Copyright

Copyright (c) 2006 by Tavmjong Bah. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining
a copy of the fonts accompanying this license ("Fonts") and
associated documentation files (the "Font Software"), to reproduce
and distribute the modifications to the Bitstream Vera Font Software,
including without limitation the rights to use, copy, merge, publish,
distribute, and/or sell copies of the Font
Software, and to permit
persons to whom the Font Software is furnished to do so, subject to
the following conditions:

The above copyright and trademark notices and this permission notice
shall be included in all copies of one or more of the Font Software
typefaces.

The Font Software may be modified, altered, or added to, and in
particular the designs of glyphs or characters in the Fonts may be
modified and additional glyphs or characters may be added to the
Fonts, only if the fonts are renamed to names not containing either
the words "Tavmjong Bah" or the word "Arev".

This License becomes null and void to the extent applicable to Fonts
or Font Software that has been modified and is distributed under the
"Tavmjong Bah Arev" names.

The Font Software may be sold as part of a larger software package but
no copy of one or more of the Font Software typefaces may be sold by
itself.

THE FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT
NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT
OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL
TAVMJONG BAH BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL
DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM
OTHER DEALINGS IN THE FONT SOFTWARE.

Except as contained in this notice, the name of Tavmjong Bah shall not
be used in advertising or otherwise to promote the sale, use or other
dealings in this Font Software without prior written authorization

from Tavmjong Bah. For further information, contact: tavmjong @ free
. fr.

TeX Gyre DJV Math

Fonts are (c) Bitstream (see below). DejaVu changes are in public domain.

Math extensions done by B. Jackowski, P. Strzelczyk and P. Pianowski
(on behalf of TeX users groups) are in public domain.

Letters
imported from Euler Fraktur from AMSfonts are (c) American
Mathematical Society (see below).
Bitstream Vera Fonts Copyright
Copyright (c) 2003 by Bitstream, Inc. All Rights Reserved. Bitstream Vera
is a trademark of Bitstream, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of the fonts accompanying this license (Fonts) and associated
documentation
files (the Font Software), to reproduce and distribute the Font Software,
including without limitation the rights to use, copy, merge, publish,
distribute,
and/or sell copies of the Font Software, and to permit persons to whom
the Font Software is furnished to do so, subject to the following
conditions:

The above copyright and trademark notices and this permission notice
shall be
included in all copies of one or more of the Font Software typefaces.

The Font Software may be modified, altered, or added to, and in particular
the designs of glyphs or characters in the Fonts may be modified and
additional
glyphs
or characters may be added to the Fonts, only if the fonts are
renamed
to names not containing either the words Bitstream or the word Vera.

This License becomes null and void to the extent applicable to Fonts or
Font Software
that has been modified and is distributed under the Bitstream Vera
names.

The Font Software may be sold as part of a larger software package but
no copy
of one or more of the Font Software typefaces may be sold by itself.

THE FONT SOFTWARE IS PROVIDED AS IS, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL BITSTREAM OR THE GNOME FOUNDATION
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO
USE
THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.
Except as contained in this notice, the names of GNOME, the GNOME Foundation,
and Bitstream Inc., shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Font Software without prior written authorization from the GNOME Foundation or Bitstream Inc., respectively.
For further information, contact: fonts at gnome dot org.

AMSFonts (v. 2.2) copyright

The PostScript Type 1 implementation of the AMSFonts produced by and previously distributed by Blue Sky Research and Y&Y, Inc. are now freely available for general use. This has been accomplished through the cooperation
of a consortium of scientific publishers with Blue Sky Research and Y&Y.
Members of this consortium include:

Elsevier Science IBM Corporation Society for Industrial and Applied Mathematics (SIAM) Springer-Verlag American Mathematical Society (AMS)

In order to assure the authenticity of these fonts, copyright will be held
by
the American Mathematical Society. This is not meant to restrict in any way the legitimate use of the fonts, such as (but not limited to) electronic distribution of documents containing these fonts, inclusion of these fonts into other public domain or commercial font collections or computer applications, use of the outline data to create derivative fonts and/or faces, etc. However, the AMS does require that the AMS copyright notice be removed from any derivative versions of the fonts which have been altered in any way. In addition, to ensure the fidelity of TeX documents using Computer Modern fonts, Professor Donald Knuth, creator of the Computer Modern faces, has requested that any alterations which yield different font metrics be given a different name.

Id

1.88 libtasn 4.16.0-8.el9_1

1.88.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave

you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into

another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that,

in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of

the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these

materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if

you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the

library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)

assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the

earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This

License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the

written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object

code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above

requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible

for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a

patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
 must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to use that
work under the conditions stated herein. The ``Document'', below,
refers
 to any such manual or work. Any member of the public is a
licensee, and is addressed as ``you''. You accept the license if you
copy, modify or distribute the work in a way requiring permission
under copyright law.

A ``Modified Version'' of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The ``Invariant Sections'' are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, La@TeX{} input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML,

PostScript or PDF designed for human modification. Examples
of transparent image formats include PNG, XCF and
JPG@. Opaque formats include proprietary formats that can be
read and edited only by proprietary word
processors, SGML or
XML for which the DTD and/or processing tools are
not generally available, and the machine-generated HTML,
PostScript or PDF produced by some word processors for
output purposes only.

The ``Title Page'' means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, ``Title Page'' means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies
of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'',
``Dedications'', ``Endorsements'',
or ``History''.) To ``Preserve the Title''
of such a section when you modify the Document means that it remains a
section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which
states that this License applies to the Document. These Warranty
Disclaimers are considered to be included by reference in this
License, but only as regards disclaiming warranties: any other
implication that these Warranty Disclaimers may have is void and has
no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either
commercially or noncommercially, provided that this License, the
copyright notices, and the license notice saying this License applies
to the Document are reproduced in all copies, and that you add no other
conditions whatsoever to those of this License. You may not use
technical measures to obstruct or control the reading or further
copying of the copies
you make or distribute. However, you may accept
compensation in exchange for copies. If you distribute a large enough

number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and
you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have
printed covers) of the Document, numbering more than 100, and the
Document's license notice requires Cover Texts, you must enclose the
copies in covers that carry, clearly and legibly, all these Cover
Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on
the back cover. Both covers must also clearly and legibly identify
you as the publisher of these copies. The front cover must present
the full title with all words of the title equally prominent and
visible. You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve
the
 title of the Document and satisfy these conditions, can be treated
as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit
legibly, you should put the first ones listed (as many as fit
reasonably) on the actual cover, and continue the rest onto adjacent
pages.

If you publish or distribute Opaque copies of the Document numbering
more than 100, you must either include a machine-readable Transparent
copy along with each Opaque copy, or state in or with each Opaque copy
a computer-network location from which the general network-using
public has access to download using public-standard network protocols
a complete Transparent copy of the Document, free of added material.
If you use the latter option, you must take reasonably prudent steps,
when you begin distribution of Opaque copies in quantity, to ensure
that this Transparent copy will remain thus accessible at the stated
location until at least one year after the last time you distribute
 an
Opaque copy (directly or through your agents or retailers) of that
edition to the public.

It is requested, but not required, that you contact the authors of the
Document well before redistributing any large number of copies, to give
them a chance to provide you with an updated version of the Document.

@item
MODIFICATIONS

You may copy and distribute a Modified Version of the Document under
the conditions of sections 2 and 3 above, provided that you release
the Modified Version under precisely this License, with the Modified
Version filling the role of the Document, thus licensing distribution
and modification of the Modified Version to whoever possesses a copy
of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item
Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same
 title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities
responsible for authorship of the modifications in the Modified
Version, together with at least five of the principal authors of the
Document (all of its principal authors, if it has fewer than five),
unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the
Modified Version, as the publisher.

@item
Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications
adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice
giving the public permission to use the Modified Version under the
terms of this License, in the form shown in the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the
 Document's license notice.

@item
Include an unaltered copy of this License.

@item

Preserve the section Entitled ``History'', Preserve its Title, and add
to it an item stating at least the title, year, new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled ``History'' in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.

@item
Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the ``History'' section.
You may omit a network location for a work that was published at
least four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any
section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document, you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant
Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements", provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old
one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if
known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History"
in the various original documents, forming one section Entitled
``History"; likewise combine any sections Entitled ``Acknowledgements",
and any sections Entitled ``Dedications". You must delete all
sections Entitled ``Endorsements."

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License
into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an ``aggregate'' if the copyright resulting from the compilation is not used to limit the legal rights of the compilation's users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form.
Otherwise they must appear on printed covers that bracket the whole aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions

of those notices and disclaimers. In case of a disagreement between
the translation and the original version of this License or a notice
or disclaimer, the original version will prevail.

If a section in the Document is Entitled ``Acknowledgements'',
``Dedications'', or ``History'', the requirement
 (section 4) to Preserve
its Title (section 1) will typically require changing the actual
title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for
 any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See
@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and
 conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'') contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons
 Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or
in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the MMC is eligible for relicensing.

@end enumerate

@page

@heading ADDENDUM: How to use this License for your documents

To use this License
 in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group
 Copyright (C) @var{year} @var{your name}.
 Permission is granted to copy, distribute and/or modify this document
 under the terms of the GNU Free Documentation License, Version 1.3
 or any later version published by the Free Software Foundation;
 with no Invariant Sections, no Front-Cover Texts, and no Back-Cover
 Texts. A copy of the license is included in the section entitled ``GNU
 Free Documentation License".
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts."@: line with this:

@smallexample
@group
  with the Invariant Sections being @var{list their titles}, with
  the Front-Cover Texts being @var{list}, and with the Back-Cover Texts
  being @var{list}.
@end group
@end smallexample

If you have Invariant
 Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:
LICENSING
=========

The libtasn1 library is released under the GNU Lesser General Public
License (LGPL) version 2.1 or later; see [COPYING.LESSER](doc/COPYING.LESSER)

for the license terms.

The GNU LGPL applies to the main libtasn1 library, while the
included applications library are under the GNU GPL version 3.
The libtasn1 library is located in the lib directory, while the applications
in src/.

The documentation in doc/ is under the GNU FDL license 1.3.

For any copyright year range specified as YYYY-ZZZZ in this package
note that the range specifies every single year in that closed interval.

1.89 grep 3.6-5.el9

1.89.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if

you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of

works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The

"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with

the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified

it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years

and valid for as
long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user

actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions

apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does

not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or

modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free

patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement,

or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the
option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with

the library. If this is what you want
 to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.

1.90 pygobject 3.40.1-6.el9

1.90.1 Available under license :

pygobject.svg and pygobject-small.svg are based on the GTK logo, created by
Andreas Nilsson, licensed under CC BY-SA 3.0. For more info see
https://commons.wikimedia.org/wiki/File:GTK%2B_logo.svg
   GNU LESSER GENERAL PUBLIC LICENSE
      Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
   51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

      Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

 This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we
 suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

 When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

 To protect your rights, we need to make restrictions that forbid

distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves,
then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License
to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be
distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered
by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying
or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free
status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You

should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.91 python-iniparse 0.4-45.el9

1.91.1 Available under license :

Copyright (c) 2001, 2002, 2003 Python Software Foundation
Copyright (c) 2004-2008 Paramjit Oberoi <param.cs.wisc.edu>
Copyright (c) 2007 Tim Lauridsen <tla@rasmil.dk>
All Rights Reserved.

iniparse/compat.py and tests/test_compat.py contain code derived from
lib/python-2.3/ConfigParser.py and lib/python-2.3/test/test_cfgparse.py
respectively. Other code may contain small snippets from those two files
as well. The Python license (LICENSE-PSF) applies to that code.

The MIT License

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The
above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL
THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes

2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON

PSF LICENSE AGREEMENT FOR PYTHON 2.3

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 2.3 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 2.3 alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright (c) 2001, 2002, 2003 Python Software Foundation; All Rights Reserved" are retained in Python 2.3 alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 2.3 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 2.3.

4. PSF is making Python 2.3 available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 2.3 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
2.3 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING,
 OR OTHERWISE USING PYTHON 2.3,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python 2.3, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an
office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee")
 accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and
otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE
OR ANY OTHER USERS OF THE
SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS
AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY
DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all
respects by the law of the State of California, excluding conflict of
law provisions. Nothing in this License Agreement shall be deemed to
create any relationship of agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant
permission to use BeOpen trademarks or trade names in a trademark
sense to endorse or promote products or services of Licensee, or any
third party. As an exception, the "BeOpen Python" logos available at
http://www.pythonlabs.com/logos.html may be used according to the
permissions granted on that web page.

7.
By copying, installing or otherwise using the software, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National
Research Initiatives, having an office at 1895 Preston White Drive,
Reston, VA 20191 ("CNRI"), and the Individual or Organization
("Licensee") accessing and otherwise using Python 1.6.1 software in
source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI
hereby grants Licensee a nonexclusive, royalty-free, world-wide
license to reproduce, analyze, test, perform and/or display publicly,
prepare derivative works, distribute, and otherwise use Python 1.6.1
alone or in any derivative version, provided, however, that CNRI's
License Agreement and CNRI's notice of copyright, i.e., "Copyright (c)

1995-2001 Corporation for National Research Initiatives;
All Rights
Reserved" are retained in Python 1.6.1 alone or in any derivative
version prepared by Licensee. Alternately, in lieu of CNRI's License
Agreement, Licensee may substitute the following text (omitting the
quotes): "Python 1.6.1 is made available subject to the terms and
conditions in CNRI's License Agreement. This Agreement together with
Python 1.6.1 may be located on the Internet using the following
unique, persistent identifier (known as a handle): 1895.22/1013. This
Agreement may also be obtained from a proxy server on the Internet
using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python 1.6.1 or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS"
basis.
CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. This License Agreement shall be governed by the federal
intellectual property law of the United States, including without
limitation the federal copyright law, and, to the extent such
U.S. federal law does not apply, by the law of the Commonwealth of
Virginia, excluding Virginia's conflict of law provisions.
Notwithstanding
the foregoing, with regard to derivative works based
on Python 1.6.1 that incorporate non-separable material that was
previously distributed under the GNU General Public License (GPL), the
law of the Commonwealth of Virginia shall govern this License
Agreement only as to issues arising under or with respect to
Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this
License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture between CNRI and Licensee. This

License Agreement does not grant permission to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or
services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying,
installing or otherwise using Python 1.6.1, Licensee agrees to be
bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright
(c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE
OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.92 gpgme 1.15.1-6.el9

1.92.1 Available under license :

(21:protected-private-key(3:elg(1:p129:|B36I(s7}+ZJ/pvE;"tg7N ca"Gxvnyu&bB#h'7=89&oG
R<hO)(1:g1:)(1:y128:Ji]WU_UP}AQ\YMhAl|2e{_tcMNDg]{QnWsK 4pY{$bDCs)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:JcE7:6452224)16: i[Q*vK)192:FJA!O!ZAF
biJ&Tsb!t
&9@R\~V+x>?sedDz-W(yqf?u^e?s1saV8<T0:tC5%ZMh?$|,y_e[1D)(12:protected-at15:20130812T105135)))
(21:protected-private-key(3:elg(1:p129:W#}}l;;m>
;4YV$Qg
LoLy~*Tru*+ID8"-9,:17^g*({ #7)(1:g1:)(1:y128:2o62,Tj/

rRi3sSS iCAYNYbVtAHKi7(UPp)?Od{'R^f)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:fw`E7:5242880)16:aqR)192:5f1a-`{^EV699WoB\,:Rs1*W6Lu iZ
:=ZqURM47;pA3#DL
so8O)Th^P@lP0&.DR;"rkN7)(12:protected-at15:20101008T070216)))
#+TITLE: GPGME Python Bindings HOWTO Examples
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Examples
 :PROPERTIES:
 :CUSTOM_ID: gpgme-python3-examples
 :END:

 The contents of this directory are the examples included in the /GNU
 Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO/ file. Each
 script is explicitly for Python 3 and specifically for Python 3.4 or
 later.

 Some of these scripts may work with Python 2.7, but there are no
 guarantees. They will include the relevant imports from the
 =__future__= module to facilitate that if possible.

* Copyright and Licensing
 :PROPERTIES:
 :CUSTOM_ID: copyright-and-license
 :END:

 Unless otherwise stated, all the examples in this directory are
 released under the same terms as GPGME
 itself; that is they are dual
 licensed under the terms of both the GNU General Public License
 version 2.0 (or any later version) *and* the GNU Lesser General
 Public License version 2.1 (or any later version).

** Copyright (C) The GnuPG Project, 2018
  :PROPERTIES:
  :CUSTOM_ID: copyright
  :END:

  Copyright The GnuPG Project, 2018.

** License GPL compatible
  :PROPERTIES:
  :CUSTOM_ID: license
  :END:

  This file is free software; as a special exception the author gives
  unlimited permission to copy and/or distribute it, with or without
  modifications, as long as this notice is preserved.

  This file is distributed in the hope that it will be useful, but
  WITHOUT ANY WARRANTY, to the extent permitted by law; without even
  the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
  PURPOSE.
cython
;;;; gpgme-package.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify
;;; it under the terms of the GNU General Public License as published
;;; by the Free Software Foundation; either version 2 of the License,
;;; or (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; Conventions:
;;;
;;; gpg-error is used for error handling.
;;;
;;; Standard I/O streams are used for input and output.

(defpackage #:gpgme
 (:use #:common-lisp #:cffi #:gpg-error)
  (:import-from #:trivial-garbage
           #:finalize)
 (:export #:check-version
   #:*version*

```
   #:context
   #:protocol
   #:armorp
   #:textmodep
   #:+include-certs-default+
   #:include-certs
   #:keylist-mode
   #:signers
   #:sig-notations
   #:with-context
   #:key-data
   #:get-key
   #:op-encrypt
   #:op-decrypt
   #:op-sign
   #:op-verify
   #:op-import
   #:op-export))
2011-12-02  Werner Koch  <wk@g10code.com>

 NB: ChangeLog files are no longer manually maintained.  Starting
 on December 1st, 2011 we put change information only in the GIT
 commit log, and generate a top-level ChangeLog file from logs at
 "make dist".  See doc/HACKING for details.

2011-05-12  Marcus Brinkmann  <marcus@g10code.com>

 * gpgme.texi (I/O Callback Example): Fix example code.

 * gpgme.texi (Generating Keys): Fix OpenPGP parameters and reference
 GPG and GPGSM manual.

2010-01-05  Werner Koch  <wk@g10code.com>

 * gpgme.texi (Changing Passphrases): New.

2009-07-21  Werner Koch  <wk@g10code.com>

 * uiserver.texi (UI Server Encrypt): Add --expect-sign option to
 PREP_ENCRYPT.

2009-06-16  Marcus Brinkmann  <marcus@g10code.de>

 * gpgme.texi (Result Management): New section.

2009-06-16  Werner Koch  <wk@g10code.com>

 * gpgme.texi (Exporting Keys): Document gpgme_op_export_keys.
```

(Importing Keys): Document gpgme_op_import_keys.
(Data Buffer Meta-Data): Document URL encodings.

2009-05-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Document selftest error.
(Creating Contexts): Likewise.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
GPGME_ENCRYPT_NO_ENCRYPT_TO.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Information): Replace path by file_name.

2008-11-28 Werner Koch <wk@g10code.com>

* gpgme.texi (Listing Keys): Change description of the return
value to match the code. Spotted by Colin Leroy.

2008-10-15 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Add option
--protocol to the SENDER command.

2008-07-17 Werner Koch <wk@g10code.com>

* module-overview.sk: New.

2008-07-04 Werner Koch <wk@g10code.com>

* gpgme.texi (Algorithms): Add a hint on symmetric only encryption.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancellation): Document gpgme_cancel_async.

2008-06-25
Werner Koch <wk@g10code.com>

* gpgme.texi (Listing Keys): Updated example to the current API.
Noted by Nico Schottelius.

2008-06-05 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Describe START_CONFDIALOG.

2008-06-04 Werner Koch <wk@g10code.com>

* gpgme.texi: Use @copying command. Change license to GPLv3. Include protocol specis from GpgOL and GPGEx. Minor cleanups.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (File Based Data Buffers): Document the need for blocking operations.
(Callback Based Data Buffers): Likewise.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Rename snippet function to init_gpgme.
(I/O Callback Example): Call it here.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Document that data encoding affects some output data objects now.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocols and Engines):
Document GPGME_PROTOCOL_UNKNOWN.

2007-09-11 Werner Koch <wk@g10code.com>

* gpgme.texi (I/O Callback Example): Typo fix.

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.texi (Verify): Describe chain_model.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgme.texi (Library Version Check): Add remark that the socket layer will get initialized.

2007-06-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Advanced Key Editing): New section.

2007-05-21 Werner Koch <wk@g10code.com>

 * Makefile.am (online): New target.

2007-05-18 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Error Strings): Fix documentation of
 gpgme_strerror_r.

2006-11-01 Moritz Schulte <moritz@g10code.com>

 * gpgme.texi (Data Buffer I/O Operations): Fixed entry for
 gpgme_data_seek: OFFSET is not a pointer; some s/whence/offset/.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Destroying Data Buffers): Clarify that
 gpgme_data_release_and_get_mem destroys DH unconditionally.

2005-03-24
 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Library Version Check): Make example code compatible
 to W32 systems.

2006-06-21 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Passphrase Callback): Fix inverted condition in
 description.

2005-12-20 Werner Koch <wk@g10code.com>

 * gpgme.texi (Verify): Document pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

 * gpgme.texi (Key Management): Updated to match the fixes for
 subkey fingerprints and theg secret flag.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Destroying Data Buffers): Document gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Key Management): Add the new member notations of
 gpgme_sig_key_t.
 (Key Listing Mode): Document GPGME_KEYLIST_MODE_SIG_NOTATIONS.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Enclose all return parameters of deftypefuns in
curly brackets.

* gpgme.texi (Signature Notation Data): New
section.
(Verify): Added more about the notation data structure.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Data Buffer I/O Operations, Data Buffer Meta-Data):
New subsections.

* gpgme.texi: Replace plaintext_filename with file_name.

* gpgme.texi (Key Management): Document is_qualified.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Decrypt): Add plaintext_filename to
gpgme_decrypt_result_t.
(Verify): Likewise for gpgme_verify_result_t.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Add information about new fields in
gpgme_signature_t.

* gpgme.texi (Decrypt): Add gpgme_recipient_t.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Fix return type of
gpgme_set_keylist_mode.
Reported by "Sergio" <ml_sergico@virgilio.it>.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Included Certificates): Document
GPGME_INCLUDE_CERTS_DEFAULT.

2005-01-12 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Configuration): New section.
(Crypto Engine): New subsection.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* lesser.texi (Library Copying): Change from @appendixsec to
@appendix.
* gpgme.texi (Features): Change reference to GPL to one to LGPL.

* Makefile.am: Change license to LGPL.
(gpgme_TEXINFOS): Replace gpl.texi with lesser.texi.

* gpgme.texi: Change license to LGPL (also for documentation of
GPGME's license).
* lesser.texi: New file.
* gpl.texi: File removed.

* gpgme.texi (Creating Contexts): Fix cut&paste error. Reported
by Noel Torres <envite@rolamasao.org>.

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme_TEXINFOS): Remove fdl.texi.
* gpgme.texi: Do not include fdl.texi. Change license to GPL.
* fdl.texi: File removed.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Change type of keylist_mode in
gpgme_key_t to gpgme_keylist_mode_t.

2004-09-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix last change.

2004-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document
GPG_ERR_NOT_IMPLEMENTED.

* gpgme.texi: Update copyright year for tex version.

2004-07-29 Moritz Schulte <moritz@g10code.com>

* gpgme.texi (Verify): Fix gpgme_get_key example (ancient
force_update argument was still there).

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Elaborate on the length restrictions
on search patterns.

* gpgme.texi (Decrypt and Verify): Document the NO_DATA error
code.
(Verify): Document the relationship between gpgme_op_verify_result
and the decrypt and verify operations.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.text (Verify): Document GPG_ERR_CERT_REVOKED status.

* gpgme.texi (Decrypt): Add note about new field wrong_key_usage
of gpgme_decrypt_result_t.

* gpgme.texi (Key Management): Add
note about new field
keylist_mode of gpgme_key_t.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Correct type of member wrong_key_usage.

2004-03-29 Moritz Schulte <moritz@duesseldorf.ccc.de>

* gpgme.texi (Verify): Fix type of gpgme_op_verify_result.
* gpgme.texi (Key Listing Mode): Typo fix.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Fix the instruction when to
set the locale.

2004-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Example Qt): New section by Marc Mutz.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (cancellation): New section.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgme.texi (Key Listing Mode): Doc KEYLIST_MODE_VALIDATE.

2004-02-06 Moritz Schulte <mo@g10code.com>

* gpgme.texi: A couple of small fixes regarding the Largfile

Support section.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Largefile Support): New
section.

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Fix exportable field.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Rename member class in
gpgme_key_sig_t to sig_class.
(Creating a Signature): Likewise for gpgme_signature_t.

2003-12-23 Moritz Schulte <mo@g10code.com>

* gpgme.texi (Listing Keys): Minor clarification for
gpgme_get_key.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Signal Handling): New section.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Correct documentation on memory
synchronization requirement.

* gpgme.texi (Locale): New section.
(Multi Threading): Set locale in example.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add gpgme_strerror_r.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Update documentation.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Header): We don't use the assuan namespace anymore.
Document new thread options.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Change type of member class
to unsigned int.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Get error code from SIG->status in the code
for gpgme_get_sig_status.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Add can_authenticate flag.

* gpgme.texi (Listing Keys): Document GPG_ERR_AMBIGUOUS_NAME for
gpgme_get_key.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (EXTRA_DIST): Remove variable.

* gpgme.texi (Encrypting a Plaintext): Bad passphrase is only
possible with symmetric encryption, change the wording to reflect
that.

* gpgme.texi (Creating a Signature): Document
GPG_ERR_UNUSABLE_SECKEY.

* gpgme.texi (Encrypting a Plaintext): Mention encrypt and sign
operations in result function.
(Creating
a Signature): Likewise.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Remove word duplication.
(Listing Keys): Remove mentioning of force argument.
(Verify): Don't mention r_stat. Fix some typos.
(Decrypt and Verify): Correct info how to get the result. Don't
mention r_stat.
(Manipulating Data Buffers): Fix documentation of return value.
(Listing Keys): Update examples.
(Decrypt): Result might also be available when operation failed.
(Verify): Result might also be available when operation failed.
All spotted by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Sources): Fix cut and paste error.

2003-07-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Clarify difference between can_sign
and can_certify.
(Information About Keys): Likewise for GPGME_ATTR_CAN_SIGN and
GPGME_ATTR_CAN_CERTIFY.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Progress
Meter Callback): Change return type of
gpgme_progress_cb_t to void.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add 2003 to copyright notice.

* gpgme.texi (Header): Fix name space documentation on
libgpg-error.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove reference to
gpgme_recipients_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Crypto Operations): Rename gpgme_invalid_user_id_t
to gpgme_invalid_key_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Change error codes to GPG_ERR_* variants.
(Error Handling): Rewritten.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Exporting Keys): Change and document prototypes.
Add new gpgme_op_export_ext and gpgme_op_export_ext_start
variants.
(Selecting Recipients): Section removed.
(Encrypting a Plaintext): Change prototypes and document the
changes.

2003-05-28 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Exporting Keys): Change argument type from
gpgme_recipient_t to gpgme_user_id_t.
(Encrypting a Plaintext): Likewise.
(Selecting Recipients): Rewritten.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocol Selection): Do not use @acronym in @node
because that breaks texi2dvi.

* gpgme.texi (Passphrase Callback): Document new prototype.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Remove Gpgme as namespace prefix. Add
_GPGME to namespace prefix.
* gpgme.texi (Multi Threading): Add note about link order.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document what happens if key is not
found.

* gpgme.texi (Importing Keys): Fix cut and paste error.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Remove reference to
gpgme_get_op_info.
(Detailed Results): Subsection removed.

* gpgme.texi (Key Listing Mode): Add GPGME_KEYLIST_MODE_SIGS.
(Manipulating
Keys): Add obsoleteness note.
(Key Signatures): Likewise.
(Information About Keys): Likewise.
(Key Management): Add new data types GpgmeSubkey, GpgmeKeySig,
GpgmeUserID, and all the information about GpgmeKey.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Remove force_update argument from
gpgme_get_key.

* gpgme.texi (Trust Item Management): Add data members of
GpgmeTrustItem type.
(Information About Trust Items): Add note about obsoleteness.

(Manipulating Trust Items): Add gpgme_trust_item_ref and
gpgme_trust_item_unref.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Rewritten to take into account new and
deprecated functions and data types.

* gpgme.texi (Decrypt): Descript gpgme_op_decrypt_result and
GpgmeDecryptResult.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Add info about
GpgmeEncryptResult and gpgme_op_encrypt_result.

* gpgme.texi
(Creating a Signature): Add info about
GpgmeNewSignature, GpgmeSignResult and gpgme_op_sign_result.
(Crypto Operations): Add GpgmeInvalidUserID.
(Algorithms): New chapter.

* gpgme.texi (Deleting Keys): Document
GPGME_Ambiguous_Specification.
(Error Values): Remove GPGME_Invalid_Type and GPGME_Invalid_Mode.
Add GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Change GPGME_IMPORT_PRIVATE to
GPGME_IMPORT_SECRET.

* gpgme.texi (Importing Keys): Remove note about gpgme_get_op_info.
(Detailed Results): Remove note about import.

* gpgme.texi (Importing Keys): Add documentation
for
GpgmeImportStatus, GpgmeImportResult and gpgme_op_import_result.

* gpgme.texi (Generating Keys): Fix documentation of public and
secret arguments.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document changed gpgme_op_genkey
and new gpgme_op_genkey_result function. Document
GpgmeGenKeyResult data type.

* gpgme.texi (Error Values): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* gpgme.texi (Decrypt): Likewise.
(Decrypt and Verify): Likewise.
(Creating a Signature): Likewise.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Remove GPGME_Busy and GPGME_No_Request.
(Listing Keys): Likewise.
(Listing Trust Items): Likewise.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancelling an Operation): Removed.
(Passphrase
Callback): Document new type for GpgmePassphraseCb.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Information): Rename member part to
file_name.

* gpgme.texi (Protocols and Engines): Document
gpgme_get_protocol_name.

* gpgme.texi (Engine Information): Rewritten.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Interface): Document new even
GPGME_EVENT_START.
(Waiting For Completion): Document new possible return values.
(I/O Callback Interface): Document return type of GpgmeIOCb.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Hooking Up Into Idle Time): Section removed.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Drop R_STAT argument in gpgme_op_verify.
* gpgme.texi (Decrypt and Verify): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document that
GPGME_ATTR_IS_SECRET is not representable
as a string anymore.

2002-12-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Signatures): New section.
(Listing Keys): Add gpgme_get_key.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Memory Based Data Buffers): New subsection.
(File Based Data Buffers): Likewise.
(Callback Based Data Buffers): Likewise.
(Manipulating Data Buffers): Update interfaces. Add
gpgme_data_seek.
* gpgme.texi (Engine Version Check): Remove gpgme_check_engine.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document the new interface.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document new argument to
gpgme_op_genkey.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Fix prototype of gpgme_get_sig_key.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Selecting Signers): Fix reference count.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Document name space.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Document gpgme_op_import_ext.

* gpgme.texi (Importing Keys): Undocument EOF.

2002-08-14 Werner Koch <wk@gnupg.org>

* gpgme.texi (Information About Keys): Changed GPGME_ATTR_TYPE.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Say that secret keys might not be
deleted.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document (badly) the new
key attributes.

* gpgme.texi (Manipulating Data Buffers): Mention that backend
tries to detect encoding automatically.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): Update this section.
(Waiting For Completion): Likewise for this subsection.
(Cancelling an Operation): Likewise for this subsection.
(Using External Event Loops): New subsection with several
subsubsections.

2002-06-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove item about the need to
synchronize anything against gpgme_wait (except gpgme_wait
itself).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Fix documentation for IDX.
(Information About Trust Items): Likewise.

2002-06-26 Werner Koch <wk@gnupg.org>

* gpgme.texi (Importing Keys): Document the return value -1 of

gpgme_op_import.

2002-06-20 Werner Koch <wk@gnupg.org>

* gpgme.texi (Verify): Explain the new whatidx variable.

2002-06-10 Werner Koch <wk@gnupg.org>

* gpgme.texi (Verify): Document attribute GPGME_ATTR_ERRTOK.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Document new autodetection.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (DISTCLEANFILES): New variable.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Some typographical corrections
throughout.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Using Automake): New section.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Escape { and }.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Overview): Replace note about thread-safeness.
(Multi Threading): New section.

2002-05-03 Werner Koch <wk@gnupg.org>

* gpgme.texi (Manipulating Data Buffers): Changed some data types
to void*.
(Protocol Selection): Added gpgme_get_protocol.
(Verify): Updated to include the new attribute functions and
status codes.

2002-04-27 Werner Koch <wk@gnupg.org>

* gpgme.texi (Manipulating Data Buffers): New type GpgmeDataEncoding.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document that either return
argument can be NULL.
(Progress Meter Callback): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix small
typo. Document the
new function gpgme_get_passphrase_cb.
(Progress Meter Callback): Document the new function
gpgme_get_progress_cb.

2002-04-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Fix function name. Reported
by Wichert Ackerman <wichert@debian.org>.

2002-03-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (direntry): End index entry with a full stop.
Patch submitted by Jose Carlos Garcia Sogo <jsogo@debian.org>.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Fix syntax error in last change.

2002-03-08 Werner Koch <wk@gnupg.org>

* gpgme.texi (Detailed Results): Import does also return info.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document symmetric
encryption.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add example.
* gpgme.texi (Listing Keys): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Information About Keys): Document GPGME_ATTR_EXPIRE.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document verification of normal and
cleartext signatures.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document gpgme_op_keylist_ext_start.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
GPGME_Invalid_Recipients.
(Error Values): Likewise.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
gpgme_op_encrypt_sign and gpgme_op_encrypt_sign_start.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Add a note about
certificates to include.
(Included Certificates): New section.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Remove literal tags.
(Generating Keys): Update documentation.

* gpgme.texi (Generating Keys):
Fix syntax error.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Waiting For Completion): Adjust doc to changes in
the code.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Update documentation.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document error at creation
failure.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Document new error values.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Add reference to gpgme_get_op_info.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Some spell checking.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add all the gpgme_op_*_start functions.
Fill the concept index with many, many entries.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): New section.
(Verify): Document gpgme_get_notation.
(More Information):
New section describing gpgme_get_op_info.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase callback): Change GpgmePassphraseCb's
R_HD type from void* to void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating data buffers): Change
gpgme_data_new_from_filepart's LENGTH type from off_t to size_t.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating keys): New subsection.
(Exporting keys): Likewise.
(Importing keys): Likewise.
(Deleting keys): Likewise.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: g10Code -> g10 Code

* gpgme.texi (Top): Complete detailmenu.

* gpgme.texi: Convert embarrassing cruft to the real thing.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

 * ChangeLog: New file.
 * gpgme.texi: Likewise.
 * gpl.texi: Likewise.
 * fdl.texi: Likewise.
 * Makefile.am (info_TEXINFOS): New variable.
(gpgme_TEXINFOS): Likewise.

Copyright (C) 2002, 2003, 2004, 2005,
 2006, 2007, 2008, 2009, 2010,
          2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
(private-key
(oid.1.2.840.113549.1.1.1
 (n
#00e0ce96f90b6c9e02f3922beada93fe50a875eac6bcc18bb9a9cf2e84965caa2d1ff95a7f542465c6c0c19d276e4526ce
048868a7a914fd343cc3a87dd74291ffc565506d5bbb25cbac6a0e2dd1f8bcaab0d4a29c2f37c950f363484bf269f78914
40464baf79827e03a36e70b814938eebdc63e964247be75dc58b014b7ea251#)
 (e #010001#)
 (d
#046129F2489D71579BE0A75FE029BD6CDB574EBF57EA8A5B0FDA942CAB943B117D7BB95E5D28875E0F
9FC5FCC06A72F6D502464DABDED78EF6B716177B83D5BDC543DC5D3FED932E59F5897E92E6F58A0F334
24106A3B6FA2CBF877510E4AC21C3EE47851E97D12996222AC3566D4CCB0B83D164074ABF7DE655FC244
6DA1781#)
 (p
#00e861b700e17e8afe6837e7512e35b6ca11d0ae47d8b85161c67baf64377213fe52d772f2035b3ca830af41d8a4120e
1c1c70d12cc22f00d28d31dd48a8d424f1#)
 (q
#00f7a7ca5367c661f8e62df34f0d05c10c88e5492348dd7bddc942c9a8f369f935a07785d2db805215ed786e4285df16
58eed3ce84f469b81b50d358407b4ad361#)
 (u
#304559a9ead56d2309d203811a641bb1a09626bc8eb36fffa23c968ec5bd891eebbafc73ae666e01ba7c8990bae06cc2
bbe10b75e69fcacb353a6473079d8e9b#)
)
)
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

   Permission is granted to copy, distribute and/or modify this

document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: Top, Next: Introduction, Up: (dir)

Main Menu
****

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version 1.14.1-beta35 of the
GPGME library.

* Menu:

* Introduction:: How to use this manual.
* Preparation:: What you should

do before using the library.
* Protocols and Engines:: Supported crypto protocols.
* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from GPGME.
* Contexts:: Handling GPGME contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share GnuPG Made Easy.
* Copying:: The GNU General Public License says how you
can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

The Detailed Node Listing

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS):: How to use GPGME with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How GPGME affects signal handling.
* Multi-Threading:: How GPGME can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about
the engines.
* Engine Configuration:: Changing the engine configuration.

* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file
based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.

* Crypto Engine:: Configuring
the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting ASCII armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys::
Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data::
How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate GPGME in GTK+.
* I/O Callback Example GDK:: How to integrate GPGME in GDK.
* I/O Callback Example Qt:: How to integrate GPGME in Qt.

File:
gpgme.info, Node: Introduction, Next: Preparation, Prev: Top, Up: Top

1 Introduction
****

GnuPG Made Easy (GPGME) is a C language library that allows to add
support for cryptography to a program. It is designed to make access to
public key crypto engines like GnuPG or GpgSM easier for applications.
GPGME provides a high-level crypto API for encryption, decryption,
signing, signature verification and key management.

GPGME uses GnuPG and GpgSM as its backends to support OpenPGP and the
Cryptographic Message Syntax (CMS).

* Menu:

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

File: gpgme.info, Node: Getting Started, Next: Features, Up: Introduction

1.1 Getting Started

==========

This manual documents the GPGME library programming interface. All functions and data types provided
by the library are explained.

The reader is assumed to possess basic knowledge about cryptography in general, and public key cryptography in particular. The underlying cryptographic engines that are used by the library are not explained, but where necessary, special features or requirements by an engine are mentioned as far as they are relevant to GPGME or its users.

This manual can be used in several ways. If read from the beginning to the end, it gives a good introduction into the library and how it can be used in an application. Forward references are included where necessary. Later on, the manual can be used as a reference manual to get just the information needed about any particular interface of the library. Experienced programmers might want to start looking at the examples at the end of the manual, and then only read up those parts of the interface which are unclear.

The documentation for the language bindings is currently not included in this manual. Those
languages bindings follow the general programming
model of GPGME but may provide some extra high level abstraction on top of the GPGME style API. For now please see the README files in the lang/ directory of the source distribution.

File: gpgme.info, Node: Features, Next: Overview, Prev: Getting Started, Up: Introduction

1.2 Features
============

GPGME has a couple of advantages over other libraries doing a similar job, and over implementing support for GnuPG or other crypto engines into your application directly.

its free software
: Anybody can use, modify, and redistribute it under the terms of the GNU Lesser General Public License (*note Library Copying::).

its flexible
: GPGME provides transparent support for several cryptographic protocols by different engines. Currently, GPGME supports the OpenPGP protocol using GnuPG as the backend, and the Cryptographic Message Syntax using GpgSM as the backend.

its easy
GPGME hides the differences
between the protocols and engines from
the programmer behind an easy-to-use interface. This way the
programmer can focus on the other parts of the program, and still
integrate strong cryptography in his application. Once support for
GPGME has been added to a program, it is easy to add support for
other crypto protocols once GPGME backends provide them.

its language friendly
GPGME comes with languages bindings for several common programming
languages: Common Lisp, C++, Python 2, and Python 3.

File: gpgme.info, Node: Overview, Prev: Features, Up: Introduction

1.3 Overview
============

GPGME provides a data abstraction that is used to pass data to the
crypto engine, and receive returned data from it. Data can be read from
memory or from files, but it can also be provided by a callback
function.

The actual cryptographic operations are always set within a context.
A context provides configuration parameters that define the behaviour of
all
operations performed within it. Only one operation per context is
allowed at any time, but when one operation is finished, you can run the
next operation in the same context. There can be more than one context,
and all can run different operations at the same time.

Furthermore, GPGME has rich key management facilities including
listing keys, querying their attributes, generating, importing,
exporting and deleting keys, and acquiring information about the trust
path.

With some precautions, GPGME can be used in a multi-threaded
environment, although it is not completely thread safe and thus needs
the support of the application.

File: gpgme.info, Node: Preparation, Next: Protocols and Engines, Prev: Introduction, Up: Top

2 Preparation
****

To use GPGME, you have to perform some changes to your sources and the

build system. The necessary changes are small and explained in the
following sections. At the end of this chapter, it is described how the
library is initialized,
 and how the requirements of the library are
verified.

* Menu:

* Header::   What header file you need to include.
* Building the Source::   Compiler options to be used.
* Largefile Support (LFS)::   How to use GPGME with LFS.
* Using Automake::   Compiler options to be used the easy way.
* Using Libtool::   Avoiding compiler options entirely.
* Library Version Check::   Getting and verifying the library version.
* Signal Handling::   How GPGME affects signal handling.
* Multi-Threading::   How GPGME can be used in an MT environment.

File: gpgme.info, Node: Header, Next: Building the Source, Up: Preparation

2.1 Header
==========

All interfaces (data types and functions) of the library are defined in
the header file gpgme.h. You must include this in all programs using
the library, either directly or through some other header file, like
this:

```
#include <gpgme.h>
```

 The name space
 of GPGME is gpgme_* for function names and data
types and GPGME_* for other symbols. Symbols internal to GPGME take
the form _gpgme_* and _GPGME_*.

 Because GPGME makes use of the GPG Error library, using GPGME will
also use the GPG_ERR_* name space directly, and the gpg_err*,
gpg_str*, and gpgrt_* name space indirectly.

File: gpgme.info, Node: Building the Source, Next: Largefile Support (LFS), Prev: Header, Up: Preparation

2.2 Building the Source
=======================

If you want to compile a source file including the gpgme.h header
file, you must make sure that the compiler can find it in the directory
hierarchy. This is accomplished by adding the path to the directory in

which the header file is located to the compilers include file search path (via the -I option).

However, the path to the include file is determined at the time the source is configured. To solve this problem, gpgme ships with a small helper program gpgme-config that knows about the path to the include file and other configuration options. The options that need to be added to the compiler invocation at compile time are output by the --cflags option to gpgme-config. The following example shows how it can be used at the command line:

```
gcc -c foo.c `gpgme-config --cflags`
```

Adding the output of gpgme-config --cflags to the compiler command line will ensure that the compiler can find the GPGME header file.

A similar problem occurs when linking the program with the library. Again, the compiler has to find the library files. For this to work, the path to the library files has to be added to the library search path (via the -L option). For this, the option --libs to gpgme-config can be used. For convenience, this option also outputs all other options that are required to link the program with GPGME (in particular, the -lgpgme option). The example shows how to link foo.o with the GPGME library to a program foo.

```
gcc -o foo foo.o `gpgme-config --libs`
```

Of course you can also combine both examples to a single command by specifying both options to gpgme-config:

```
gcc -o foo foo.c `gpgme-config --cflags --libs`
```

If you need to detect the installed language bindings you can use list them using:

```
gpgme-config --print-lang
```

or test for the availability using

```
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
```

File: gpgme.info, Node: Largefile Support (LFS), Next: Using Automake, Prev: Building the Source, Up: Preparation

2.3 Largefile Support (LFS)

==========

GPGME is compiled with largefile support by default, if it is available on the system. This means that GPGME supports files larger than two gigabyte in size, if the underlying operating system can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes
has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those new functions have the same name as their smallfile counterparts, but with a suffix of 64.

An example: The data type off_t is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type off64_t is provided, which is 64 bit wide. Or you can replace the existing off_t data type with its 64 bit wide counterpart. All occurrences of off_t are then automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum
file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for GPGME, because some data types it uses in its interfaces are affected by that. For example, the off_t data type is used in the gpgme_data_seek function, to match its POSIX counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow

for a transitional period.

On POSIX platforms GPGME is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the gpgme.h header file. All types in this header files refer to their largefile counterparts, if they are different from any default types on the system.

On 32 and 64 bit Windows platforms off_t is declared as 32 bit signed integer. There is no specific support for LFS in the C library. The recommendation from Microsoft is to use the native interface (CreateFile et al.) for large files. Released binary versions of GPGME (libgpgme-11.dll) have always been build with a 32 bit off_t. To avoid an ABI break we stick to this convention for 32 bit Windows by using long there. GPGME versions for 64 bit Windows have never been released and thus we are able to use int64_t instead of off_t there. For easier migration the typedef gpgme_off_t has been defined. The reason we cannot use off_t directly is that some toolchains (e.g. mingw64) introduce a POSIX compatible hack for off_t. Some widely used toolkits make use of this hack and in turn GPGME would need to use it also. However, this would introduce an ABI break and existing software making use of libgpgme might suffer from a severe break. Thus with version 1.4.2 we redefined all functions using off_t to use gpgme_off_t which is defined as explained above. This way we keep the ABI well defined and independent of any toolchain hacks. The bottom line is that LFS support in GPGME is only available on 64 bit versions of Windows.

On POSIX platforms you can enable largefile support, if it is different from the default on the system the application is compiled on, by using the Autoconf macro AC_SYS_LARGEFILE. If you do this, then you dont need to worry about anything else: It will just work. In this case you might also want to use AC_FUNC_FSEEKO to take advantage of some new interfaces, and AC_TYPE_OFF_T (just in case).

If you do not use Autoconf, you can define the preprocessor symbol _FILE_OFFSET_BITS to 64 _before_ including any header files, for example by specifying the option -D_FILE_OFFSET_BITS=64 on the compiler command line. You will also want to define the preprocessor symbol LARGEFILE_SOURCE to 1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough about the issue to invent your own solution. Just keep in mind that the GPGME header file expects that largefile support is enabled, if it is available. In particular, we do not support dual mode

(_LARGEFILE64_SOURCE).

File: gpgme.info, Node: Using Automake, Next: Using Libtool, Prev: Largefile Support (LFS), Up: Preparation

2.4 Using Automake

It is much easier if you use GNU Automake instead of writing your own Makefiles. If you do that you do not have to worry about finding and invoking the gpgme-config script at all. GPGME provides an extension to Automake that does all the work for you.

-- Macro: AM_PATH_GPGME ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTH ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTHREAD ([MINIMUM-VERSION], [ACTION-IF-FOUND], [ACTION-IF-NOT-FOUND])

Check whether GPGME (at least version MINIMUM-VERSION, if given) exists on the host system. If it is found, execute ACTION-IF-FOUND, otherwise do ACTION-IF-NOT-FOUND, if given.

Additionally, the function defines GPGME_CFLAGS to the flags needed for compilation of the program to find the gpgme.h header file, and GPGME_LIBS to the linker flags needed to link the program to the GPGME library. If the used helper script does not match the target type you are building for a warning is printed and the string libgcrypt is appended to the variable gpg_config_script_warn.

AM_PATH_GPGME_PTH checks for the version of GPGME that can be used with GNU Pth, and defines GPGME_PTH_CFLAGS and GPGME_PTH_LIBS.

AM_PATH_GPGME_PTHREAD checks for the version of GPGME that can be used with the native pthread implementation, and defines GPGME_PTHREAD_CFLAGS and GPGME_PTHREAD_LIBS. Since version 1.8.0 this is no longer required to GPGME_PTHREAD as GPGME itself is thread safe.

This macro searches for gpgme-config along the PATH. If you are cross-compiling, it is useful to set the environment variable SYSROOT to the top directory of your target. The macro will then first look for the helper program in the bin directory below that top directory. An absolute directory name must be used for

SYSROOT. Finally, if the configure command line option
--with-gpgme-prefix is used, only its value is used for the top
directory below which the helper script is expected.

You can use the defined Autoconf variables
like this in your
Makefile.am:

```
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
```

File: gpgme.info, Node: Using Libtool, Next: Library Version Check, Prev: Using Automake, Up: Preparation

2.5 Using Libtool

The easiest way is to just use GNU Libtool. If you use libtool, and
link to libgpgme.la, libgpgme-pth.la or libgpgme-pthread.la
respectively, everything will be done automatically by Libtool.

File: gpgme.info, Node: Library Version Check, Next: Signal Handling, Prev: Using Libtool, Up: Preparation

2.6 Library Version Check

-- Function: const char * gpgme_check_version
(const char *REQUIRED_VERSION)
The function gpgme_check_version has four purposes. It can be
used to retrieve the version number of the library. In addition it
can verify that the version number is higher than a certain
required version number. In either case, the function initializes
some sub-systems,
and for this reason alone it must be invoked
early in your program, before you make use of the other functions
in GPGME. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get
initialized.

If REQUIRED_VERSION is NULL, the function returns a pointer to a
statically allocated string containing the version number of the
library.

If REQUIRED_VERSION is not NULL, it should point to a string
containing a version number, and the function checks that the
version of the library is at least as high as the version number

provided. In this case, the function returns a pointer to a statically allocated string containing the version number of the library. If REQUIRED_VERSION is not a valid version number, or if the version requirement is not met, the function returns NULL.

If you use a version of a library that is backwards compatible with older releases, but contains additional interfaces which your program uses, this function provides a run-time check if the necessary features are provided by the installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors are returned later when invoking gpgme_new or gpgme-data_new, so that a detailed error code can be returned (historically, gpgme_check_version does not return a detailed error code).

-- Function: int gpgme_set_global_flag (const char *NAME, const char *VALUE)

SINCE: 1.4.0

On some systems it is not easy to set environment variables and thus hard to use GPGMEs internal trace facility for debugging. This function has been introduced as an alternative way to enable debugging and for a couple of other rarely used tweaks. It is important to assure that only one thread accesses GPGME functions between a call to this function and after the return from the call to gpgme_check_version.

All currently supported features require that this function is called as early as possible even before gpgme_check_version. The features are identified by the following values for NAME:

debug
: To enable debugging use the string debug for NAME and VALUE identical to the value used with the environment variable GPGME_DEBUG.

disable-gpgconf
: Using this feature with any VALUE disables the detection of the gpgconf program and thus forces GPGME to fallback into the simple OpenPGP only mode. It may be used to force the use of GnuPG-1 on systems which have both GPG versions installed. Note that in general the use of gpgme_set_engine_info is a better way to select a specific engine version.

gpgconf-name
gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are GNU/GnuPG/gpgconf and GNU/GnuPG/gpg. Under

Unix the leading directory part is ignored. Under Windows the leading directory part is used as the default installation directory; the .exe suffix is added by GPGME. Use forward slashed even under Windows.

require-gnupg
Set the minimum version of the required GnuPG engine. If that version is not met, GPGME fails early instead of trying to use the existent version. The given version must be a string with major, minor, and micro number. Example: "2.1.0".

w32-inst-dir
On Windows GPGME needs to know its installation directory to find its spawn helper. This is in general no problem because a DLL has this information. Some applications however link statically to GPGME and thus GPGME can only figure out the installation directory of this application which may be wrong in certain cases. By supplying an installation directory as

value to this flag, GPGME will assume that that directory is the installation directory. This flag has no effect on non-Windows platforms.

This function returns 0 on success. In contrast to other functions the non-zero return value on failure does not convey any error code. For setting debug the only possible error cause is an out of memory condition; which would exhibit itself later anyway. Thus the return value may be ignored.

After initializing GPGME, you should set the locale information to the locale required for your output terminal. This locale information is needed for example for the curses and Gtk pinentry. Here is an example of a complete initialization:

```
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
{
  /* Initialize the locale environment.  */
  setlocale (LC_ALL, "");
```

```
  gpgme_check_version (NULL);
  gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
 #ifdef LC_MESSAGES
  gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
}
```

Note that you are highly recommended to initialize the locale settings like this. GPGME can not do this for you because it would not be thread safe. The conditional on LC_MESSAGES is only necessary for portability to W32 systems.

File: gpgme.info, Node: Signal Handling, Next: Multi-Threading, Prev: Library Version Check, Up: Preparation

2.7 Signal Handling

The GPGME library communicates with child processes (the crypto engines). If a child process dies unexpectedly, for example due to a bug, or system problem, a SIGPIPE signal will be delivered to the application. The default action is to abort the program. To protect against this, gpgme_check_version sets the SIGPIPE signal action to SIG_IGN, which means that the signal will be ignored.

GPGME will only do that if the signal action for SIGPIPE is SIG_DEF at the time gpgme_check_version is called. If it is something different, GPGME will take no action.

This means that if your application does not install any signal handler for SIGPIPE, you dont need to take any precautions. If you do install a signal handler for SIGPIPE, you must be prepared to handle any SIGPIPE events that occur due to GPGME writing to a defunct pipe. Furthermore, if your application is multi-threaded, and you install a signal action for SIGPIPE, you must make sure you do this either before gpgme_check_version is called or afterwards.

File: gpgme.info, Node: Multi-Threading, Prev: Signal Handling, Up: Preparation

2.8 Multi-Threading

The GPGME library is mostly thread-safe, and can be used in a multi-threaded environment but there are some requirements for multi-threaded use:

The function gpgme_check_version must be called before any other function in the library, because it initializes the thread support subsystem in GPGME. To achieve this in multi-threaded programs, you must synchronize the memory with respect to other threads that also want to use GPGME. For this, it is sufficient to call gpgme_check_version before creating the other threads using GPGME(1).

Any gpgme_data_t and gpgme_ctx_t object must only be accessed by one thread at a time. If multiple threads want to deal with the same object, the caller has to make sure that operations on that object are fully synchronized.

Only one thread at any time is allowed to call gpgme_wait. If multiple threads call this function, the caller must make sure that all invocations are fully synchronized. It is safe to start asynchronous operations while a thread is running in gpgme_wait.

The function gpgme_strerror is not thread safe. You have to use gpgme_strerror_r instead.

---------- Footnotes ----------

(1) At least this is true for POSIX threads, as pthread_create is a function that synchronizes memory with respects to other threads. There are many functions which have this property, a complete list can be found in POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the definition of the term Memory Synchronization. For other thread packages other, more relaxed or more strict rules may apply.

File: gpgme.info, Node: Protocols and Engines, Next: Algorithms, Prev: Preparation, Up: Top

3 Protocols and Engines

GPGME supports several cryptographic protocols, however, it does not implement them. Rather it uses backends (also called engines) which implement the protocol. GPGME uses inter-process communication to pass data back and forth between the application and the backend, but the details of the communication protocol and invocation of the backend is completely hidden by the interface. All complexity is handled by GPGME. Where an exchange of information between the application and the backend is necessary, GPGME provides the necessary callback function hooks and further interfaces.

-- Data type: enum gpgme_protocol_t
The gpgme_protocol_t type specifies the set of possible protocol values that are supported by GPGME. The following protocols are supported:

GPGME_PROTOCOL_OpenPGP
GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

GPGME_PROTOCOL_GPGCONF
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_ASSUAN
SINCE: 1.2.0

This specifies the raw Assuan protocol.

GPGME_PROTOCOL_G13
SINCE: 1.3.0

Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_UISERVER
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_SPAWN
SINCE: 1.5.0

Special protocol for use with gpgme_op_spawn.

GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the used protocol is not known to the application. Currently, GPGME does not accept this value in any operation, though, except for gpgme_get_protocol_name.

-- Function: const char * gpgme_get_protocol_name (gpgme_protocol_t PROTOCOL)
The function gpgme_get_protocol_name returns a statically allocated string describing the protocol PROTOCOL, or NULL if the

protocol number is not valid.

* Menu:

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan:: Support for the raw Assuan protocol.

File: gpgme.info,
Node: Engine Version Check, Next: Engine Information, Up: Protocols and Engines

3.1 Engine Version Check
========================

-- Function: const char * gpgme_get_dirinfo (cons char *WHAT)
SINCE: 1.5.0

The function gpgme_get_dirinfo returns a statically allocated string with the value associated to WHAT. The returned values are the defaults and wont change even after gpgme_set_engine_info has been used to configure a different engine. NULL is returned if no value is available. Commonly supported values for WHAT are:

homedir
Return the default home directory.

sysconfdir
Return the name of the system configuration directory

bindir
Return the name of the directory with GnuPG program files.

libdir
Return the name of the directory with GnuPG related library files.

libexecdir
Return the name of the directory with GnuPG helper program files.

datadir
Return the name of the directory with GnuPG shared data.

localedir
Return the name of the directory with GnuPG locale data.

agent-socket
Return the name of the socket to connect to the gpg-agent.

agent-ssh-socket
Return the name of the socket to connect to the ssh-agent component of gpg-agent.

dirmngr-socket
Return the name of the socket to connect to the dirmngr.

uiserver-socket
Return the name of the socket to connect to the user interface server.

gpgconf-name
Return the file name of the engine configuration tool.

gpg-name
Return the file name of the OpenPGP engine.

gpgsm-name
Return the file name of the CMS engine.

g13-name
Return the name of the file container encryption engine.

gpg-wks-client-name
Return the name of the Web Key Service tool.

-- Function: gpgme_error_t gpgme_engine_check_version (gpgme_protocol_t PROTOCOL)
The function gpgme_engine_check_version verifies that the engine implementing the protocol PROTOCOL is installed in the expected path and meets the version requirement of GPGME.

This function returns the error code GPG_ERR_NO_ERROR if the engine is available and GPG_ERR_INV_ENGINE if it is not.

File: gpgme.info, Node: Engine Information, Next: Engine Configuration, Prev: Engine Version Check, Up: Protocols and Engines

3.2 Engine Information
==========

-- Data type: gpgme_engine_info_t
The gpgme_engine_info_t type specifies a pointer to a structure describing a crypto engine. The structure contains the following elements:

gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked list, or NULL if this is the last element.

gpgme_protocol_t protocol
This is the protocol for which the crypto engine is used. You
can convert this to a string with gpgme_get_protocol_name for printing.

const char *file_name
This is a string holding the file name of the executable of the crypto engine. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

const char *home_dir
This is a string holding the directory name of the crypto engines configuration directory. If it is NULL, then the default directory is used. See gpgme_get_dirinfo on how to get the default directory.

const char *version
This is a string containing the version number of the crypto engine. It might be NULL if the version number can not be determined, for example because the executable doesnt exist or is invalid.

const char *req_version
This is a string containing the minimum required version number
of the crypto engine for GPGME to work correctly. This
is the version number that gpgme_engine_check_version verifies against. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

-- Function: gpgme_error_t gpgme_get_engine_info
(gpgme_engine_info_t *INFO)
The function gpgme_get_engine_info returns a linked list of engine info structures in INFO. Each info structure describes the defaults of one configured backend.

The memory for the info structures is allocated the first time this function is invoked, and must not be freed by the caller.

This function returns the error code GPG_ERR_NO_ERROR if successful, and a system error if the memory could not be allocated.

Here is an example how you can provide more diagnostics if you receive an error message which indicates that the crypto engine is invalid.

```
  gpgme_ctx_t ctx;
  gpgme_error_t
err;

  [...]

  if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
    {
      gpgme_engine_info_t info;
      err = gpgme_get_engine_info (&info);
      if (!err)
        {
          while (info && info->protocol != gpgme_get_protocol (ctx))
            info = info->next;
          if (!info)
            fprintf (stderr, "GPGME compiled without support for protocol %s",
                     gpgme_get_protocol_name (info->protocol));
          else if (info->file_name && !info->version)
            fprintf (stderr, "Engine %s not installed properly",
                     info->file_name);
          else if (info->file_name && info->version && info->req_version)
            fprintf (stderr, "Engine %s version %s installed, "
                     "but at least version %s required", info->file_name,
                     info->version, info->req_version);
          else
            fprintf (stderr, "Unknown problem with engine
for protocol %s",
                     gpgme_get_protocol_name (info->protocol));
        }
    }
```

File: gpgme.info, Node: Engine Configuration, Next: OpenPGP, Prev: Engine Information, Up: Protocols and Engines

3.3 Engine Configuration

==========

You can change the configuration of a backend engine, and thus change the executable program and configuration directory to be used. You can make these changes the default or set them for some contexts individually.

-- Function: gpgme_error_t gpgme_set_engine_info
(gpgme_protocol_t PROTO, const char *FILE_NAME,
const char *HOME_DIR)
SINCE: 1.1.0

The function gpgme_set_engine_info changes the default configuration of the crypto engine implementing the protocol PROTO.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this crypto engine. If HOME_DIR is

NULL, the engines default will be used.

The new defaults are not applied to already created GPGME contexts.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

The functions gpgme_ctx_get_engine_info and gpgme_ctx_set_engine_info can be used to change the engine configuration per context. *Note Crypto Engine::.

File: gpgme.info, Node: OpenPGP, Next: Cryptographic Message Syntax, Prev: Engine Configuration, Up: Protocols and Engines

3.4 OpenPGP
==========

OpenPGP is implemented by GnuPG, the GNU Privacy Guard. This is the first protocol that was supported by GPGME.

The OpenPGP protocol is specified by GPGME_PROTOCOL_OpenPGP.

File: gpgme.info, Node: Cryptographic Message Syntax, Next: Assuan, Prev: OpenPGP, Up: Protocols and Engines

3.5 Cryptographic Message Syntax
==========

CMS is implemented by GpgSM, the S/MIME implementation for GnuPG.

The CMS protocol is specified by
GPGME_PROTOCOL_CMS.

File: gpgme.info, Node: Assuan, Prev: Cryptographic Message Syntax, Up: Protocols and Engines

3.6 Assuan
==========

Assuan is the RPC library used by the various GnuPG components. The
Assuan protocol allows one to talk to arbitrary Assuan servers using
GPGME. *Note Using the Assuan protocol::.

The ASSUAN protocol is specified by GPGME_PROTOCOL_ASSUAN.

File: gpgme.info, Node: Algorithms, Next: Error Handling, Prev: Protocols and Engines, Up: Top

4 Algorithms
****

The crypto backends support a variety of algorithms used in public key
cryptography.(1) The following sections list the identifiers used to
denote such an algorithm.

* Menu:

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

---------- Footnotes ----------

(1) Some engines also provide symmetric only encryption; see the
description of the encryption function on how to use this.

File:
gpgme.info, Node: Public Key Algorithms, Next: Hash Algorithms, Up: Algorithms

4.1 Public Key Algorithms
=========================

Public key algorithms are used for encryption, decryption, signing and
verification of signatures.

-- Data type: enum gpgme_pubkey_algo_t

The gpgme_pubkey_algo_t type specifies the set of all public key algorithms that are supported by GPGME. Possible values are:

GPGME_PK_RSA
: This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

GPGME_PK_RSA_E
: Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for encryption and decryption only.

GPGME_PK_RSA_S
: Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for signing and verification only.

GPGME_PK_DSA
: This value indicates DSA, the Digital Signature Algorithm.

GPGME_PK_ELG
: This value indicates ElGamal.

GPGME_PK_ELG_E
: This value also indicates ElGamal and is used specifically in GnuPG.

GPGME_PK_ECC
: SINCE: 1.5.0

  This value is a generic indicator for ellipic curve algorithms.

GPGME_PK_ECDSA
: SINCE: 1.3.0

  This value indicates ECDSA, the Elliptic Curve Digital Signature Algorithm as defined by FIPS 186-2 and RFC-6637.

GPGME_PK_ECDH
: SINCE: 1.3.0

  This value indicates ECDH, the Eliptic Curve Diffie-Hellmann encryption algorithm as defined by RFC-6637.

GPGME_PK_EDDSA
: SINCE: 1.7.0

  This value indicates the EdDSA algorithm.

-- Function: const char * gpgme_pubkey_algo_name
(gpgme_pubkey_algo_t ALGO)
The function gpgme_pubkey_algo_name returns a pointer to a statically allocated string containing a description of the public key algorithm ALGO. This string can be used to output the name of the public key algorithm to the user.

If ALGO is not a valid public key algorithm, NULL is returned.

-- Function: char * gpgme_pubkey_algo_string (gpgme_subkey_t KEY)
SINCE: 1.7.0

The function gpgme_pubkey_algo_string is a convenience function to build and return an algorithm string in the same way GnuPG does (e.g. rsa2048 or ed25519). The caller must free the result using gpgme_free. On error (e.g. invalid argument or memory exhausted), the function returns NULL and sets ERRNO.

File: gpgme.info, Node: Hash Algorithms, Prev: Public Key Algorithms, Up: Algorithms

4.2 Hash Algorithms

Hash (message digest) algorithms are used to compress a long message to make it suitable for public key cryptography.

-- Data type: enum gpgme_hash_algo_t
The gpgme_hash_algo_t type specifies the set of all hash algorithms that are supported by GPGME. Possible values are:

GPGME_MD_MD5
GPGME_MD_SHA1
GPGME_MD_RMD160
GPGME_MD_MD2
GPGME_MD_TIGER
GPGME_MD_HAVAL
GPGME_MD_SHA256
GPGME_MD_SHA384
GPGME_MD_SHA512
GPGME_MD_SHA224
SINCE: 1.5.0

GPGME_MD_MD4
GPGME_MD_CRC32
GPGME_MD_CRC32_RFC1510
GPGME_MD_CRC24_RFC2440

-- Function: const char * gpgme_hash_algo_name (gpgme_hash_algo_t ALGO)
   The function gpgme_hash_algo_name returns a pointer to a
   statically allocated string containing a description of the hash
   algorithm ALGO. This string can be used to output the name of the
   hash algorithm to the user.

   If ALGO is not a valid hash algorithm, NULL is returned.

File: gpgme.info, Node: Error Handling, Next: Exchanging Data, Prev: Algorithms, Up: Top

5 Error Handling
****

Many functions in GPGME can return an error if they fail. For this
reason, the application should always catch the error condition and take
appropriate measures, for example by releasing the resources and passing
the error up to the caller, or by displaying a descriptive
 message to
the user and cancelling the operation.

 Some error values do not indicate a system error or an error in the
operation, but the result of an operation that failed properly. For
example, if you try to decrypt a tempered message, the decryption will
fail. Another error value actually means that the end of a data buffer
or list has been reached. The following descriptions explain for many
error codes what they mean usually. Some error values have specific
meanings if returned by a certain functions. Such cases are described
in the documentation of those functions.

 GPGME uses the libgpg-error library. This allows to share the
error codes with other components of the GnuPG system, and thus pass
error values transparently from the crypto engine, or some helper
application of the crypto engine, to the user. This way no information
is lost. As a consequence, GPGME does not use its own identifiers for
error codes, but uses those provided by libgpg-error. They usually
start
 with GPG_ERR_.

 However, GPGME does provide aliases for the functions defined in
libgpg-error, which might be preferred for name space consistency.

* Menu:

* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.

* Error Strings:: How to get a descriptive string from a value.

File: gpgme.info, Node: Error Values, Next: Error Sources, Up: Error Handling

5.1 Error Values
==========

-- Data type: gpgme_err_code_t
   The gpgme_err_code_t type is an alias for the libgpg-error type
   gpg_err_code_t. The error code indicates the type of an error,
   or the reason why an operation failed.

   A list of important error codes can be found in the next section.

-- Data type: gpgme_err_source_t
   The gpgme_err_source_t type is an alias for the libgpg-error
   type gpg_err_source_t. The error source
 has not a precisely
   defined meaning. Sometimes it is the place where the error
   happened, sometimes it is the place where an error was encoded into
   an error value. Usually the error source will give an indication
   to where to look for the problem. This is not always true, but it
   is attempted to achieve this goal.

   A list of important error sources can be found in the next section.

-- Data type: gpgme_error_t
   The gpgme_error_t type is an alias for the libgpg-error type
   gpg_error_t. An error value like this has always two components,
   an error code and an error source. Both together form the error
   value.

   Thus, the error value can not be directly compared against an error
   code, but the accessor functions described below must be used.
   However, it is guaranteed that only 0 is used to indicate success
   (GPG_ERR_NO_ERROR), and that in this case all other parts of the
   error value are set to 0, too.

   Note
 that in GPGME, the error source is used purely for
   diagnostical purposes. Only the error code should be checked to
   test for a certain outcome of a function. The manual only
   documents the error code part of an error value. The error source
   is left unspecified and might be anything.

-- Function: static inline gpgme_err_code_t gpgme_err_code
        (gpgme_error_t ERR)

The static inline function gpgme_err_code returns the gpgme_err_code_t component of the error value ERR. This function must be used to extract the error code from an error value in order to compare it with the GPG_ERR_* error code macros.

-- Function: static inline gpgme_err_source_t gpgme_err_source (gpgme_error_t ERR)

The static inline function gpgme_err_source returns the gpgme_err_source_t component of the error value ERR. This function must be used to extract the error source from an error value in order to compare it with the GPG_ERR_SOURCE_* error source macros.

-- Function: static inline gpgme_error_t gpgme_err_make (gpgme_err_source_t SOURCE, gpgme_err_code_t CODE)

The static inline function gpgme_err_make returns the error value consisting of the error source SOURCE and the error code CODE.

This function can be used in callback functions to construct an error value to return it to the library.

-- Function: static inline gpgme_error_t gpgme_error (gpgme_err_code_t CODE)

The static inline function gpgme_error returns the error value consisting of the default error source and the error code CODE.

For GPGME applications, the default error source is GPG_ERR_SOURCE_USER_1. You can define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h to change this default.

This function can be used in callback functions to construct an error value to return it to the library.

The libgpg-error library provides error codes for all system error numbers it knows about. If ERR is an unknown error number, the error code GPG_ERR_UNKNOWN_ERRNO is used. The following functions can be used to construct error values from system errnor numbers.

-- Function: gpgme_error_t gpgme_err_make_from_errno (gpgme_err_source_t SOURCE, int ERR)

The function gpgme_err_make_from_errno is like gpgme_err_make, but it takes a system error like errno instead of a gpgme_err_code_t error code.

-- Function: gpgme_error_t gpgme_error_from_errno (int ERR)

The function gpgme_error_from_errno is like gpgme_error, but it

takes a system error like errno instead of a gpgme_err_code_t
error code.

Sometimes you might want to map system error numbers to error codes directly, or map an error code representing a system error back to the system error number. The following functions can be used to do that.

-- Function: gpgme_err_code_t gpgme_err_code_from_errno (int ERR)
The function gpgme_err_code_from_errno returns the error code for
the system error ERR. If ERR is not a known system error, the function returns GPG_ERR_UNKNOWN_ERRNO.

-- Function: int gpgme_err_code_to_errno (gpgme_err_code_t ERR)
The function gpgme_err_code_to_errno returns the system error for the error code ERR. If ERR is not an error code representing a system error, or if this system error is not defined on this system, the function returns 0.

File: gpgme.info, Node: Error Sources, Next: Error Codes, Prev: Error Values, Up: Error Handling

5.2 Error Sources

The library libgpg-error defines an error source for every component of the GnuPG system. The error source part of an error value is not well defined. As such it is mainly useful to improve the diagnostic error message for the user.

If the error code part of an error value is 0, the whole error value will be 0. In this case the error source part is of course GPG_ERR_SOURCE_UNKNOWN.

The list of error sources that might occur in applications using GPGME is:

GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is 0.

GPG_ERR_SOURCE_GPGME
The error source is GPGME itself. This is the default for errors that occur in the GPGME library.

GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the

OpenPGP protocol.

GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is the crypto engine used for the CMS protocol.

GPG_ERR_SOURCE_GCRYPT
The error source is libgcrypt, which is used by crypto engines to perform cryptographic operations.

GPG_ERR_SOURCE_GPGAGENT
The error source is gpg-agent, which is used by crypto engines to perform operations with the secret key.

GPG_ERR_SOURCE_PINENTRY
The error source is pinentry, which is used by gpg-agent to query the passphrase to unlock a secret key.

GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by gpg-agent to delegate operations with the secret key to a SmartCard.

GPG_ERR_SOURCE_KEYBOX
The error source is libkbx, a library used by the crypto engines to manage local keyrings.

GPG_ERR_SOURCE_USER_1
GPG_ERR_SOURCE_USER_2
GPG_ERR_SOURCE_USER_3
GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be used by other software. For example, applications using GPGME can use them to mark error values coming from callback handlers. Thus GPG_ERR_SOURCE_USER_1 is the default for errors created with gpgme_error and gpgme_error_from_errno, unless you define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h.

File: gpgme.info, Node: Error Codes, Next: Error Strings, Prev: Error Sources, Up: Error Handling

5.3 Error Codes

The library libgpg-error defines many error values. Most of them are not used by GPGME directly, but might be returned by GPGME because it received them

from the crypto engine. The below list only includes such error codes that have a specific meaning in GPGME, or which are so common that you should know about them.

GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is 0. Also, it is guaranteed that an error value made from the error code 0 will be 0 itself (as a whole). This means that the error source information is lost for this error code, however, as this error code indicates that no error occurred, this is generally not a problem.

GPG_ERR_GENERAL
This value means that something went wrong, but either there is not enough information about the problem to return a more useful error value, or there is no separate error value for this type of problem.

GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO where FOO is the symbol for the system error.

GPG_ERR_INV_VALUE
This value means that some user provided data was out of range. This can also refer to objects. For example, if an empty gpgme_data_t object was expected, but one containing data was provided, this error value is returned.

GPG_ERR_UNUSABLE_PUBKEY
This value means that some recipients for a message were invalid.

GPG_ERR_UNUSABLE_SECKEY
This value means that some signers were invalid.

GPG_ERR_NO_DATA
This value means that a gpgme_data_t object which was expected to have content was found empty.

GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is not implemented. This error should never happen. It can only occur if you use certain values or configuration options which do not work, but for which we think that they should work at some later time.

GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase when requested.

GPG_ERR_CANCELED
This value means that the operation was canceled.

GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired protocol is currently not available. This can either be because the sources were configured to exclude support for this engine, or because the engine is not installed properly.

GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify a unique key.

GPG_ERR_WRONG_KEY_USAGE
This value indicates that a key is not used appropriately.

GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

GPG_ERR_NO_CRL_KNOWN
This value indicates
that no certificate revocation list is known
for the certificate.

GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the issuer certificate is missing.

GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its certificate chain is not good, for example it could be too long.

GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic algorithm is not supported by the crypto backend.

GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not available.

GPG_ERR_USER_1
GPG_ERR_USER_2
...
GPG_ERR_USER_16
These error codes are not used by any GnuPG component and can be freely used by other software. Applications using GPGME might use them to mark specific errors returned by callback handlers if no suitable error codes (including the system errors) for these errors exist already.

File: gpgme.info, Node: Error Strings, Prev: Error Codes, Up: Error Handling

5.4 Error Strings
==========

-- Function: const char * gpgme_strerror (gpgme_error_t ERR)
The function gpgme_strerror returns a pointer to a statically allocated string containing a description of the error code contained in the error value ERR. This string can be used to output a diagnostic message to the user.

This function is not thread safe. Use gpgme_strerror_r in multi-threaded programs.

-- Function: int gpgme_strerror_r (gpgme_error_t ERR, char *BUF, size_t BUFLEN)

The function gpgme_strerror_r returns the error string for ERR in the user-supplied buffer BUF of size BUFLEN.

This function is, in contrast to gpgme_strerror, thread-safe if a thread-safe strerror_r function is provided by the system. If the function succeeds, 0 is returned and BUF contains the string describing the error. If the buffer was not large enough, ERANGE is returned and BUF contains as much of the beginning of the error string as fits into the buffer.

-- Function: const char * gpgme_strsource (gpgme_error_t ERR)

The function gpgme_strerror returns a pointer to a statically allocated string containing a description of the error source contained in the error value ERR. This string can be used to output a diagnostic message to the user.

The following example illustrates the use of gpgme_strerror:

```
gpgme_ctx_t ctx;
gpgme_error_t err = gpgme_new (&ctx);
if (err)
  {
    fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",
             argv[0], gpgme_strsource (err), gpgme_strerror (err));
     exit (1);
  }
```

File: gpgme.info, Node: Exchanging Data, Next: Contexts, Prev: Error Handling, Up: Top

6 Exchanging Data

A lot of data has to be exchanged between the user and the crypto engine, like plaintext messages, ciphertext, signatures and information about the keys. The technical details about exchanging the data information are completely abstracted by GPGME. The user provides and receives the data via gpgme_data_t objects, regardless of the communication protocol between GPGME and the crypto engine in use.

-- Data type: gpgme_data_t

The gpgme_data_t type is a handle for a container for generic data, which is used by GPGME to exchange data with the user.

gpgme_data_t objects do not provide notifications on events. It is assumed that read and write operations are blocking until data is available. If this is undesirable, the application must ensure that all GPGME data operations always have data available, for example

by using
memory buffers or files rather than pipes or sockets. This might be
relevant, for example, if the external event loop mechanism is used.

-- Data type: gpgme_off_t
SINCE: 1.4.1

On POSIX platforms the gpgme_off_t type is an alias for off_t;
it may be used interchangeable. On Windows platforms gpgme_off_t
is defined as a long (i.e. 32 bit) for 32 bit Windows and as a 64
bit signed integer for 64 bit Windows.

-- Data type: gpgme_ssize_t
The gpgme_ssize_t type is an alias for ssize_t. It has only
been introduced to overcome portability problems pertaining to the
declaration of ssize_t by different toolchains.

* Menu:

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

File: gpgme.info, Node: Creating Data Buffers, Next: Destroying Data Buffers, Up: Exchanging Data

6.1 Creating Data Buffers
==========

Data
objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all objects.

* Menu:

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

File: gpgme.info, Node: Memory Based Data Buffers, Next: File Based Data Buffers, Up: Creating Data Buffers

6.1.1 Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is
convenient, but only practical for an amount of data that is a fraction
of the available physical memory. The data has to be copied from its

source and to its destination, which can often be avoided by using one
of the other data object

-- Function: gpgme_error_t gpgme_data_new (gpgme_data_t *DH)
The function gpgme_data_new creates a new gpgme_data_t object

and returns a handle for it in DH. The data object is memory based
and initially empty.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH is not a
valid pointer, and GPG_ERR_ENOMEM if not enough memory is
available.

-- Function: gpgme_error_t gpgme_data_new_from_mem (gpgme_data_t *DH,
const char *BUFFER, size_t SIZE, int COPY)
The function gpgme_data_new_from_mem creates a new gpgme_data_t
object and fills it with SIZE bytes starting from BUFFER.

If COPY is not zero, a private copy of the data is made. If COPY
is zero, the data is taken from the specified buffer as needed, and
the user has to ensure that the buffer remains valid for the whole
life span of the data object.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
BUFFER is not a valid pointer, and
GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_file (gpgme_data_t *DH,
const char *FILENAME, int COPY)
The function gpgme_data_new_from_file creates a new
gpgme_data_t object and fills it with the content of the file
FILENAME.

If COPY is not zero, the whole file is read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for COPY might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
FILENAME is not a valid pointer, GPG_ERR_NOT_IMPLEMENTED if CODE
is zero, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_filepart

(gpgme_data_t *DH, const char *FILENAME,
FILE *FP,
off_t OFFSET, size_t LENGTH)
The function gpgme_data_new_from_filepart creates a new gpgme_data_t object and fills it with a part of the file specified by FILENAME or FP.

Exactly one of FILENAME and FP must be non-zero, the other must be zero. The argument that is not zero specifies the file from which LENGTH bytes are read into the data object, starting from OFFSET.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, GPG_ERR_INV_VALUE if DH and exactly one of FILENAME and FP is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available.

File: gpgme.info, Node: File Based Data Buffers, Next: Callback Based Data Buffers, Prev: Memory Based Data Buffers, Up: Creating Data Buffers

6.1.2 File Based Data Buffers

File based data objects operate directly on file descriptors or streams.
Only a small amount of data is stored
in core at any time, so the size
of the data objects is not limited by GPGME.

-- Function: gpgme_error_t gpgme_data_new_from_fd (gpgme_data_t *DH,
int FD)
The function gpgme_data_new_from_fd creates a new gpgme_data_t object and uses the file descriptor FD to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the file descriptor than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_stream

(gpgme_data_t *DH, FILE *STREAM)
The function gpgme_data_new_from_stream creates a new
gpgme_data_t object and uses the I/O stream STREAM to read from
(if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might
read a bit more from the stream than is actually needed by the
crypto engine in the desired operation because of internal
buffering.

Note that GPGME assumes that the stream is in blocking mode.
Errors during I/O operations, except for EINTR, are usually fatal
for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_estream
(gpgme_data_t *DH, gpgrt_stream_t STREAM)
The function gpgme_data_new_from_estream creates
a new
gpgme_data_t object and uses the gpgrt stream STREAM to read from
(if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might
read a bit more from the stream than is actually needed by the
crypto engine in the desired operation because of internal
buffering.

Note that GPGME assumes that the stream is in blocking mode.
Errors during I/O operations, except for EINTR, are usually fatal
for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

File: gpgme.info, Node: Callback Based Data Buffers, Prev: File Based Data Buffers, Up: Creating Data Buffers

6.1.3 Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your
application, you can

implement the functions a data object provides
yourself and create a data object from these callback functions.

-- Data type: ssize_t (*gpgme_data_read_cb_t) (void *HANDLE,
    void *BUFFER, size_t SIZE)
The gpgme_data_read_cb_t type is the type of functions which GPGME calls if it wants to read data from a user-implemented data object. The function should read up to SIZE bytes from the current read position into the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: ssize_t (*gpgme_data_write_cb_t) (void *HANDLE,
    const void *BUFFER, size_t SIZE)
The gpgme_data_write_cb_t type is the type of functions which GPGME calls if it wants to write data to a user-implemented data object. The function should write up to SIZE bytes to the current write position from the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes written, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: off_t (*gpgme_data_seek_cb_t) (void *HANDLE,
    off_t OFFSET, int WHENCE)
The gpgme_data_seek_cb_t type is the type of functions which GPGME calls if it wants to change the current read/write position in a user-implemented data object, just like the lseek function.

The function
should return the new read/write position, and -1 on
error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: void (*gpgme_data_release_cb_t) (void *HANDLE)
The gpgme_data_release_cb_t type is the type of functions which

GPGME calls if it wants to destroy a user-implemented data object.
The HANDLE is provided by the user at data object creation time.

-- Data type: struct gpgme_data_cbs
This structure is used to store the data callback interface
functions described above. It has the following members:

gpgme_data_read_cb_t read
This is the function called by GPGME to read data from the
data object. It is only required for input data object.

gpgme_data_write_cb_t write
This is the function called by GPGME to write data to the data
object. It is only required for output data object.

gpgme_data_seek_cb_t seek
This is the function called by GPGME
to change the current
read/write pointer in the data object (if available). It is
optional.

gpgme_data_release_cb_t release
This is the function called by GPGME to release a data object.
It is optional.

-- Function: gpgme_error_t gpgme_data_new_from_cbs (gpgme_data_t *DH,
gpgme_data_cbs_t CBS, void *HANDLE)
The function gpgme_data_new_from_cbs creates a new gpgme_data_t
object and uses the user-provided callback functions to operate on
the data object.

The handle HANDLE is passed as first argument to the callback
functions. This can be used to identify this data object.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

File: gpgme.info, Node: Destroying Data Buffers, Next: Manipulating Data Buffers, Prev: Creating Data Buffers, Up: Exchanging Data

6.2 Destroying Data Buffers

-- Function: void gpgme_data_release (gpgme_data_t DH)
The function gpgme_data_release destroys the data object with the
handle DH. It releases all associated resources that were not

provided by the user in the first place.

-- Function: char * gpgme_data_release_and_get_mem (gpgme_data_t DH,
size_t *LENGTH)
The function gpgme_data_release_and_get_mem is like
gpgme_data_release, except that it returns the data buffer and
its length that was provided by the object.

The user has to release the buffer with gpgme_free. In case the
user provided the data buffer in non-copy mode, a copy will be made
for this purpose.

In case an error returns, or there is no suitable data buffer that
can be returned to the user, the function will return NULL. In
any case, the data object DH is destroyed.

-- Function: void gpgme_free (void *BUFFER)
SINCE: 1.1.1

The function gpgme_free releases
the memory returned by
gpgme_data_release_and_get_mem and gpgme_pubkey_algo_string.
It should be used instead of the system libraries free function
in case different allocators are used by a program. This is often
the case if gpgme is used under Windows as a DLL.

File: gpgme.info, Node: Manipulating Data Buffers, Prev: Destroying Data Buffers, Up: Exchanging Data

6.3 Manipulating Data Buffers
==========

Data buffers contain data and meta-data. The following operations can
be used to manipulate both.

* Menu:

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

File: gpgme.info, Node: Data Buffer I/O Operations, Next: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.1 Data Buffer I/O Operations

-- Function: ssize_t gpgme_data_read
(gpgme_data_t DH, void *BUFFER,
size_t LENGTH)
The function gpgme_data_read reads up to LENGTH bytes from the data object with the handle DH into the space starting at BUFFER.

If no error occurs, the actual amount read is returned. If the end of the data object is reached, the function returns 0.

In all other cases, the function returns -1 and sets ERRNO.

-- Function: ssize_t gpgme_data_write (gpgme_data_t DH,
const void *BUFFER, size_t SIZE)
The function gpgme_data_write writes up to SIZE bytes starting from BUFFER into the data object with the handle DH at the current write position.

The function returns the number of bytes actually written, or -1 if an error occurs. If an error occurs, ERRNO is set.

-- Function: off_t gpgme_data_seek (gpgme_data_t DH, off_t OFFSET,
int WHENCE)
The function gpgme_data_seek changes the current read/write position.

The WHENCE argument specifies how
the OFFSET should be interpreted.
It must be one of the following symbolic constants:

SEEK_SET
Specifies that OFFSET is a count of characters from the beginning of the data object.

SEEK_CUR
Specifies that OFFSET is a count of characters from the current file position. This count may be positive or negative.

SEEK_END
Specifies that OFFSET is a count of characters from the end of the data object. A negative count specifies a position within the current extent of the data object; a positive count specifies a position past the current end. If you set the position past the current end, and actually write data, you will extend the data object with zeros up to that position.

If successful, the function returns the resulting file position, measured in bytes from the beginning of the data object. You can

use this feature together with SEEK_CUR
to read the current
read/write position.

If the function fails, -1 is returned and ERRNO is set.

File: gpgme.info, Node: Data Buffer Meta-Data, Next: Data Buffer Convenience, Prev: Data Buffer I/O Operations, Up: Manipulating Data Buffers

6.3.2 Data Buffer Meta-Data

-- Function: char * gpgme_data_get_file_name (gpgme_data_t DH)
SINCE: 1.1.0

The function gpgme_data_get_file_name returns a pointer to a string containing the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

If no error occurs, the string containing the file name is returned. Otherwise, NULL will be returned.

-- Function: gpgme_error_t gpgme_data_set_file_name (gpgme_data_t DH, const char *FILE_NAME)
SINCE: 1.1.0

The function gpgme_data_set_file_name sets the file
name
associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

The function returns the error code GPG_ERR_INV_VALUE if DH is not a valid pointer and GPG_ERR_ENOMEM if not enough memory is available.

-- Data type: enum gpgme_data_encoding_t
The gpgme_data_encoding_t type specifies the encoding of a gpgme_data_t object. For input data objects, the encoding is useful to give the backend a hint on the type of data. For output data objects, the encoding can specify the output data format on certain operations. Please note that not all backends support all encodings on all operations. The following data types are available:

GPGME_DATA_ENCODING_NONE
This specifies that the encoding is not known. This is the default for a new data object. The backend will try its best to detect the encoding automatically.

GPGME_DATA_ENCODING_BINARY
This specifies that the data is encoding in binary form; i.e. there is no special encoding.

GPGME_DATA_ENCODING_BASE64
This specifies that the data is encoded using the Base-64 encoding scheme as used by MIME and other protocols.

GPGME_DATA_ENCODING_ARMOR
This specifies that the data is encoded in an armored form as used by OpenPGP and PEM.

GPGME_DATA_ENCODING_MIME
SINCE: 1.7.0

This specifies that the data is encoded as a MIME part.

GPGME_DATA_ENCODING_URL
SINCE: 1.2.0

The data is a list of linefeed delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URL0
SINCE: 1.2.0

The data is a list of binary zero delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URLESC

SINCE: 1.2.0

The data is a list of linefeed delimited URLs with all control and space characters percent escaped. This mode is is not yet implemented.

-- Function: gpgme_data_encoding_t gpgme_data_get_encoding (gpgme_data_t DH)
The function gpgme_data_get_encoding returns the encoding of the data object with the handle DH. If DH is not a valid pointer (e.g. NULL) GPGME_DATA_ENCODING_NONE is returned.

-- Function: gpgme_error_t gpgme_data_set_encoding
(gpgme_data_t DH, gpgme_data_encoding_t ENC)
The function gpgme_data_set_encoding changes the encoding of the data object with the handle DH to ENC.

-- Function: gpgme_error_t gpgme_data_set_flag (gpgme_data_t DH,
const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the data object can be controlled with flags set by this function. The properties are identified by the following values for NAME:

size-hint
The value is a decimal number with the length gpgme shall assume for this data object. This is useful if the data is provided by callbacks or via file descriptors but the applications knows the total size of the data. If this is set the OpenPGP engine may use this to decide on buffer allocation strategies and to provide a total value for its progress information.

This function returns 0 on success.

File: gpgme.info, Node: Data Buffer Convenience, Prev: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.3 Data Buffer Convenience Functions

-- Data type: enum gpgme_data_type_t
SINCE: 1.4.3

The gpgme_data_type_t type is used to return the detected type of the content of a data buffer.

GPGME_DATA_TYPE_INVALID
This is returned by gpgme_data_identify if it was not possible to identify the data. Reasons for this might be a non-seekable stream
or a memory problem. The value is 0.
GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary signature, a detached one or a cleartext signature.

GPGME_DATA_TYPE_PGP_ENCRYPTED
SINCE: 1.7.0

The data is an OpenPGP encrypted message.
GPGME_DATA_TYPE_PGP_SIGNATURE
SINCE: 1.7.0

The data is an OpenPGP detached signature.
GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be
encrypted data.
GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
GPGME_DATA_TYPE_X509_CERT
The data is a X.509 certificate
GPGME_DATA_TYPE_PKCS12
The data is a PKCS#12 message. This
is commonly used to exchange
private keys for X.509.

-- Function: gpgme_data_type_t gpgme_data_identify (gpgme_data_t DH)
SINCE: 1.4.3

The function gpgme_data_identify returns the type of the data
with the handle DH. If it is not possible to perform the
identification, the function returns zero
(GPGME_DATA_TYPE_INVALID). Note that depending on how the data
object has been created the identification may not be possible or
the data object may change its internal state (file pointer moved).
For file or memory based data object, the state should not change.

File: gpgme.info, Node: Contexts, Next: UI Server Protocol, Prev: Exchanging Data, Up: Top

7 Contexts

All cryptographic operations in GPGME are performed within a context,
which contains the internal state of the operation as well as
configuration parameters. By using several contexts you can run several
cryptographic operations in parallel, with different configuration.

-- Data type: gpgme_ctx_t
The gpgme_ctx_t type is a handle for a GPGME context, which is used to hold the configuration, status and result of cryptographic operations.

* Menu:

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations
* Run Control:: Controlling how operations are run.

File: gpgme.info, Node: Creating Contexts, Next: Destroying Contexts, Up: Contexts

7.1 Creating Contexts

-- Function: gpgme_error_t gpgme_new (gpgme_ctx_t *CTX)
The function gpgme_new creates a new gpgme_ctx_t object and returns a handle
for it in CTX.

The function returns the error code GPG_ERR_NO_ERROR if the context was successfully created, GPG_ERR_INV_VALUE if CTX is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available. Also, it returns GPG_ERR_NOT_OPERATIONAL if gpgme_check_version was not called to initialize GPGME, and GPG_ERR_SELFTEST_FAILED if a selftest failed. Currently, the only selftest is for Windows MingW32 targets to see if -mms-bitfields was used (as required).

File: gpgme.info, Node: Destroying Contexts, Next: Result Management, Prev: Creating Contexts, Up: Contexts

7.2 Destroying Contexts

-- Function: void gpgme_release (gpgme_ctx_t CTX)
The function gpgme_release destroys the context with the handle CTX and releases all associated resources.

File: gpgme.info, Node: Result Management, Next: Context Attributes, Prev: Destroying Contexts, Up: Contexts

7.3 Result Management
==========

The
 detailed result of an operation is returned in operation-specific
structures such as gpgme_decrypt_result_t. The corresponding
retrieval functions such as gpgme_op_decrypt_result provide static
access to the results after an operation completes. Those structures
shall be considered read-only and an application must not allocate such
a structure on its own. The following interfaces make it possible to
detach a result structure from its associated context and give it a
lifetime beyond that of the current operation or context.

-- Function: void gpgme_result_ref (void *RESULT)
   SINCE: 1.2.0

   The function gpgme_result_ref acquires an additional reference
   for the result RESULT, which may be of any type gpgme_*_result_t.
   As long as the user holds a reference, the result structure is
   guaranteed to be valid and unmodified.

-- Function: void gpgme_result_unref (void *RESULT)
   SINCE: 1.2.0

   The function gpgme_result_unref releases a reference for
 the
   result RESULT. If this was the last reference, the result
   structure will be destroyed and all resources associated to it will
   be released.

  Note that a context may hold its own references to result structures,
typically until the context is destroyed or the next operation is
started. In fact, these references are accessed through the
gpgme_op_*_result functions.

File: gpgme.info, Node: Context Attributes, Next: Key Management, Prev: Result Management, Up: Contexts

7.4 Context Attributes
==========

* Menu:

* Protocol Selection::   Selecting the protocol used by a context.
* Crypto Engine::   Configuring the crypto engine.
* Setting the Sender::   How to tell the engine the sender.
* ASCII Armor::   Requesting ASCII armored output.

* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing
the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
* Additional Logs:: Additional logs of a context.

File: gpgme.info, Node: Protocol Selection, Next: Crypto Engine, Up: Context Attributes

7.4.1 Protocol Selection

-- Function: gpgme_error_t gpgme_set_protocol (gpgme_ctx_t CTX,
gpgme_protocol_t PROTO)
The function gpgme_set_protocol sets the protocol used within the
context CTX to PROTO. All crypto operations will be performed by
the crypto engine configured for that protocol. *Note
Protocols
and Engines::.

Setting the protocol with gpgme_set_protocol does intentionally
not check if the crypto engine for that protocol is available and
installed correctly. *Note Engine Version Check::.

The function returns the error code GPG_ERR_NO_ERROR if the
protocol could be set successfully, and GPG_ERR_INV_VALUE if
PROTOCOL is not a valid protocol.

-- Function: gpgme_protocol_t gpgme_get_protocol (gpgme_ctx_t CTX)
The function gpgme_get_protocol retrieves the protocol currently
use with the context CTX.

File: gpgme.info, Node: Crypto Engine, Next: Setting the Sender, Prev: Protocol Selection, Up: Context Attributes

7.4.2 Crypto Engine

The following functions can be used to set and retrieve the
configuration of the crypto engines of a specific context. The default

can also be retrieved without any particular context. *Note Engine Information::. The default can also be changed globally. *Note Engine Configuration::.

-- Function: gpgme_engine_info_t gpgme_ctx_get_engine_info (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_ctx_get_engine_info returns a linked list of engine info structures. Each info structure describes the configuration of one configured backend, as used by the context CTX.

The result is valid until the next invocation of gpgme_ctx_set_engine_info for this particular context.

This function can not fail.

-- Function: gpgme_error_t gpgme_ctx_set_engine_info (gpgme_ctx_t CTX, gpgme_protocol_t PROTO, const char *FILE_NAME, const char *HOME_DIR)
SINCE: 1.1.0

The function gpgme_ctx_set_engine_info changes the configuration of the crypto engine implementing the protocol PROTO for the context CTX.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this crypto engine. If HOME_DIR is NULL, the engines default will be used.

Currently this function must be used before starting the first crypto operation. It is unspecified if and when the changes will take effect if the function is called after starting the first operation on the context CTX.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

File: gpgme.info, Node: Setting the Sender, Next: ASCII Armor, Prev: Crypto Engine, Up: Context Attributes

7.4.3 How to tell the engine the sender.

Some engines can make use of the senders address, for example to figure out the best user id in certain trust models. For verification and signing of mails, it is thus suggested to let the engine know the sender ("From:") address. GPGME provides two functions to accomplish that. Note that the esoteric use of multiple "From:" addresses is not supported.

-- Function: gpgme_error_t
gpgme_set_sender (gpgme_ctx_t CTX,
int ADDRESS)

SINCE: 1.8.0

The function gpgme_set_sender specifies the sender address for use in sign and verify operations. ADDRESS is expected to be the addr-spec part of an address but my also be a complete mailbox address, in which case this function extracts the addr-spec from it. Using NULL for ADDRESS clears the sender address.

The function returns 0 on success or an error code on failure. The most likely failure is that no valid addr-spec was found in ADDRESS.

-- Function: const char * gpgme_get_sender (gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_get_sender returns the current sender address from the context, or NULL if none was set. The returned value is valid as long as the CTX is valid and gpgme_set_sender has not been called again.

File: gpgme.info, Node: ASCII Armor, Next: Text Mode, Prev: Setting the Sender, Up: Context Attributes

7.4.4
ASCII Armor

-- Function: void gpgme_set_armor (gpgme_ctx_t CTX, int YES)
The function gpgme_set_armor specifies if the output should be ASCII armored. By default, output is not ASCII armored.

ASCII armored output is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_armor (gpgme_ctx_t CTX)
The function gpgme_get_armor returns 1 if the output is ASCII

armored, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Text Mode, Next: Offline Mode, Prev: ASCII Armor, Up: Context Attributes

7.4.5 Text Mode

-- Function: void gpgme_set_textmode (gpgme_ctx_t CTX, int YES)
The function gpgme_set_textmode specifies if canonical text mode should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that the updated RFC 3156 mandates that the mail user agent does some preparations so that
text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored by all other engines.

Canonical text mode is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_textmode (gpgme_ctx_t CTX)
The function gpgme_get_textmode returns 1 if canonical text mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Offline Mode, Next: Pinentry Mode, Prev: Text Mode, Up: Context Attributes

7.4.6 Offline Mode

-- Function: void gpgme_set_offline (gpgme_ctx_t CTX, int YES)
SINCE: 1.6.0

The function gpgme_set_offline specifies if offline mode should be used. Offline mode is disabled if YES is zero, and enabled otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its backend engine. It may eventually be extended to be more stricter and for example
completely disable the use of Dirmngr for any
engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall be used to do additional validation that might require

connecting external services (e.g. CRL / OCSP checks). Here the offline mode only affects the keylist mode GPGME_KEYLIST_MODE_VALIDATE.

For the OpenPGP protocol offline mode entirely disables the use of the Dirmngr and will thus guarantee that no network connections are done as part of an operation on this context. It has only an effect with GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

-- Function: int gpgme_get_offline (gpgme_ctx_t CTX)
SINCE: 1.6.0

The function gpgme_get_offline returns 1 if offline mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Pinentry Mode, Next: Included Certificates, Prev: Offline Mode, Up: Context Attributes

7.4.7 Pinentry Mode

-- Function: gpgme_error_t gpgme_set_pinentry_mode (gpgme_ctx_t CTX, gpgme_pinentry_mode_t MODE)

SINCE: 1.4.0

The function gpgme_set_pinentry_mode specifies the pinentry mode to be used.

For GnuPG >= 2.1 this option is required to be set to GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback mechanism in GPGME through gpgme_set_passphrase_cb.

-- Function: gpgme_pinentry_mode_t gpgme_get_pinentry_mode (gpgme_ctx_t CTX)
SINCE: 1.4.0

The function gpgme_get_pinenty_mode returns the mode set for the context.

-- Data type: enum gpgme_pinentry_mode_t
SINCE: 1.4.0

The gpgme_minentry_mode_t type specifies the set of possible pinentry modes that are supported by GPGME if GnuPG >= 2.1 is used.

The following modes are supported:

GPGME_PINENTRY_MODE_DEFAULT
SINCE: 1.4.0

Use the default of the agent, which is ask.

GPGME_PINENTRY_MODE_ASK
SINCE: 1.4.0

Force the use of the Pinentry.

GPGME_PINENTRY_MODE_CANCEL
SINCE: 1.4.0

Emulate use of Pinentrys cancel button.

GPGME_PINENTRY_MODE_ERROR
SINCE: 1.4.0

Return a Pinentry error No Pinentry.

GPGME_PINENTRY_MODE_LOOPBACK
SINCE: 1.4.0

Redirect Pinentry queries to the caller. This enables the use of gpgme_set_passphrase_cb because pinentry queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires allow-loopback-pinentry to be enabled in the gpg-agent.conf or an agent started with that option.

File: gpgme.info, Node: Included Certificates, Next: Key Listing Mode, Prev: Pinentry Mode, Up: Context Attributes

7.4.8 Included Certificates

-- Function: void gpgme_set_include_certs (gpgme_ctx_t CTX, int NR_OF_CERTS)

The function gpgme_set_include_certs specifies how many certificates should be included in an S/MIME signed message. By default, only the senders certificate is included. The possible values of NR_OF_CERTS are:

GPGME_INCLUDE_CERTS_DEFAULT
SINCE: 1.0.3

Fall back to the default of the crypto backend. This is the default for GPGME.

-2
Include all certificates except the root certificate.

-1
Include all certificates.

0
Include no certificates.

1
Include the senders certificate only.

n
Include the first n certificates of the certificates path, starting from the senders certificate. The number n must be positive.

Values of NR_OF_CERTS smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by all other engines.

-- Function: int gpgme_get_include_certs (gpgme_ctx_t CTX)
The function gpgme_get_include_certs returns the number of certificates to include into an S/MIME signed message.

File: gpgme.info, Node: Key Listing Mode, Next: Passphrase Callback, Prev: Included Certificates, Up: Context Attributes

7.4.9 Key Listing Mode

-- Function: gpgme_error_t gpgme_set_keylist_mode (gpgme_ctx_t CTX, gpgme_keylist_mode_t MODE)
The function gpgme_set_keylist_mode changes the default behaviour of the key listing functions. The value in MODE is a bitwise-or combination of one or multiple of the following bit values:

GPGME_KEYLIST_MODE_LOCAL
The GPGME_KEYLIST_MODE_LOCAL symbol specifies that the local keyring should be searched for keys in the keylisting operation. This is the default.

Using only this option results in a --list-keys.

GPGME_KEYLIST_MODE_EXTERN

The GPGME_KEYLIST_MODE_EXTERN symbol specifies that an external source should be searched for keys in the keylisting operation. The type of external source is dependent on the crypto engine used and whether it is combined with GPGME_KEYLIST_MODE_LOCAL. For example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a --search-keys for GPGME_PROTOCOL_OpenPGP and something similar to --list-external-keys for GPGME_PROTOCOL_CMS.

GPGME_KEYLIST_MODE_LOCATE

This is a shortcut for the combination of GPGME_KEYLIST_MODE_LOCAL and GPGME_KEYLIST_MODE_EXTERN, which results in a --locate-keys for GPGME_PROTOCOL_OpenPGP.

GPGME_KEYLIST_MODE_SIGS

The GPGME_KEYLIST_MODE_SIGS symbol specifies that the key signatures should be included in the listed keys.

GPGME_KEYLIST_MODE_SIG_NOTATIONS

SINCE: 1.1.1

The GPGME_KEYLIST_MODE_SIG_NOTATIONS symbol specifies that the signature notations on key signatures should be included in the listed keys. This only works if GPGME_KEYLIST_MODE_SIGS is also enabled.

GPGME_KEYLIST_MODE_WITH_TOFU

SINCE: 1.7.0

The GPGME_KEYLIST_MODE_WITH_TOFU symbol specifies that information pertaining to the TOFU trust model should be included in the listed keys.

GPGME_KEYLIST_MODE_WITH_KEYGRIP

SINCE: 1.14.0

The GPGME_KEYLIST_MODE_WITH_KEYRIP symbol specifies that the keygrip is always included in the listing. The default depends on the version of the backend and the used protocol.

GPGME_KEYLIST_MODE_WITH_SECRET

SINCE: 1.5.1

The GPGME_KEYLIST_MODE_WITH_SECRET returns information about
the presence of a corresponding secret key in a public key
listing. A public key listing with this mode is slower than a
standard listing but can be used instead of a second run to
list the secret keys.
This is only supported for GnuPG
versions >= 2.1. Note that using this option also makes sure
that the keygrip is available in the output.

GPGME_KEYLIST_MODE_EPHEMERAL
SINCE: 1.2.0

The GPGME_KEYLIST_MODE_EPHEMERAL symbol specifies that keys
flagged as ephemeral are included in the listing.

GPGME_KEYLIST_MODE_VALIDATE
SINCE: 0.4.5

The GPGME_KEYLIST_MODE_VALIDATE symbol specifies that the
backend should do key or certificate validation and not just
get the validity information from an internal cache. This
might be an expensive operation and is in general not useful.
Currently only implemented for the S/MIME backend and ignored
for other backends.

At least one of GPGME_KEYLIST_MODE_LOCAL and
GPGME_KEYLIST_MODE_EXTERN must be specified. For future binary
compatibility, you should get the current mode with
gpgme_get_keylist_mode and
modify it by setting or clearing the
appropriate bits, and then using that calculated value in the
gpgme_set_keylisting_mode operation. This will leave all other
bits in the mode value intact (in particular those that are not
used in the current version of the library).

The function returns the error code GPG_ERR_NO_ERROR if the mode
could be set correctly, and GPG_ERR_INV_VALUE if CTX is not a
valid pointer or MODE is not a valid mode.

-- Function: gpgme_keylist_mode_t gpgme_get_keylist_mode
(gpgme_ctx_t CTX)
The function gpgme_get_keylist_mode returns the current key
listing mode of the context CTX. This value can then be modified
and used in a subsequent gpgme_set_keylist_mode operation to only
affect the desired bits (and leave all others intact).

The function returns 0 if CTX is not a valid pointer, and the
current mode otherwise. Note that 0 is not a valid mode value.

File: gpgme.info, Node: Passphrase
Callback, Next: Progress Meter Callback, Prev: Key Listing Mode, Up: Context Attributes

7.4.10 Passphrase Callback

-- Data type: gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const
       char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD,
       int FD)
   The gpgme_passphrase_cb_t type is the type of functions usable as
   passphrase callback function.

   The argument UID_HINT might contain a string that gives an
   indication for which user ID the passphrase is required. If this
   is not available, or not applicable (in the case of symmetric
   encryption, for example), UID_HINT will be NULL.

   The argument PASSPHRASE_INFO, if not NULL, will give further
   information about the context in which the passphrase is required.
   This information is engine and operation specific.

   If this is the repeated attempt to get the passphrase, because
   previous attempts failed, then PREV_WAS_BAD is 1,
otherwise it will
   be 0.

   The user must write the passphrase, followed by a newline
   character, to the file descriptor FD. The function
   gpgme_io_writen should be used for the write operation. Note
   that if the user returns 0 to indicate success, the user must at
   least write a newline character before returning from the callback.

   If an error occurs, return the corresponding gpgme_error_t value.
   You can use the error code GPG_ERR_CANCELED to abort the
   operation. Otherwise, return 0.

   Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not
   with the 2.0.x series. See gpgme_set_pinentry_mode for more
   details on 2.1.x usage.

-- Function: void gpgme_set_passphrase_cb (gpgme_ctx_t CTX,
       gpgme_passphrase_cb_t PASSFUNC, void *HOOK_VALUE)
   The function gpgme_set_passphrase_cb sets the function that is
   used when a passphrase needs to be provided by the user to
   PASSFUNC. The function PASSFUNC needs to

implemented by the user,
and whenever it is called, it is called with its first argument
being HOOK_VALUE. By default, no passphrase callback function is
set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase
from a trusted agent (a daemon process), rather than having each
user to implement their own passphrase query. Some engines do not
even support an external passphrase callback at all, in this case
the error code GPG_ERR_NOT_SUPPORTED is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to
GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback.
See gpgme_set_pinentry_mode.

The user can disable the use of a passphrase callback function by
calling gpgme_set_passphrase_cb with PASSFUNC being NULL.

-- Function: void gpgme_get_passphrase_cb (gpgme_ctx_t CTX,
gpgme_passphrase_cb_t *PASSFUNC, void **HOOK_VALUE)
The function gpgme_get_passphrase_cb returns the function that is
used when a passphrase needs to be provided by the user in
*PASSFUNC, and the first argument for this function in *HOOK_VALUE.
If no passphrase callback is set, or CTX is not a valid pointer,
NULL is returned in both variables.

PASSFUNC or HOOK_VALUE can be NULL. In this case, the
corresponding value will not be returned.

File: gpgme.info, Node: Progress Meter Callback, Next: Status Message Callback, Prev: Passphrase Callback, Up: Context Attributes

7.4.11 Progress Meter Callback

-- Data type: void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT,
int TYPE, int CURRENT, int TOTAL)
The gpgme_progress_cb_t type is the type of functions usable as
progress callback function.

The arguments are specific to the crypto engine. More information
about the progress information returned from the GnuPG engine can
be
found in the GnuPG source code in the file doc/DETAILS in the
section PROGRESS.

-- Function: void gpgme_set_progress_cb (gpgme_ctx_t CTX,
gpgme_progress_cb_t PROGFUNC, void *HOOK_VALUE)
The function gpgme_set_progress_cb sets the function that is used when progress information about a cryptographic operation is available. The function PROGFUNC needs to implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no progress callback function is set.

Setting a callback function allows an interactive program to display progress information about a long operation to the user.

The user can disable the use of a progress callback function by calling gpgme_set_progress_cb with PROGFUNC being NULL.

-- Function: void gpgme_get_progress_cb (gpgme_ctx_t CTX,
gpgme_progress_cb_t *PROGFUNC, void **HOOK_VALUE)
The function gpgme_get_progress_cb returns the function that is used to inform the user about the progress made in *PROGFUNC, and the first argument for this function in *HOOK_VALUE. If no progress callback is set, or CTX is not a valid pointer, NULL is returned in both variables.

PROGFUNC or HOOK_VALUE can be NULL. In this case, the corresponding value will not be returned.

File: gpgme.info, Node: Status Message Callback, Next: Context Flags, Prev: Progress Meter Callback, Up: Context Attributes

7.4.12 Status Message Callback

-- Data type: gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS)
The gpgme_status_cb_t type is the type of function usable as a status message callback function.

The argument KEYWORD is the name of the status message while the ARGS argument contains any arguments for the status message.

If an error occurs, return the corresponding gpgme_error_t value. Otherwise, return 0.

-- Function: void gpgme_set_status_cb (gpgme_ctx_t CTX,
gpgme_status_cb_t STATUSFUNC, void *HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_set_status_cb sets the function that is used when a status message is received from gpg to STATUSFUNC. The function STATUSFUNC needs to be implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no status message callback function is set.

The user can disable the use of a status message callback function by calling gpgme_set_status_cb with STATUSFUNC being NULL.

-- Function: void gpgme_get_status_cb (gpgme_ctx_t CTX, gpgme_status_cb_t *STATUSFUNC, void **HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_get_status_cb returns the function that is used to process status messages from gpg in *STATUSFUNC, and the first argument for this function in *HOOK_VALUE. If no status message callback
is set, or CTX is not a valid pointer, NULL is returned in both variables.

File: gpgme.info, Node: Context Flags, Next: Locale, Prev: Status Message Callback, Up: Context Attributes

7.4.13 Context Flags

-- Function: gpgme_error_t gpgme_set_ctx_flag (gpgme_ctx_t CTX, const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the context can be controlled with flags set by this function. The properties are identified by the following values for NAME:

"redraw"
: This flag is normally not changed by the caller because GPGME sets and clears it automatically: The flag is cleared before an operation and set if an operation noticed that the engine has launched a Pinentry. A Curses based application may use this information to redraw the screen; for example:

```
err = gpgme_op_keylist_start (ctx, "foo@example.org", 0);
while
```

```
(!err)
              {
                err = gpgme_op_keylist_next (ctx, &key);
                if (err)
                  break;
                show_key (key);
                gpgme_key_release (key);
              }
            if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
              redraw_screen ();
            gpgme_release (ctx);
```

"full-status"
Using a VALUE of "1" the status callback set by gpgme_set_status_cb returns all status lines with the exception of PROGRESS lines. With the default of "0" the status callback is only called in certain situations.

"raw-description"
Setting the VALUE to "1" returns human readable strings in a raw format. For example the non breaking space characters ("~") will not be removed from the description field of the gpgme_tofu_info_t object.

"export-session-key"

Using a VALUE of "1" specifies that the context should try to export the symmetric session key when decrypting data. By default, or when using an empty string or "0" for VALUE, session keys are not exported.

"override-session-key"
The string given in VALUE is passed to the GnuPG engine to override the session key for decryption. The format of that session key is specific to GnuPG and can be retrieved during a decrypt operation when the context flag "export-session-key" is enabled. Please be aware that using this feature with GnuPG < 2.1.16 will leak the session key on many platforms via ps(1).

"auto-key-retrieve"
Setting the VALUE to "1" asks the backend to automatically retrieve a key for signature verification if possible. Note that this option makes a "web bug" like behavior possible. Keyserver or Web Key Directory operators can see which keys you request, so by sending you a message signed by a brand new key (which you naturally will not have on your local keyring),

the operator can tell both your IP address and the time when
you verified the signature.

"auto-key-import"
Setting the VALUE to "1" forces the GPG backend to
automatically import a missing key for signature verification
from the signature.

"include-key-block"
Setting the VALUE to "1" forces the GPG backend to embed the
signing key as well as an encryption subkey into the the
signature.

"request-origin"
The string given in VALUE is passed to the GnuPG engines to
request restrictions based on the origin of the request.
Valid values are documented in the GnuPG manual and the gpg
man page under the option --request-origin. Requires at
least GnuPG 2.2.6 to have an effect.

"no-symkey-cache"
For OpenPGP disable the passphrase cache used for symmetrical
en- and decryption. This cache is based on the message
specific salt value. Requires at least GnuPG 2.2.7 to have an
effect.

"ignore-mdc-error"
This flag passes the option --ignore-mdc-error to gpg. This
can be used to force decryption of a message which failed due
to a missing integrity check. This flag must be used with
great caution and only if it is a known non-corrupted old
message and the decryption result of the former try had the
decryption result flag legacy_cipher_nomdc set. For
failsafe reasons this flag is reset after each operation.

"auto-key-locate"
The string given in VALUE is passed to gpg. This can be used
to change the behavior of a GPGME_KEYLIST_MODE_LOCATE
keylisting. Valid values are documented in the GnuPG manual
and the gpg
man page under the option --auto-key-locate.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through auto-key-locate are
automatically imported in the keyring.

trust-model
SINCE: 1.11.2

Change the trust-model for all GnuPG engine operations. An
empty string sets the trust-model back to the users default.
If the trust-model is not supported by GnuPG the behavior is
undefined and will likely cause all operations to fail.
Example: "tofu+pgp".

This options should be used carefully with a strict version
requirement. In some versions of GnuPG setting the
trust-model changes the default trust-model for future
operations. A change in the trust-model also can have
unintended side effects, like rebuilding the trust-db.

"extended-edit"
This flag passes the option --expert to gpg key edit. This
can be used to get additional
callbacks in gpgme_op_edit.

This function returns 0 on success.

-- Function: const char * gpgme_get_ctx_flag (gpgme_ctx_t CTX,
const char *NAME)

SINCE: 1.8.0

The value of flags settable by gpgme_set_ctx_flag can be
retrieved by this function. If NAME is unknown the function
returns NULL. For boolean flags an empty string is returned for
False and the string "1" is returned for True; either atoi(3) or a
test for an empty string can be used to get the boolean value.

File: gpgme.info, Node: Locale, Next: Additional Logs, Prev: Context Flags, Up: Context Attributes

7.4.14 Locale

A locale setting can be associated with a context. This locale is
passed to the crypto engine, and used for applications like the PIN
entry, which is displayed to the user when entering a passphrase is
required.

The default locale is used to initialize the locale setting of all
contexts created afterwards.

-- Function: gpgme_error_t
gpgme_set_locale (gpgme_ctx_t CTX,
int CATEGORY, const char *VALUE)

SINCE: 0.4.3

The function gpgme_set_locale sets the locale of the context CTX, or the default locale if CTX is a null pointer.

The locale settings that should be changed are specified by CATEGORY. Supported categories are LC_CTYPE, LC_MESSAGES, and LC_ALL, which is a wildcard you can use if you want to change all the categories at once.

The value to be used for the locale setting is VALUE, which will be copied to GPGMEs internal data structures. VALUE can be a null pointer, which disables setting the locale, and will make PIN entry and other applications use their default setting, which is usually not what you want.

Note that the settings are only used if the application runs on a text terminal, and that the settings should fit the configuration of the output terminal. Normally, it is sufficient to initialize the default
value at startup.

The function returns an error if not enough memory is available.

File: gpgme.info, Node: Additional Logs, Prev: Locale, Up: Context Attributes

7.4.15 Additional Logs

Additional logs can be associated with a context. These logs are engine specific and can be be obtained with gpgme_op_getauditlog.

-- Function: gpgme_error_t gpgme_op_getauditlog (gpgme_ctx_t CTX,
gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

The function gpgme_op_getauditlog is used to obtain additional logs as specified by FLAGS into the OUTPUT data. If

The function returns the error code GPG_ERR_NO_ERROR if a log could be queried from the engine, and GPG_ERR_NOT_IMPLEMENTED if the log specified in FLAGS is not available for this engine. If no log is available GPG_ERR_NO_DATA is returned.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_AUDITLOG_DIAG
SINCE: 1.11.2

Obtain diagnostic output which would be written to stderr in interactive use of the engine. This can be used to provide additional diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will be empty and GPG_ERR_NO_DATA will be returned.

Implemented for: GPGME_PROTOCOL_OpenPGP

GPGME_AUDITLOG_DEFAULT
SINCE: 1.11.2

This flag has the value 0 for compatibility reasons. Obtains additional information from the engine by issuing the GETAUDITLOG command. For GPGME_PROTOCOL_CMS this provides additional information about the X509 certificate chain.

Implemented for: GPGME_PROTOCOL_CMS

GPGME_AUDITLOG_HTML
SINCE: 1.1.1

Same as GPGME_AUDITLOG_DEFAULT but in HTML.

Implemented for: GPGME_PROTOCOL_CMS

-- Function: gpgme_error_t
gpgme_op_getauditlog_start (gpgme_ctx_t CTX,
gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

This is the asynchronous variant of gpgme_op_getauditlog.

File: gpgme.info, Node: Key Management, Next: Crypto Operations, Prev: Context Attributes, Up: Contexts

7.5 Key Management

Some of the cryptographic operations require that recipients or signers are specified. This is always done by specifying the respective keys that should be used for the operation. The following section describes how such keys can be selected and manipulated.

* Menu:

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public
keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

File: gpgme.info, Node: Key objects, Next: Listing Keys, Up: Key Management

7.5.1 Key objects

The keys are represented in GPGME by structures which may only be read by the application but never be allocated or changed. They are valid as long as the key object itself is valid.

-- Data type: gpgme_key_t

The gpgme_key_t type is a pointer to a key object. It has the following members:

gpgme_keylist_mode_t keylist_mode
SINCE: 0.9.0

The keylist mode that was active when the key was retrieved.

unsigned int revoked : 1
This is true if the key is revoked.

unsigned int expired : 1
This is true if the key is expired.

unsigned int disabled : 1
This is true if the key is disabled.

unsigned int invalid : 1
This is true if the key is invalid. This might have several reasons, for a example for the S/MIME backend, it will be set

during key listings if the key could not be validated due to
missing certificates or unmatched policies.

unsigned int can_encrypt : 1
This is true if the key (ie one of its subkeys) can be used
for encryption.

unsigned int can_sign : 1
This is true if the key (ie one of its subkeys) can be used to
create data signatures.

unsigned int can_certify : 1
This is true if the key (ie one of its subkeys) can be used to
create key certificates.

unsigned int can_authenticate : 1
SINCE: 0.4.5

This is true
if the key (ie one of its subkeys) can be used
for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the key can be used for qualified signatures
according to local government regulations.

unsigned int secret : 1
This is true if the key is a secret key. Note, that this will
always be true even if the corresponding subkey flag may be
false (offline/stub keys). This is only set if a listing of
secret keys has been requested or if
GPGME_KEYLIST_MODE_WITH_SECRET is active.

unsigned int origin : 5
SINCE: 1.8.0

Reserved for the origin of this key.

gpgme_protocol_t protocol
This is the protocol supported by this key.

char *issuer_serial
If protocol is GPGME_PROTOCOL_CMS, then this is the issuer
serial.

char *issuer_name

If protocol is GPGME_PROTOCOL_CMS, then this is the issuer name.

char *chain_id
If protocol is GPGME_PROTOCOL_CMS, then this is the chain ID, which can be used to built the certificate chain.

gpgme_validity_t owner_trust
If protocol is GPGME_PROTOCOL_OpenPGP, then this is the owner trust.

gpgme_subkey_t subkeys
This is a linked list with the subkeys of the key. The first subkey in the list is the primary key and usually available.

gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first user ID in the list is the main (or primary) user ID.

char *fpr
SINCE: 1.7.0

This field gives the fingerprint of the primary key. Note that this is a copy of the fingerprint of the first subkey. For an incomplete key (for example from a verification result) a subkey may be missing but this field may be set nevertheless.

unsigned long last_update

SINCE: 1.8.0

Reserved for the time of the last update of this key.

-- Data type: gpgme_subkey_t
SINCE: 1.5.0

The gpgme_subkey_t type is a pointer to a subkey structure. Subkeys are one component of a gpgme_key_t object. In fact, subkeys are those parts that contains the real information about the individual cryptographic keys that belong to the same key object. One gpgme_key_t can contain several subkeys. The first subkey in the linked list is also called the primary key.

The subkey structure has the following members:

gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked

list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the subkey is revoked.

unsigned int expired : 1
This is true if the subkey is expired.

unsigned int disabled : 1
This is true if the subkey is disabled.

unsigned int
invalid : 1
This is true if the subkey is invalid.

unsigned int can_encrypt : 1
This is true if the subkey can be used for encryption.

unsigned int can_sign : 1
This is true if the subkey can be used to create data
signatures.

unsigned int can_certify : 1
This is true if the subkey can be used to create key
certificates.

unsigned int can_authenticate : 1
SINCE: 0.4.5

This is true if the subkey can be used for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the subkey can be used for qualified
signatures according to local government regulations.

unsigned int is_de_vs : 1
SINCE: 1.8.0

This is true if the subkey complies with the rules for
classified information in Germany at the restricted level
(VS-NfD). This are currently RSA keys of at least 2048 bits or
ECDH/ECDSA
keys using a Brainpool curve.

unsigned int secret : 1
This is true if the subkey is a secret key. Note that it will

be false if the key is actually a stub key; i.e. a secret key operation is currently not possible (offline-key). This is only set if a listing of secret keys has been requested or if GPGME_KEYLIST_MODE_WITH_SECRET is active.

gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

unsigned int length
This is the length of the subkey (in bits).

char *keyid
This is the key ID of the subkey in hexadecimal digits.

char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if available.

char *keygrip
SINCE: 1.7.0

The keygrip of the subkey in hex digit form or NULL if not available.

long int timestamp
This is the creation timestamp of the subkey.
This is -1 if
the timestamp is invalid, and 0 if it is not available.

long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey does not expire.

unsigned int is_cardkey : 1
SINCE: 1.2.0

True if the secret key is stored on a smart card.

char *card_number
SINCE: 1.2.0

The serial number of a smart card holding this key or NULL.

char *curve
For ECC algorithms the name of the curve.

-- Data type: gpgme_user_id_t

A user ID is a component of a gpgme_key_t object. One key can have many user IDs. The first one in the list is the main (or primary) user ID.

The user ID structure has the following members.

gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the user ID is revoked.

unsigned int invalid : 1
This is true if the user ID is invalid.

gpgme_validity_t validity
This specifies the validity of the user ID.

char *uid
This is the user ID string.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

char *address;
The mail address (addr-spec from RFC-5322) of the user ID string. This is general the same as the email part of this structure but might be slightly different. If no mail address is available NULL is stored.

gpgme_tofu_info_t tofu
SINCE: 1.7.0

If not NULL information from the TOFU database pertaining to this user id.

gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

unsigned int origin :

5
SINCE: 1.8.0

Reserved for the origin of this user ID.

unsigned long last_update
SINCE: 1.8.0

Reserved for the time of the last update of this user ID.

char *uidhash;
A string used by gpg to identify a user ID. This string can be used at certain prompts of gpgme_op_edit to select a user ID. Users must be prepared to see a NULL value here. The format of the value is not specified and may depend on the GPGME or GnuPG version.

-- Data type: gpgme_tofu_info_t

SINCE: 1.7.0

The gpgme_tofu_info_t type is a pointer to a tofu info structure. Tofu info structures are one component of a gpgme_user_id_t object, and provide information from the TOFU database pertaining to the user ID.

The tofu info structure has the following members:

gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked list, or NULL if
this is the last element.

unsigned int validity : 3
This is the TOFU validity. It can have the following values:

0
The value 0 indicates a conflict.

1
The value 1 indicates a key without history.

2
The value 2 indicates a key with too little history.

3
The value 3 indicates a key with enough history for basic trust.

4
The value 4 indicates a key with a lot of history.

unsigned int policy : 4
This is the TOFU policy, see gpgme_tofu_policy_t.

unsigned short signcount
This is the number of signatures seen for this binding (or USHRT_MAX if there are more than that).

unsigned short encrcount
This is the number of encryptions done with this binding (or USHRT_MAX if there are more than that).

unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with this binding.

unsigned long signlast
Number of seconds since Epoch when the last signature was seen with this binding.

unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with this binding.

unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with this binding.

char *description
A human-readable string summarizing the TOFU data (or NULL).

-- Data type: gpgme_key_sig_t

The gpgme_key_sig_t type is a pointer to a key signature structure. Key signatures are one component of a gpgme_key_t object, and validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled, because it can be expensive to retrieve all signatures of

a key.

The signature notations on a key signature are only available if

the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIG_NOTATIONS mode enabled, because it can be expensive to retrieve all signature notations.

The key signature structure has the following members:

gpgme_key_sig_t next
: This is a pointer to the next key signature structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
: This is true if the key signature is a revocation signature.

unsigned int expired : 1
: This is true if the key signature is expired.

unsigned int invalid : 1
: This is true if the key signature is invalid.

unsigned int exportable : 1
: This is true if the key signature is exportable.

gpgme_pubkey_algo_t pubkey_algo
: This is the public key algorithm used to create the signature.

char *keyid
: This is the key ID of the key (in hexadecimal digits) used to create the signature.

long int timestamp
: This is the creation timestamp of the key signature. This is -1 if the timestamp is invalid, and 0 if it is not available.

long int expires
: This is the expiration timestamp of the key signature, or 0 if the key signature does not expire.

gpgme_error_t status
: This is the status of the signature and has the same meaning as the member of the same name in a gpgme_signature_t object.

unsigned int sig_class
: This specifies the signature class of the key signature. The meaning is specific to the crypto engine.

char *uid

This is the main user ID of the key used to create the signature.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

File: gpgme.info, Node: Listing Keys, Next: Information About Keys, Prev: Key objects, Up: Key Management

7.5.2 Listing Keys

-- Function: gpgme_error_t gpgme_op_keylist_start (gpgme_ctx_t CTX, const char *PATTERN, int SECRET_ONLY)

The function gpgme_op_keylist_start initiates a key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys in the list.

If PATTERN is NULL, all available keys are returned. Otherwise, PATTERN contains an engine specific expression that is used to limit the list to all keys matching the pattern. Note that the total length of the pattern is restricted to an engine-specific maximum (a couple of hundred characters are usually accepted). The pattern should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are

reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_ext_start (gpgme_ctx_t CTX,
const char *PATTERN[], int SECRET_ONLY, int RESERVED)

The function gpgme_op_keylist_ext_start initiates an extended key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the

keys in the list.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are used to limit the list to all keys matching at least one of the patterns verbatim. Note that the total length of all patterns is restricted to an engine-specific maximum (the exact limit also depends on the number of patterns and amount of quoting required, but a couple of hundred characters are usually accepted). Patterns should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The value of RESERVED must be 0.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function
returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_from_data_start
(gpgme_ctx_t CTX, gpgme_data_t DATA, int RESERVED)

SINCE: 1.8.0

The function gpgme_op_keylist_from_data_start initiates a key listing operation inside the context CTX. In contrast to the other key listing operation the keys are read from the supplied DATA and not from the local key database. The keys are also not imported into the local key database. The function sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys from DATA.

The value of RESERVED must be 0.

This function requires at least GnuPG version 2.1.14 and currently works only with OpenPGP keys.

The context will be busy until either all keys are received (and gpgme_op_keylist_next
returns GPG_ERR_EOF), or
gpgme_op_keylist_end is called to finish the operation. While the context is busy DATA may not be released.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_next (gpgme_ctx_t CTX, gpgme_key_t *R_KEY)

The function gpgme_op_keylist_next returns the next key in the list created by a previous gpgme_op_keylist_start operation in the context CTX. The key will have one reference for the user. *Note Manipulating Keys::.

This is the only way to get at gpgme_key_t objects in GPGME.

If the last key in the list has already been returned, gpgme_op_keylist_next returns GPG_ERR_EOF.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer, and GPG_ERR_ENOMEM if there is not enough memory
for the operation.

-- Function: gpgme_error_t gpgme_op_keylist_end (gpgme_ctx_t CTX)

The function gpgme_op_keylist_end ends a pending key list operation in the context CTX.

After the operation completed successfully, the result of the key listing operation can be retrieved with gpgme_op_keylist_result.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

The following example illustrates how all keys containing a certain string (g10code) can be listed with their key ID and the name and

email address of the main user ID:

```
   gpgme_ctx_t ctx;
   gpgme_key_t key;
   gpgme_error_t err = gpgme_new (&ctx);

   if (!err)
     {
       err = gpgme_op_keylist_start (ctx, "g10code", 0);
       while (!err)
         {
           err = gpgme_op_keylist_next (ctx, &key);
           if (err)

 break;
           printf ("%s:", key->subkeys->keyid);
           if (key->uids && key->uids->name)
             printf (" %s", key->uids->name);
           if (key->uids && key->uids->email)
             printf (" <%s>", key->uids->email);
           putchar ('\n');
           gpgme_key_release (key);
         }
       gpgme_release (ctx);
     }
   if (gpg_err_code (err) != GPG_ERR_EOF)
     {
       fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
       exit (1);
     }
```

-- Data type: gpgme_keylist_result_t
   This is a pointer to a structure used to store the result of a
   gpgme_op_keylist_* operation. After successfully ending a key
   listing operation, you can retrieve the pointer to the result with
   gpgme_op_keylist_result. The structure contains the following
   member:

   unsigned int truncated : 1
        This is true if the crypto backend had to truncate the result,
        and less than the desired keys
 could be listed.

-- Function: gpgme_keylist_result_t gpgme_op_keylist_result
       (gpgme_ctx_t CTX)
   The function gpgme_op_keylist_result returns a
   gpgme_keylist_result_t pointer to a structure holding the result
   of a gpgme_op_keylist_* operation. The pointer is only valid if

the last operation on the context was a key listing operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

In a simple program, for which a blocking operation is acceptable, the following function can be used to retrieve a single key.

-- Function: gpgme_error_t gpgme_get_key (gpgme_ctx_t CTX, const char *FPR, gpgme_key_t *R_KEY, int SECRET)
The function gpgme_get_key gets the key with the fingerprint (or key ID) FPR from the crypto backend and return it in R_KEY. If SECRET is true, get the secret key. The currently active keylist mode is used to retrieve
the key. The key will have one reference
for the user.

If the key is not found in the keyring, gpgme_get_key returns the error code GPG_ERR_EOF and *R_KEY will be set to NULL.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer or FPR is not a fingerprint or key ID, GPG_ERR_AMBIGUOUS_NAME if the key ID was not a unique specifier for a key, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

File: gpgme.info, Node: Information About Keys, Next: Manipulating Keys, Prev: Listing Keys, Up: Key Management

7.5.3 Information About Keys

Please see the beginning of this section for more information about gpgme_key_t objects.

-- Data type: gpgme_validity_t
The gpgme_validity_t type is used to specify the validity of a user ID in a key. The following validities are defined:

GPGME_VALIDITY_UNKNOWN
The user
ID is of unknown validity. The string representation
of this validity is ?.

GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this validity is q.

GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this validity is n.

GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this validity is m.

GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this validity is f.

GPGME_VALIDITY_ULTIMATE
The user ID is ultimately valid. The string representation of this validity is u.

File: gpgme.info, Node: Manipulating Keys, Next: Generating Keys, Prev: Information About Keys, Up: Key Management

7.5.4 Manipulating Keys

-- Function: void gpgme_key_ref (gpgme_key_t KEY)
The function gpgme_key_ref acquires an additional reference for the key KEY.

-- Function: void gpgme_key_unref (gpgme_key_t KEY)
The function gpgme_key_unref releases a reference for the key KEY. If this was the last reference, the key will be destroyed and all resources associated to it will be released.

-- Function: gpgme_error_t gpgme_op_setexpire (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS, unsigned int RESERVED);

SINCE: 1.14.1

The function gpgme_op_setexpire sets the expiration time of the key KEY or of the specified subkeys. This function requires at least version 2.1.22 of GnuPG.

KEY specifies the key to operate on.

EXPIRES specifies the expiration time in seconds from now. To be similar to other usages where expiration times are provided in unsigned long this is similar to the key creation date and so it is

in seconds from NOW.

The common case is to use 0 to not set an
expiration time. Note
that this parameter takes an unsigned long value and not a time_t
to avoid problems on systems which use a signed 32 bit time_t.
Note further that the OpenPGP protocol uses 32 bit values for
timestamps and thus can only encode dates up to the year 2106.

SUBFPRS selects the subkey(s) for which the expiration time should
be set. If SUBFPRS is set to NULL, then the expiration time of
the primary key is set. If SUBFPRS is an asterisk (*), then the
expiration times of all non-revoked and not yet expired subkeys are
set. To select more than one subkey put all subkey fingerprints
into one string separated by linefeeds characters (\n).

RESERVED is reserved for later use and must be 0.

-- Function: gpgme_error_t gpgme_op_setexpire_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS,
unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start
initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

File: gpgme.info, Node: Generating Keys, Next: Signing Keys, Prev: Manipulating Keys, Up: Key Management

7.5.5 Generating Keys

GPGME provides a set of functions to create public key pairs. Most of
these functions require the use of GnuPG 2.1 and later; for older GnuPG

versions the gpgme_op_genkey function can be used. Existing code which wants to update to the new functions or new code which shall supports older
GnuPG versions may try the new functions first and provide a fallback to the old function if the error code GPG_ERR_NOT_SUPPORTED is received.

-- Function: gpgme_error_t gpgme_op_createkey (gpgme_ctx_t CTX, const char *USERID, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, gpgme_key_t EXTRAKEY, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey generates a new key for the procotol active in the context CTX. As of now this function does only work for OpenPGP and requires at least version 2.1.13 of GnuPG.

USERID is commonly the mail address associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested. The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

ALGO specifies the algorithm for the new key (actually a keypair of public and private key). For a list of supported algorithms, see the GnuPG manual. If ALGO is NULL or the string "default", the key is generated using the default algorithm of the engine. If the string "future-default" is used the engine may use an algorithm which is planned to be the default in a future release of the engine; however existing implementation of the protocol may not be able to already handle such future algorithms. For the OpenPGP protocol, the specification of a default algorithm, without requesting a non-default usage via FLAGS, triggers the creation of a primary key plus a secondary key (subkey).

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you supply 0, a reasonable expiration time is chosen. Use the flag GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

EXTRAKEY is currently not used and must be set to NULL. A future version of GPGME may use this parameter to create X.509 keys.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_CREATE_SIGN
GPGME_CREATE_ENCR
GPGME_CREATE_CERT
GPGME_CREATE_AUTH
SINCE: 1.7.0

Do not create the key with the default capabilities (key usage) of the requested algorithm but use those explicitly given by these flags: signing, encryption, certification, or authentication. The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been selected only one key is created in the case of the OpenPGP protocol.

GPGME_CREATE_NOPASSWD
SINCE: 1.7.0

Request generation of the key without password protection.

GPGME_CREATE_SELFSIGNED
SINCE: 1.7.0

For an X.509 key do not create a CSR but a self-signed certificate. This has not yet been implemented.

GPGME_CREATE_NOSTORE
SINCE: 1.7.0

Do not store the created key in the local key database. This has not yet been implemented.

GPGME_CREATE_WANTPUB
GPGME_CREATE_WANTSEC
SINCE: 1.7.0

Return the public or secret key as part of the result structure. This has not yet been implemented.

GPGME_CREATE_FORCE
SINCE: 1.7.0

The engine does not allow the creation of a key with a user ID already existing in the local key database. This flag can be used to override this check.

GPGME_CREATE_NOEXPIRE
SINCE: 1.9.0

Request generation of keys that do not expire.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createkey_start (gpgme_ctx_t CTX, const char *USERID, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, gpgme_key_t EXTRAKEY, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey_start initiates a gpgme_op_createkey operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_createsubkey (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createsubkey creates and adds a new subkey to the primary OpenPGP key given by KEY. The only allowed protocol in CTX is GPGME_PROTOCOL_OPENPGP. Subkeys (aka secondary keys) are a concept in the OpenPGP protocol to bind several keys to a primary key. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

ALGO specifies the algorithm for the new subkey. For a list of supported algorithms, see the GnuPG manual. If ALGO is NULL or

the string "default", the subkey is generated using the default algorithm for an encryption subkey of the engine. If the string "future-default" is used the engine may use an encryption algorithm which is planned to be the default in a future release of the engine; however existing implementation of the protocol may not be able to already handle such future algorithms.

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you supply 0, a reasonable expiration time is chosen. Use the flag GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

FLAGS takes the same values as described above for gpgme_op_createkey.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createsubkey_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createsubkey_start initiates a gpgme_op_createsubkey operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_adduid (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid adds a new user ID to the OpenPGP key given by KEY. Adding additional user IDs after key creation is

a feature of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to add to the key. A user ID is commonly the mail address to be associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested.
The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

FLAGS are currently not used and must be set to zero.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_adduid_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid_start initiates a gpgme_op_adduid operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid revokes a user ID from the OpenPGP key given by KEY. Revoking user IDs after key creation is a feature
of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to be revoked from the key. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. This is a required parameter.

FLAGS are currently not used and must be set to zero.

Note that the engine wont allow to revoke the last valid user ID.
To change a user ID is better to first add the new user ID, then
revoke the old one, and finally publish the key.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if
the engine does not support the command, or a bunch of other error
codes.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const
char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid_start initiates a gpgme_op_revuid
operation; see there for details. It must be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_set_ui_flag (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, cons char * NAME,
cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag is used to set flags on a user
ID from the OpenPGP key given by KEY. Setting flags on user IDs
after key creation is a feature of the OpenPGP protocol and thus
the protocol for the context CTX must be set to OpenPGP.

KEY specifies the key to operate on. This parameters is required.

USERID is the user ID of the key to be manipulated. This user ID
must be given verbatim because the engine does an exact and case
sensitive match. Thus the uid field from the user ID object

(gpgme_user_id_t) is to be used. This is a required parameter.

NAME names the flag which is to be changed. The only currently
supported flag is:

primary
This sets the primary key flag on the given user ID. All other
primary key flag on other user IDs are removed. VALUE must be
given as NULL. For technical reasons this functions bumps the
creation timestamp of all affected self-signatures up by one
second. At least GnuPG version 2.1.20 is required.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_set_uid_flag_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, cons char * NAME, cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag_start initiates a gpgme_op_set_uid_flag operation; see there for details. It must

be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_genkey (gpgme_ctx_t CTX, const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)

The function gpgme_op_genkey generates a new key pair in the context CTX. The meaning of PUBLIC and SECRET depends on the crypto backend.

GPG does not support PUBLIC and SECRET, they should be NULL. GnuPG will generate a key pair and add it to the standard key ring. The fingerprint of the generated key is available with gpgme_op_genkey_result.

GpgSM requires PUBLIC to be a writable data object. GpgSM will generate a secret key (which will be stored by gpg-agent, and return a certificate request in PUBLIC, which then needs to be signed by the certification authority and imported before it can be used. GpgSM does not make the fingerprint available.

The argument PARMS specifies parameters for the key in an string that looks something like XML. The details about the format of PARMS are specific to the crypto engine used by CTX. The first line of the parameters must be <GnupgKeyParams format="internal"> and the last line must be </GnupgKeyParams>. Every line in between the first and last lines is treated as a Header: Value pair. In particular, no XML escaping is necessary if you need to include the characters <, >, or &.

Here is an example for GnuPG as the crypto engine (all parameters of OpenPGP key generation are documented in the GPG manual):

```
      <GnupgKeyParms format="internal">
      Key-Type: default
      Subkey-Type: default
      Name-Real: Joe Tester
      Name-Comment: with stupid passphrase
      Name-Email: joe@foo.bar
      Expire-Date: 0
      Passphrase: abc
      </GnupgKeyParms>
```

Here is an example for GpgSM as the crypto engine (all parameters of OpenPGP key generation
are documented in the GPGSM manual):

```
      <GnupgKeyParms format="internal">
      Key-Type: RSA
      Key-Length: 1024
      Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
      Name-Email: joe@foo.bar
      </GnupgKeyParms>
```

Strings should be given in UTF-8 encoding. The only format supported for now is internal. The content of the GnupgKeyParms container is passed verbatim to the crypto backend. Control statements are not allowed.

After the operation completed successfully, the result can be retrieved with gpgme_op_genkey_result.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a well-formed string (e.g. does not have the expected tag-like headers and footers), GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not valid, and GPG_ERR_GENERAL if no key was created by the backend.

-- Function: gpgme_error_t
gpgme_op_genkey_start (gpgme_ctx_t CTX,
const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)

The function gpgme_op_genkey_start initiates a gpgme_op_genkey operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a valid XML string, and GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not NULL.

-- Data type: gpgme_genkey_result_t

This is a pointer to a structure used to store the result of a gpgme_op_genkey operation. After successfully generating a key, you can retrieve the pointer to the result with gpgme_op_genkey_result. The structure contains the following members:

unsigned int primary : 1
: This flag is set to 1 if a primary key was created and to 0 if not.

unsigned int sub : 1
: This flag is set to 1 if a subkey was created and to 0 if not.

unsigned int uid : 1
: This flag is set to 1 if a user ID was created and to 0 if not.

char *fpr
: This is the fingerprint of the key that was created. If both a primary and a subkey were generated, the fingerprint of the primary key will be returned. If the crypto engine does not provide the fingerprint, fpr will be a null pointer.

gpgme_data_t pubkey
: SINCE: 1.7.0

This will eventually be used to return the public key. It is currently not used.

gpgme_data_t seckey
: SINCE: 1.7.0

This will eventually be used to return the secret key. It is currently not used.

-- Function: gpgme_genkey_result_t gpgme_op_genkey_result (gpgme_ctx_t CTX)

The function gpgme_op_genkey_result returns a gpgme_genkey_result_t pointer to a structure holding the result of a gpgme_op_genkey operation. The pointer is only valid if the last operation on the context was a gpgme_op_genkey or gpgme_op_genkey_start operation, and if this operation finished

successfully. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Signing Keys, Next: Exporting Keys, Prev: Generating Keys, Up: Key Management

7.5.6 Signing Keys

Key signatures are a unique concept of the OpenPGP protocol. They can be used to certify the validity of a key and are used to create the Web-of-Trust (WoT). Instead of using the gpgme_op_interact function along with a finite state machine, GPGME provides a convenient function to create key signatures when using modern GnuPG versions.

-- Function: gpgme_error_t gpgme_op_keysign (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign adds a new key signature to the public key KEY. This function requires at least version 2.1.12 of GnuPG.

CTX is the usual context which describes the protocol to use (which must be OpenPGP) and has also the list of signer keys to be used for the signature. The common case is to use the default key for signing other keys. If another key or more than one key shall be used for a key signature, gpgme_signers_add can be used. *Note Selecting Signers::.

KEY specifies the key to operate on.

USERID selects the user ID or user IDs to be signed. If USERID is set to NULL all valid user IDs are signed. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. To select more than one user ID put them all into one string separated by linefeeds characters (\n) and set the flag GPGME_KEYSIGN_LFSEP.

EXPIRES specifies the expiration time of the new signature in seconds. The common case is to use 0 to not set an expiration date. However, if the configuration of the engine defines a default expiration for key signatures, that is still used unless

the flag GPGME_KEYSIGN_NOEXPIRE is used. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_KEYSIGN_LOCAL
SINCE: 1.7.0

Instead of creating an exportable key signature, create a key signature which is is marked as non-exportable.

GPGME_KEYSIGN_LFSEP
SINCE: 1.7.0

Although linefeeds are uncommon in user IDs this flag is required to explicitly declare that
USERID may contain several
linefeed separated user IDs.

GPGME_KEYSIGN_NOEXPIRE
Force the creation of a key signature without an expiration date. This overrides EXPIRE and any local configuration of the engine.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_keysign_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign_start initiates a gpgme_op_keysign operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_revsig (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig revokes key signatures of the public key KEY made with the key SIGNING_KEY. This function requires at least version 2.2.24 of GnuPG.

KEY specifies the key to operate on.

SIGNING_KEY specifies the key whose signatures shall be revoked.

USERID selects the user ID or user IDs whose signatures shall be revoked. If USERID is set to NULL the signatures on all user IDs are revoked. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. To select more than one user ID put them all into one string separated by linefeeds characters (\n) and set the flag GPGME_REVSIG_LFSEP.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_REVSIG_LFSEP
SINCE: 1.14.1

Although linefeeds are uncommon in user IDs this flag is required to explicitly declare
that USERID may contain several
linefeed separated user IDs.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_revsig_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig_start initiates a gpgme_op_revsig operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

File: gpgme.info, Node: Exporting Keys, Next: Importing Keys, Prev: Signing Keys, Up: Key Management

7.5.7 Exporting Keys

Exporting keys means the same as running gpg with the command --export. However, a mode flag can be used to change the way the

export works. The available mode flags are described below, they may be or-ed together.

GPGME_EXPORT_MODE_EXTERN

If this bit is set, the output is send directly to the default keyserver. This is currently only allowed for OpenPGP keys. It is good practise to not send more than a few dozens key to a keyserver at one time. Using this flag requires that the KEYDATA argument of the export function is set to NULL.

GPGME_EXPORT_MODE_MINIMAL

SINCE: 1.3.1

If this bit is set, the smallest possible key is exported. For OpenPGP keys it removes all signatures except for the latest self-signatures. For X.509 keys it has no effect.

GPGME_EXPORT_MODE_SSH

SINCE: 1.4.0

If this bit is set, the latest authentication key of the requested OpenPGP key is exported in the OpenSSH public key format. This accepts just a single key; to force the export of a specific subkey a fingerprint pattern with an appended exclamation mark may be used.

GPGME_EXPORT_MODE_SECRET

SINCE: 1.6.0

Instead of exporting the public key, the secret key is exported. This may not be combined with GPGME_EXPORT_MODE_EXTERN. For X.509 the export format is PKCS#8.

GPGME_EXPORT_MODE_RAW

SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509 key the export format will be changed to PKCS#1. This flag may not be used with OpenPGP.

GPGME_EXPORT_MODE_PKCS12

SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509 key the export format will be changed to PKCS#12 which also includes the certificate. This flag may not be used with OpenPGP.

GPGME_EXPORT_MODE_NOUID
SINCE: 1.12.0 - experimental Do not export user ids. Works only with certain gpg version.

-- Function: gpgme_error_t gpgme_op_export (gpgme_ctx_t CTX, const char *PATTERN, gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

If PATTERN is NULL, all available keys are returned. Otherwise, PATTERN contains an engine specific expression that is used to limit the list to all keys matching the pattern.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_start (gpgme_ctx_t CTX, const char *PATTERN, gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export_start initiates a gpgme_op_export operation. It can be completed by calling gpgme_wait on the context.
*Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_ext (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are

used to limit the list to all keys matching at least one of the patterns verbatim.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_ext_start (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

The function gpgme_op_export_ext_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_keys (gpgme_ctx_t CTX, gpgme_key_t keys[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

SINCE: 1.2.0

The function gpgme_op_export_keys extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

The keys to export are taken form the NULL terminated array KEYS. Only keys of the currently selected protocol of CTX which do have a fingerprint set are considered for export. Other keys specified by the KEYS are ignored. In particular OpenPGP keys retrieved via an external key listing are not included.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_keys_start
(gpgme_ctx_t CTX,
gpgme_key_t KEYS[], gpgme_export_mode_t MODE,
gpgme_data_t KEYDATA)
SINCE: 1.2.0

The function gpgme_op_export_keys_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

File: gpgme.info, Node: Importing Keys, Next: Deleting Keys, Prev: Exporting Keys, Up: Key Management

7.5.8 Importing Keys

Importing keys means the same as running gpg with the command --import.

-- Function: gpgme_error_t gpgme_op_import (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import
adds the keys in the data buffer
KEYDATA to the key ring of the crypto engine used by CTX. The format of KEYDATA can be ASCII armored, for example, but the details are specific to the crypto engine.

After the operation completed successfully, the result can be retrieved with gpgme_op_import_result.

The function returns the error code GPG_ERR_NO_ERROR if the import was completed successfully, GPG_ERR_INV_VALUE if KEYDATA if CTX or KEYDATA is not a valid pointer, and GPG_ERR_NO_DATA if KEYDATA is an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_start (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import_start initiates a gpgme_op_import operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the

import could be started successfully, GPG_ERR_INV_VALUE if CTX or
KEYDATA
is not a valid pointer, and GPG_ERR_NO_DATA if KEYDATA is
an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_keys (gpgme_ctx_t CTX,
gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys adds the keys described by the
NULL terminated array KEYS to the key ring of the crypto engine
used by CTX. It is used to actually import and make keys permanent
which have been retrieved from an external source (i.e. using
GPGME_KEYLIST_MODE_EXTERN) earlier. The external keylisting must
have been made with the same context configuration (in particular
the same home directory). (1) Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of CTX are considered
for import. Other keys specified by the KEYS are ignored. As of
now all considered keys must have been retrieved using the same
method, i.e. the used key
listing mode must be identical.

After the operation completed successfully, the result can be
retrieved with gpgme_op_import_result.

To move keys from one home directory to another, export and import
the keydata using gpgme_op_export and gpgme_op_import.

The function returns the error code GPG_ERR_NO_ERROR if the
import was completed successfully, GPG_ERR_INV_VALUE if CTX is
not a valid pointer, GPG_ERR_CONFLICT if the key listing mode
does not match, and GPG_ERR_NO_DATA if no keys are considered for
export.

-- Function: gpgme_error_t gpgme_op_import_keys_start (gpgme_ctx_t CTX,
gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys_start initiates a
gpgme_op_import_keys operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
import was completed successfully, GPG_ERR_INV_VALUE
if KEYDATA
if CTX or KEYDATA is not a valid pointer, GPG_ERR_CONFLICT if the

key listing mode does not match, and GPG_ERR_NO_DATA if no keys are considered for export.

-- Data type: gpgme_import_status_t
This is a pointer to a structure used to store a part of the result of a gpgme_op_import operation. For each considered key one status is added that contains information about the result of the import. The structure contains the following members:

gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or NULL if this is the last element.

char *fpr
This is the fingerprint of the key that was considered.

gpgme_error_t result
If the import was not successful, this is the error value that caused the import to fail. Otherwise the error code is GPG_ERR_NO_ERROR.

unsigned int status
This is a bit-wise OR of the following flags that give more information about what part of the key was imported. If the key was already known, this might be 0.

GPGME_IMPORT_NEW
The key was new.

GPGME_IMPORT_UID
The key contained new user IDs.

GPGME_IMPORT_SIG
The key contained new signatures.

GPGME_IMPORT_SUBKEY
The key contained new sub keys.

GPGME_IMPORT_SECRET
The key contained a secret key.

-- Data type: gpgme_import_result_t
This is a pointer to a structure used to store the result of a gpgme_op_import operation. After a successful import operation, you can retrieve the pointer to the result with gpgme_op_import_result. The structure contains the following members:

int considered
The total number of considered keys.

int no_user_id
The number of keys without user ID.

int imported
The total number
of imported keys.

int imported_rsa
The number of imported RSA keys.

int unchanged
The number of unchanged keys.

int new_user_ids
The number of new user IDs.

int new_sub_keys
The number of new sub keys.

int new_signatures
The number of new signatures.

int new_revocations
The number of new revocations.

int secret_read
The total number of secret keys read.

int secret_imported
The number of imported secret keys.

int secret_unchanged
The number of unchanged secret keys.

int not_imported
The number of keys not imported.

gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more
information about the keys for which an import was attempted.

int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore
support v3 keys (created with PGP

2.x) and ignores them on
import. This counter provides the number of such skipped v3
keys.

-- Function: gpgme_import_result_t gpgme_op_import_result
(gpgme_ctx_t CTX)
The function gpgme_op_import_result returns a
gpgme_import_result_t pointer to a structure holding the result
of a gpgme_op_import operation. The pointer is only valid if the
last operation on the context was a gpgme_op_import or
gpgme_op_import_start operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.

---------- Footnotes ----------

(1) Thus it is a replacement for the usual workaround of exporting
and then importing a key to make an X.509 key permanent.

File: gpgme.info, Node: Deleting Keys, Next: Changing Passphrases, Prev: Importing Keys, Up: Key Management

7.5.9 Deleting Keys

-- Function: gpgme_error_t gpgme_op_delete_ext
(gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext deletes the key KEY from the key
ring of the crypto engine used by CTX.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_DELETE_ALLOW_SECRET
SINCE: 1.9.1

If not set, only public keys are deleted. If set, secret keys
are deleted as well, if that is supported.

GPGME_DELETE_FORCE
SINCE: 1.9.1

If set, the user is not asked to confirm the deletion.

The function returns the error code GPG_ERR_NO_ERROR if the key

was deleted successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, GPG_ERR_NO_PUBKEY if KEY could not be found in the keyring, GPG_ERR_AMBIGUOUS_NAME if the key was not specified unambiguously, and GPG_ERR_CONFLICT if the secret key for KEY is available, but ALLOW_SECRET is zero.

-- Function: gpgme_error_t gpgme_op_delete_ext_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext_start initiates a gpgme_op_delete operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

The following functions allow only to use one particular flag.

-- Function: gpgme_error_t gpgme_op_delete (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext, but only the flag GPGME_DELETE_ALLOW_SECRET can be provided.

-- Function: gpgme_error_t gpgme_op_delete_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext_start, but only the flag GPGME_DELETE_ALLOW_SECRET can be provided.

File: gpgme.info, Node:
Changing Passphrases, Next: Changing TOFU Data, Prev: Deleting Keys, Up: Key Management

7.5.10 Changing Passphrases

-- Function: gpgme_error_t gpgme_op_passwd (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd changes the passphrase of the private key associated with KEY. The only allowed value for FLAGS is 0. The backend engine will usually popup a window to ask for the old and the new passphrase. Thus this function is not useful in a server application (where passphrases are not required

anyway).

Note that old gpg engines (before version 2.0.15) do not support this command and will silently ignore it.

-- Function: gpgme_error_t gpgme_op_passwd_start (gpgme_ctx_t CTX, const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd_start initiates a gpgme_op_passwd operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and an error code if one of the arguments is not valid or the oepration could not be started.

File: gpgme.info, Node: Changing TOFU Data, Next: Advanced Key Editing, Prev: Changing Passphrases, Up: Key Management

7.5.11 Changing TOFU Data

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation model. For resolving conflicts it is necessary to declare the policy for a key. See the GnuPG manual for details on the TOFU implementation.

-- Data type: enum gpgme_tofu_policy_t
SINCE: 1.7.0

The gpgme_tofu_policy_t type specifies the set of possible policy values that are supported by GPGME:

GPGME_TOFU_POLICY_AUTO
Set the policy to auto.
GPGME_TOFU_POLICY_GOOD
Set the policy to good.
GPGME_TOFU_POLICY_BAD
Set the policy to bad.
GPGME_TOFU_POLICY_ASK
Set the policy to ask.
GPGME_TOFU_POLICY_UNKNOWN
Set the policy to unknown.

To change the policy for a key the following functions can be used:

-- Function: gpgme_error_t gpgme_op_tofu_policy (gpgme_ctx_t CTX,
const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy changes the TOFU policy of KEY. The valid values for POLICY are listed above. As of now this function does only work for OpenPGP and requires at least version 2.1.10 of GnuPG.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_tofu_policy_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy_start initiates a gpgme_op_tofu_policy operation. It can be
completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and an error code if one of the arguments is not valid or the oepration could not be started.

File: gpgme.info, Node: Advanced Key Editing, Prev: Changing TOFU Data, Up: Key Management

7.5.12 Advanced Key Editing

-- Data type: gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE,
const char *STATUS, const char *ARGS, int FD)

SINCE: 1.7.0

The gpgme_interact_cb_t type is the type of functions which GPGME calls if it a key interact operation is on-going. The status keyword STATUS and the argument line ARGS are passed through by GPGME from the crypto engine. An empty string represents EOF. The file descriptor FD is -1 for normal status messages. If STATUS indicates a command rather than a status message, the response to the command should

be written to FD. The HANDLE is provided by the
user at start of operation.

The function should return GPG_ERR_FALSE if it did not handle the status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_interact (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact processes the key KEY interactively, using the interact callback function FNC with the handle HANDLE. The callback is invoked for every status and command request from the crypto engine. The output of the crypto engine is written to the data object OUT.

Note that the protocol between the callback function and the crypto engine is specific to the crypto engine and no further support in implementing this protocol correctly is provided by GPGME.

FLAGS modifies the behaviour of the function; the only defined bit
value is:

GPGME_INTERACT_CARD
SINCE: 1.7.0

This is used for smartcard based keys and uses gpgs --card-edit command.

The function returns 0 if the edit operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, and any error returned by the crypto engine or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_interact_start (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact_start initiates a gpgme_op_interact operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully,

and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

File: gpgme.info, Node: Crypto Operations, Next: Miscellaneous, Prev: Key Management, Up: Contexts

7.6 Crypto Operations

Sometimes, the result of a crypto operation returns a list of invalid keys encountered in processing the request. The following structure is used to hold information about such a key.

-- Data type: gpgme_invalid_key_t
This is a pointer to a structure used to store a part of the result of a crypto operation which takes user IDs as one input parameter. The structure contains the following members:

gpgme_invalid_key_t next
This is a pointer to the next invalid key structure in the linked list, or NULL if this is the last element.

char *fpr
The fingerprint or key ID of the invalid key encountered.

gpgme_error_t reason
An error code describing the reason why the key was found invalid.

* Menu:

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

File: gpgme.info, Node: Decrypt, Next: Verify, Up: Crypto Operations

7.6.1 Decrypt

-- Function: gpgme_error_t gpgme_op_decrypt (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt decrypts the ciphertext in the data object CIPHER and stores it into the data object PLAIN.

The function returns the error code GPG_ERR_NO_ERROR if the ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt, GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, and passes through some errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_decrypt_start (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)

The function gpgme_op_decrypt_start initiates a gpgme_op_decrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CIPHER or PLAIN is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_decrypt_ext (gpgme_ctx_t CTX, gpgme_decrypt_flags_t FLAGS, gpgme_data_t CIPHER, gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext is the same as gpgme_op_decrypt but has an additional argument FLAGS. If FLAGS is 0 both function behave identically.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_DECRYPT_VERIFY
SINCE: 1.8.0

The GPGME_DECRYPT_VERIFY symbol specifies that this function shall exactly act as gpgme_op_decrypt_verify.

GPGME_DECRYPT_UNWRAP
SINCE: 1.8.0

The GPGME_DECRYPT_UNWRAP symbol specifies that the output shall be an OpenPGP message with only the encryption layer removed. This requires GnuPG 2.1.12 and works only for OpenPGP. This is the counterpart to GPGME_ENCRYPT_WRAP.

The function returns the error codes as described for
gpgme_op_decrypt.

-- Function: gpgme_error_t gpgme_op_decrypt_ext_start (
gpgme_ctx_t CTX, gpgme_decrypt_flags_t FLAGS,
gpgme_data_t CIPHER, gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext_start initiates a
gpgme_op_decrypt_ext operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully,
and GPG_ERR_INV_VALUE if
CIPHER or PLAIN is not a valid pointer.

-- Data type: gpgme_recipient_t
SINCE: 1.1.0

This is a pointer to a structure used to store information about
the recipient of an encrypted text which is decrypted in a
gpgme_op_decrypt operation. This information (except for the
status field) is even available before the operation finished
successfully, for example in a passphrase callback. The structure
contains the following members:

gpgme_recipient_t next
This is a pointer to the next recipient structure in the
linked list, or NULL if this is the last element.

gpgme_pubkey_algo_t
The public key algorithm used in the encryption.

char *keyid
This is the key ID of the key (in hexadecimal digits) used as
recipient.

gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY
if the secret key for this recipient
is not available, and 0
otherwise.

-- Data type: gpgme_decrypt_result_t
This is a pointer to a structure used to store the result of a
gpgme_op_decrypt operation. After successfully decrypting data,

you can retrieve the pointer to the result with gpgme_op_decrypt_result. As with all result structures, it this structure shall be considered read-only and an application must not allocate such a strucure on its own. The structure contains the following members:

char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the algorithm that is not supported.

unsigned int wrong_key_usage : 1
SINCE: 0.9.0 This is true if the key was not used according to its policy.

unsigned int legacy_cipher_nomdc : 1
SINCE: 1.11.2 The message was made by a legacy algorithm without any integrity protection. This might be an old but

legitimate message.

unsigned int is_mime : 1;
SINCE: 1.11.0 The message claims that the content is a MIME object.

unsigned int is_de_vs : 1;
SINCE: 1.10.0 The message was encrypted in a VS-NfD compliant way. This is a specification in Germany for a restricted communication level.

gpgme_recipient_t recipients
SINCE: 1.1.0

This is a linked list of recipients to which this message was encrypted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer.

char *session_key
SINCE: 1.8.0

A textual representation (nul-terminated string) of the session key used in symmetric encryption of the message, if the context has been set to export session keys (see gpgme_set_ctx_flag, "export-session-key"), and a session key was available for the

most recent decryption operation.
Otherwise, this is a null pointer.

You must not try to access this member of the struct unless gpgme_set_ctx_flag (ctx, "export-session-key") returns success or gpgme_get_ctx_flag (ctx, "export-session-key") returns true (non-empty string).

char *symkey_algo
SINCE: 1.11.0

A string with the symmetric encryption algorithm and mode using the format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of OpenPGP is given as "PGPCFB".

-- Function: gpgme_decrypt_result_t gpgme_op_decrypt_result (gpgme_ctx_t CTX)
The function gpgme_op_decrypt_result returns a gpgme_decrypt_result_t pointer to a structure holding the result of a gpgme_op_decrypt operation. The pointer is only valid if the last operation on the context was a gpgme_op_decrypt or gpgme_op_decrypt_start operation. If the operation failed this

might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Verify, Next: Decrypt and Verify, Prev: Decrypt, Up: Crypto Operations

7.6.2 Verify

-- Function: gpgme_error_t gpgme_op_verify (gpgme_ctx_t CTX, gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT, gpgme_data_t PLAIN)
The function gpgme_op_verify verifies that the signature in the data object SIG is a valid signature. If SIG is a detached signature, then the signed text should be provided in SIGNED_TEXT and PLAIN should be a null pointer. Otherwise, if SIG is a normal (or cleartext) signature, SIGNED_TEXT should be a null pointer and PLAIN should be a writable data object that will contain the plaintext after successful verification.

The results of the individual signature verifications can be retrieved with gpgme_op_verify_result.

The function returns the error

code GPG_ERR_NO_ERROR if the
operation could be completed successfully, GPG_ERR_INV_VALUE if
CTX, SIG or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if SIG
does not contain any data to verify, and passes through any errors
that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_verify_start (gpgme_ctx_t CTX,
gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT,
gpgme_data_t PLAIN)
The function gpgme_op_verify_start initiates a gpgme_op_verify
operation. It can be completed by calling gpgme_wait on the
context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully, GPG_ERR_INV_VALUE if
CTX, SIG or PLAIN is not a valid pointer, and GPG_ERR_NO_DATA if
SIG or PLAIN does not contain any data to verify.

-- Data type: gpgme_sig_notation_t
This is a pointer to a structure used to store a part of the result
of a gpgme_op_verify operation. The structure contains the
following members:

gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure
in the linked list, or NULL if this is the last element.

char *name
The name of the notation field. If this is NULL, then the
member value will contain a policy URL.

int name_len
The length of the name field. For strings the length is
counted without the trailing binary zero.

char *value
The value of the notation field. If name is NULL, then
this is a policy URL.

int value_len
The length of the value field. For strings the length is
counted without the trailing binary zero.

gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags
associated with the notation data in an accumulated form which
can be used

as an argument to the function
gpgme_sig_notation_add. The value flags is a bitwise-or
combination of one or multiple of the following bit values:

GPGME_SIG_NOTATION_HUMAN_READABLE
SINCE: 1.1.0

The GPGME_SIG_NOTATION_HUMAN_READABLE symbol specifies
that the notation data is in human readable form

GPGME_SIG_NOTATION_CRITICAL
SINCE: 1.1.0

The GPGME_SIG_NOTATION_CRITICAL symbol specifies that
the notation data is critical.

unsigned int human_readable : 1
This is true if the GPGME_SIG_NOTATION_HUMAN_READABLE flag
is set and false otherwise. This flag is only valid for
notation data, not for policy URLs.

unsigned int critical : 1
This is true if the GPGME_SIG_NOTATION_CRITICAL flag is set
and false otherwise. This flag is valid for notation data and
policy URLs.

-- Data type: gpgme_signature_t
This is a pointer to a structure used to store a part of the result
of a gpgme_op_verify operation. The structure contains the
following members:

gpgme_signature_t next
This is a pointer to the next new signature structure in the
linked list, or NULL if this is the last element.

gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status.
It provides an easy interface to a defined semantic of the
signature status. Checking just one bit is sufficient to see
whether a signature is valid without any restrictions. This
means that you can check for GPGME_SIGSUM_VALID like this:

```
if ((sig.summary & GPGME_SIGSUM_VALID))
{
  ..do stuff if valid..
}
else
{
```

```
  ..do stuff if not fully valid..
}
```

The defined bits are:

GPGME_SIGSUM_VALID
The signature is fully valid.

GPGME_SIGSUM_GREEN
The signature is good but one might want to display some extra information. Check the other bits.

GPGME_SIGSUM_RED
The signature is bad. It might be useful to check other bits and display more information, i.e. a revoked certificate might not render a signature invalid when the message was received prior to the cause for the revocation.

GPGME_SIGSUM_KEY_REVOKED
The key or at least one certificate has been revoked.

GPGME_SIGSUM_KEY_EXPIRED
The key or one of the certificates has expired. It is probably a good idea to display the date of the expiration.

GPGME_SIGSUM_SIG_EXPIRED
The signature has expired.

GPGME_SIGSUM_KEY_MISSING
Cant verify due to a missing key or certificate.

GPGME_SIGSUM_CRL_MISSING
The CRL (or an equivalent mechanism) is not available.

GPGME_SIGSUM_CRL_TOO_OLD
Available CRL is too old.

GPGME_SIGSUM_BAD_POLICY
A policy requirement was not met.

GPGME_SIGSUM_SYS_ERROR
A system error occurred.

GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.

char *fpr
This is the fingerprint or key ID of the signature.

gpgme_error_t status
This is the status of the signature. In particular, the following status codes are of interest:

GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that there is no signature. For the combined result this status means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check the summary field for that.

For example a gpgme_op_decrypt_verify returns a verification result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For the combined result this status means that all signatures are valid and expired.

GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used to verify the signature has been revoked. For the combined result this status means that all signatures

are valid and all keys are revoked.

GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPG_ERR_NO_PUBKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be

checked due to missing keys.

GPG_ERR_GENERAL
This status indicates that there was some other error which prevented the signature verification.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

unsigned long timestamp
The creation timestamp of this signature.

unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature
does not expire.

unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

unsigned int pka_trust : 2
This is set to the trust information gained by means of the PKA system. Values are:
0
No PKA information available or verification not possible.
1
PKA verification failed.
2
PKA verification succeeded.
3
Reserved for future use.
Depending on the configuration of the engine, this metric may also be reflected by the validity of the signature.

unsigned int chain_model : 1
SINCE: 1.1.6

This is true if the validity of the signature has been checked using the chain model. In the chain model the time the signature has been created must be within the validity period of the certificate and the time the certificate itself has been created must be within the validity period of the issuing certificate. In contrast the default validation model checks the validity of signature as well at the entire certificate chain at the current time.

gpgme_validity_t validity

The validity of the signature.

gpgme_error_t validity_reason
If a signature is not valid, this provides a reason why.

gpgme_pubkey_algo_t
The public key algorithm used to create this signature.

gpgme_hash_algo_t
The hash algorithm used to create this signature.

char *pka_address
The mailbox from the PKA information or NULL.

gpgme_key_t key
SINCE: 1.7.0

An object describing the key used to create the signature. This key object may be incomplete in that it only conveys information availabale directly with a signature. It may also be NULL if such information is not readily available.

-- Data type: gpgme_verify_result_t
This is a pointer to a structure used to store the result of a gpgme_op_verify operation. After verifying a signature, you can retrieve the pointer to the result with gpgme_op_verify_result. If the operation failed this might be a NULL pointer. The structure contains the following member:

gpgme_signature_t signatures
A linked list with information about all signatures for which a verification was attempted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer. Warning: The filename is not covered by the signature.

unsigned int is_mime : 1;
SINCE: 1.11.0

The message claims that the content is a MIME object. Warning: This flag is not covered by the signature.

-- Function: gpgme_verify_result_t gpgme_op_verify_result
(gpgme_ctx_t CTX)

The function gpgme_op_verify_result returns a
gpgme_verify_result_t pointer to a structure holding the result
of a gpgme_op_verify operation. The pointer is only valid if the
last operation on the context was a gpgme_op_verify,
gpgme_op_verify_start, gpgme_op_decrypt_verify or
gpgme_op_decrypt_verify_start operation, and if this operation
finished successfully (for gpgme_op_decrypt_verify and
gpgme_op_decrypt_verify_start, the error code GPG_ERR_NO_DATA
counts as successful in this context). The returned pointer is
only valid until the next operation is started on the context.

File: gpgme.info, Node: Decrypt and Verify, Next: Sign, Prev: Verify, Up: Crypto Operations

7.6.3 Decrypt and Verify

-- Function: gpgme_error_t gpgme_op_decrypt_verify (gpgme_ctx_t CTX,
gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify decrypts the ciphertext in
the data object CIPHER and
stores it into the data object PLAIN.
If CIPHER contains signatures, they will be verified.

After the operation completed, gpgme_op_decrypt_result and
gpgme_op_verify_result can be used to retrieve more information
about the signatures.

If the error code GPG_ERR_NO_DATA is returned, CIPHER does not
contain any data to decrypt. However, it might still be signed.
The information about detected signatures is available with
gpgme_op_verify_result in this case.

The function returns the error code GPG_ERR_NO_ERROR if the
ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if
CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if
CIPHER does not contain any data to decrypt,
GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text,
GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could
not be retrieved, and passes through any errors that are reported
by the crypto engine support
routines.

-- Function: gpgme_error_t gpgme_op_decrypt_verify_start
(gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify_start initiates a
gpgme_op_decrypt_verify operation. It can be completed by
calling gpgme_wait on the context. *Note Waiting For

Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, CIPHER, PLAIN or R_STAT is not a valid pointer, and GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt.

When processing mails it is sometimes useful to extract the actual mail address (the addr-spec) from a string. GPGME provides this helper function which uses the same semantics as the internal functions in GPGME and GnuPG:

-- Function: char * gpgme_addrspec_from_uid (const char *UID)

SINCE: 1.7.1

Return the mail address (called addr-spec in RFC-5322) from the string
UID which is assumed to be a user id (called address in RFC-5322). All plain ASCII characters (i.e. those with bit 7 cleared) in the result are converted to lowercase. Caller must free the result using gpgme_free. Returns NULL if no valid address was found (in which case ERRNO is set to EINVAL) or for other errors.

File: gpgme.info, Node: Sign, Next: Encrypt, Prev: Decrypt and Verify, Up: Crypto Operations

7.6.4 Sign

A signature can contain signatures by one or more keys. The set of keys used to create a signatures is contained in a context, and is applied to all following signing operations in this context (until the set is changed).

* Menu:

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

File: gpgme.info, Node: Selecting Signers, Next: Creating a Signature, Up: Sign

7.6.4.1
Selecting Signers
.....

The key or the keys used to create a signature are stored in the context. The following functions can be used to manipulate this list. If no signer has been set into the context a default key is used for signing.

-- Function: void gpgme_signers_clear (gpgme_ctx_t CTX)
The function gpgme_signers_clear releases a reference for each key on the signers list and removes the list of signers from the context CTX.

Every context starts with an empty list.

-- Function: gpgme_error_t gpgme_signers_add (gpgme_ctx_t CTX,
const gpgme_key_t KEY)
The function gpgme_signers_add adds the key KEY to the list of signers in the context CTX.

Calling this function acquires an additional reference for the key.

-- Function: unsigned int gpgme_signers_count (const gpgme_ctx_t CTX)
SINCE: 1.4.3

The function gpgme_signers_count returns the number of signer keys in the context CTX.

-- Function:
gpgme_key_t gpgme_signers_enum (const gpgme_ctx_t CTX,
int SEQ)
The function gpgme_signers_enum returns the SEQth key in the list of signers in the context CTX. An additional reference is acquired for the user.

If SEQ is out of range, NULL is returned.

File: gpgme.info, Node: Creating a Signature, Next: Signature Notation Data, Prev: Selecting Signers, Up: Sign

7.6.4.2 Creating a Signature
.....

-- Data type: enum gpgme_sig_mode_t
The gpgme_sig_mode_t type is used to specify the desired type of a signature. The following modes are available:

GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the signature.

GPGME_SIG_MODE_DETACH
A detached signature is made.

GPGME_SIG_MODE_CLEAR
A clear text signature is made. The ASCII armor and text mode settings of the context are ignored.

-- Function: gpgme_error_t gpgme_op_sign (gpgme_ctx_t CTX, gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign creates a signature for the text in the data object PLAIN and returns it in the data object SIG. The type of the signature created is determined by the ASCII armor (or, if that is not set, by the encoding specified for SIG), the text mode attributes set for the context CTX and the requested signature mode MODE.

After the operation completed successfully, the result can be retrieved with gpgme_op_sign_result.

If an S/MIME signed message is created using the CMS crypto engine, the number of certificates to include in the message can be specified with gpgme_set_include_certs. *Note Included Certificates::.

The function returns the error code GPG_ERR_NO_ERROR if the signature could be created successfully, GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer, GPG_ERR_NO_DATA if the signature could not be created, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, GPG_ERR_UNUSABLE_SECKEY if there are invalid signers, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_sign_start (gpgme_ctx_t CTX, gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign_start initiates a gpgme_op_sign operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer.

-- Data type: gpgme_new_signature_t
This is a pointer to a structure used to store a part of the result

of a gpgme_op_sign operation. The structure contains the following members:

gpgme_new_signature_t next
: This is a pointer to the next new signature structure in the linked list, or NULL if this is the last element.

gpgme_sig_mode_t type
: The type of this signature.

gpgme_pubkey_algo_t pubkey_algo
: The public key algorithm used to create this signature.

gpgme_hash_algo_t hash_algo
: The hash algorithm used to create this signature.

unsigned int sig_class
: The signature class of this signature.

long int timestamp
: The creation timestamp of this signature.

char *fpr
: The fingerprint of the key which was used to create this signature.

-- Data type: gpgme_sign_result_t

This is a pointer to a structure used to store the result of a gpgme_op_sign operation. After successfully generating a signature, you can retrieve the pointer to the result with gpgme_op_sign_result. The structure contains the following members:

gpgme_invalid_key_t invalid_signers
: A linked list with information about all invalid keys for which a signature could not be created.

gpgme_new_signature_t signatures
: A linked list with information about all signatures created.

-- Function: gpgme_sign_result_t gpgme_op_sign_result (gpgme_ctx_t CTX)

The function gpgme_op_sign_result returns a gpgme_sign_result_t pointer to a structure holding the result of a gpgme_op_sign operation. The pointer is only valid if the last operation on the context was a gpgme_op_sign, gpgme_op_sign_start, gpgme_op_encrypt_sign or gpgme_op_encrypt_sign_start operation.

If that operation failed, the function might return a NULL
pointer. The returned pointer is only valid until the next
operation is started on the context.

File: gpgme.info, Node: Signature Notation Data, Prev: Creating a Signature, Up: Sign

7.6.4.3 Signature Notation Data
.....

Using the following
functions, you can attach arbitrary notation data to
a signature. This information is then available to the user when the
signature is verified.

-- Function: void gpgme_sig_notation_clear (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_clear removes the notation data
from the context CTX. Subsequent signing operations from this
context will not include any notation data.

Every context starts with an empty notation data list.

-- Function: gpgme_error_t gpgme_sig_notation_add (gpgme_ctx_t CTX,
const char *NAME, const char *VALUE,
gpgme_sig_notation_flags_t FLAGS)
SINCE: 1.1.0

The function gpgme_sig_notation_add adds the notation data with
the name NAME and the value VALUE to the context CTX.

Subsequent signing operations will include this notation data, as
well as any other notation data that was added since the creation
of the context or the last gpgme_sig_notation_clear operation.

The arguments NAME and VALUE must be NUL-terminated strings in
human-readable form. The flag GPGME_SIG_NOTATION_HUMAN_READABLE
is implied (non-human-readable notation data is currently not
supported). The strings must be in UTF-8 encoding.

If NAME is NULL, then VALUE should be a policy URL.

The function gpgme_sig_notation_add returns the error code
GPG_ERR_NO_ERROR if the notation data could be added
successfully, GPG_ERR_INV_VALUE if CTX is not a valid pointer, or
if NAME, VALUE and FLAGS are an invalid combination. The function

also passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_sig_notation_t gpgme_sig_notation_get (const gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_get returns the linked list of notation data structures that are contained in the context CTX.

If CTX is not a valid pointer, or there is no notation data added for this context, NULL is returned.

File: gpgme.info, Node: Encrypt, Prev: Sign, Up: Crypto Operations

7.6.5 Encrypt

One plaintext can be encrypted for several recipients at the same time. The list of recipients is created independently of any context, and then passed to the encryption operation.

* Menu:

* Encrypting a Plaintext:: How to encrypt a plaintext.

File: gpgme.info, Node: Encrypting a Plaintext, Up: Encrypt

7.6.5.1 Encrypting a Plaintext
.....

-- Function: gpgme_error_t gpgme_op_encrypt (gpgme_ctx_t CTX, gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt encrypts the plaintext in the data object PLAIN for the recipients RECP and stores the ciphertext in the data object CIPHER. The type of the ciphertext created is determined by the ASCII armor (or, if that is not set, by the encoding specified
for CIPHER) and the text mode attributes set for the context CTX.

RECP must be a NULL-terminated array of keys. The user must keep references for all keys during the whole duration of the call (but see gpgme_op_encrypt_start for the requirements with the asynchronous variant).

The value in FLAGS is a bitwise-or combination of one or multiple
of the following bit values:

GPGME_ENCRYPT_ALWAYS_TRUST
The GPGME_ENCRYPT_ALWAYS_TRUST symbol specifies that all the
recipients in RECP should be trusted, even if the keys do not
have a high enough validity in the keyring. This flag should
be used with care; in general it is not a good idea to use any
untrusted keys.

GPGME_ENCRYPT_NO_ENCRYPT_TO
SINCE: 1.2.0

The GPGME_ENCRYPT_NO_ENCRYPT_TO symbol specifies that no
default or hidden default recipients as configured in the
crypto backend should be included. This
can be useful for
managing different user profiles.

GPGME_ENCRYPT_NO_COMPRESS
SINCE: 1.5.0

The GPGME_ENCRYPT_NO_COMPRESS symbol specifies that the
plaintext shall not be compressed before it is encrypted.
This is in some cases useful if the length of the encrypted
message may reveal information about the plaintext.

GPGME_ENCRYPT_PREPARE
GPGME_ENCRYPT_EXPECT_SIGN
The GPGME_ENCRYPT_PREPARE symbol is used with the UI Server
protocol to prepare an encryption (i.e. sending the
PREP_ENCRYPT command). With the GPGME_ENCRYPT_EXPECT_SIGN
symbol the UI Server is advised to also expect a sign command.

GPGME_ENCRYPT_SYMMETRIC
SINCE: 1.7.0

The GPGME_ENCRYPT_SYMMETRIC symbol specifies that the output
should be additionally encrypted symmetrically even if
recipients are provided. This feature is only supported for
the OpenPGP
crypto engine.

GPGME_ENCRYPT_THROW_KEYIDS
SINCE: 1.8.0

The GPGME_ENCRYPT_THROW_KEYIDS symbols requests that the

identifiers for the decrption keys are not included in the
ciphertext. On the receiving side, the use of this flag may
slow down the decryption process because all available secret
keys must be tried. This flag is only honored for OpenPGP
encryption.

GPGME_ENCRYPT_WRAP
SINCE: 1.8.0

The GPGME_ENCRYPT_WRAP symbol specifies that the input is an
OpenPGP message and not a plain data. This is the counterpart
to GPGME_DECRYPT_UNWRAP.

GPGME_ENCRYPT_WANT_ADDRESS
SINCE: 1.11.0

The GPGME_ENCRYPT_WANT_ADDRESS symbol requests that all
supplied keys or key specifications include a syntactically
valid mail address. If this is not the case the operation is
not even tried and the error code GPG_ERR_INV_USER_ID
is
returned. Only the address part of the key specification is
conveyed to the backend. As of now the key must be specified
using the RECPSTRING argument of the extended encrypt
functions. This feature is currently only supported for the
OpenPGP crypto engine.

If GPG_ERR_UNUSABLE_PUBKEY is returned, some recipients in RECP
are invalid, but not all. In this case the plaintext might be
encrypted for all valid recipients and returned in CIPHER (if this
happens depends on the crypto engine). More information about the
invalid recipients is available with gpgme_op_encrypt_result.

If RECP is NULL, symmetric rather than public key encryption is
performed. Symmetrically encrypted cipher text can be deciphered
with gpgme_op_decrypt. Note that in this case the crypto backend
needs to retrieve a passphrase from the user. Symmetric encryption
is currently only supported for the OpenPGP
crypto backend.

The function returns the error code GPG_ERR_NO_ERROR if the
ciphertext could be created successfully, GPG_ERR_INV_VALUE if
CTX, RECP, PLAIN or CIPHER is not a valid pointer,
GPG_ERR_UNUSABLE_PUBKEY if RECP contains some invalid recipients,
GPG_ERR_BAD_PASSPHRASE if the passphrase for the symmetric key
could not be retrieved, and passes through any errors that are
reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_encrypt_start (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)

The function gpgme_op_encrypt_start initiates a gpgme_op_encrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

References to the keys only need to be held for the duration of this call. The user can release its references to the keys after this function returns, even
if the operation is not yet finished.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, RSET, PLAIN or CIPHER is not a valid pointer, and GPG_ERR_UNUSABLE_PUBKEY if RSET does not contain any valid recipients.

-- Function: gpgme_error_t gpgme_op_encrypt_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. Leading and trailing white space is remove from each line in RECPSTRING. The keys
are then passed verbatim to the backend engine.

For the OpenPGP backend several special keywords are supported to modify the operation. These keywords are given instead of a key specification. The currently supported keywords are:

--hidden
--no-hidden
These keywords toggle between normal and hidden recipients for all following key specifications. When a hidden recipient is requested the gpg option -R (or -F in file mode) is used instead of -r (-f in file mode).

--file
--no-file

These keywords toggle between regular and file mode for all following key specification. In file mode the option -f or -F is passed to gpg. At least GnuPG version 2.1.14 is required to handle these options. The GPGME_ENCRYPT_WANT_ADDRESS flag is ignored in file mode.

--

This keyword disables all keyword detection up to the end of the string. All keywords are treated as verbatim arguments.

To create a RECPSTRING it is often useful to employ a strconcat style function. For example this function creates a string to encrypt to two keys:

```
char *
xbuild_recpstring (const char *key1, const char *key2)
{
  char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
  if (!result)
    { perror ("strconcat failed"); exit (2); }
  return result;
}
```

Note the use of the double dash here; unless you want to specify a keyword, it is a good idea to avoid any possible trouble with key specifications starting with a double dash. The used strconcat function is available in Libgpg-error 1.28 and later; Libgpg-error (aka Gpgrt) is a dependency of GPGME. The number of arguments to gpgrt_strconcat is limited to 47 but that should always be sufficient. In case a larger and non-fixed number of keys are to be supplied the following code can be used:

```
char *
xbuild_long_recpstring (void)
{
  gpgrt_stream_t memfp;
  const char *s;
  void *result;

  memfp = gpgrt_fopenmem (0, "w+b");
  if (!memfp)
    { perror ("fopenmem failed"); exit (2); }
  gpgrt_fputs ("--", memfp);
  while ((s = get_next_keyspec ()))
    {
      gpgrt_fputc ('\n', memfp);
```

```
          gpgrt_fputs (s, memfp);
        }
      gpgrt_fputc (0, memfp);
      if (gpgrt_ferror (memfp))
        { perror ("writing to memstream failed"); exit (2); }
      if (gpgrt_fclose_snatch (memfp, &result, NULL))
        { perror ("fclose_snatch failed"); exit (2); }
      return result;
    }
```

In this example get_next_keyspec is expected to return the next key to be added to the string. Please take care: Encrypting to a large number of recipients
is often questionable due to security reasons and also for the technicality that all keys are currently passed on the command line to gpg which has as a platform specific length limitation.

-- Function: gpgme_error_t gpgme_op_encrypt_ext_start (gpgme_ctx_t CTX, gpgme_key_t RECP[], const char *RECPSTRING, gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN, gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_start with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. The keys are passed verbatim to the backend engine.

-- Data type: gpgme_encrypt_result_t
This is a pointer to a structure used to store the result of a gpgme_op_encrypt
operation. After successfully encrypting data, you can retrieve the pointer to the result with gpgme_op_encrypt_result. The structure contains the following members:

gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which the data could not be encrypted.

-- Function: gpgme_encrypt_result_t gpgme_op_encrypt_result (gpgme_ctx_t CTX)
The function gpgme_op_encrypt_result returns a

gpgme_encrypt_result_t pointer to a structure holding the result
of a gpgme_op_encrypt operation. The pointer is only valid if
the last operation on the context was a gpgme_op_encrypt,
gpgme_op_encrypt_start, gpgme_op_sign or gpgme_op_sign_start
operation. If this operation failed, this might be a NULL
pointer. The returned pointer is only valid until the next
operation is started on the context.

-- Function: gpgme_error_t gpgme_op_encrypt_sign (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt_sign does a combined encrypt and
sign operation. It is used like gpgme_op_encrypt, but the
ciphertext also contains signatures for the signers listed in CTX.

The combined encrypt and sign operation is currently only available
for the OpenPGP crypto engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[],
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)
The function gpgme_op_encrypt_sign_start initiates a
gpgme_op_encrypt_sign operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully, and GPG_ERR_INV_VALUE if
CTX, RSET, PLAIN or CIPHER is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign with
RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING
is not NULL, the latter is expected to be a linefeed delimited
string with the set of key specifications. In contrast to RECP the
keys are given directly as strings and there is no need to first
create the key objects. The keys are passed verbatim to the
backend engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,

gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign_start with
RECPSTRING
as additional parameter. If RECP is NULL and RECPSTRING
is not NULL, the latter is expected to be a linefeed delimited
string with the set of key specifications. In contrast to RECP the
keys are given directly as strings and there is no need to first
create the key objects. The keys are passed verbatim to the
backend engine.

File: gpgme.info, Node: Miscellaneous, Next: Run Control, Prev: Crypto Operations, Up: Contexts

7.7 Miscellaneous operations
==========

Here are some support functions which are sometimes useful.

* Menu:

* Running other Programs:: Running other Programs
* Using the Assuan protocol:: Using the Assuan protocol
* Checking for updates:: How to check for software updates

File: gpgme.info, Node: Running other Programs, Next: Using the Assuan protocol, Up: Miscellaneous

7.7.1 Running other Programs

GPGME features an internal subsystem to run the actual backend engines.
Along
with data abstraction object this subsystem can be used to run
arbitrary simple programs which even need not be related to
cryptographic features. It may for example be used to run tools which
are part of the GnuPG system but are not directly accessible with the
GPGME API.

-- Function: gpgme_error_t gpgme_op_spawn (gpgme_ctx_t CTX,
const char *FILE, const char *ARGV[], gpgme_data_t DATAIN,
gpgme_data_t DATAOUT, gpgme_data_t DATAERR,
unsigned int FLAGS)

SINCE: 1.5.0

The function gpgme_op_spawn runs the program FILE with the arguments taken from the NULL terminated array ARGV. If no arguments are required ARGV may be given as NULL. In the latter case or if argv[0] is the empty string, GPGME uses the basename of FILE for argv[0]. The file descriptors stdin, stdout, and stderr are connected to the data objects DATAIN, DATAOUT, and DATAERR. If NULL is passed for one of these data objects the corresponding
file descriptor is connected to /dev/null.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_SPAWN_DETACHED
SINCE: 1.5.0

Under Windows this flag inhibits the allocation of a new console for the program. This is useful for a GUI application which needs to call a command line helper tool.

GPGME_SPAWN_ALLOW_SET_FG
SINCE: 1.5.0

Under Windows this flag allows the called program to put itself into the foreground.

-- Function: gpgme_error_t gpgme_op_spawn_start (gpgme_ctx_t CTX,
const char *FILE, const char *ARGV[], gpgme_data_t DATAIN,
gpgme_data_t DATAOUT, gpgme_data_t DATAERR,
unsigned int FLAGS)

SINCE: 1.5.0

This is the asynchronous variant of gpgme_op_spawn.

File: gpgme.info, Node: Using the Assuan protocol, Next: Checking for updates, Prev: Running other Programs, Up: Miscellaneous

7.7.2
Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers. By default it is connected to the GnuPG agent, but it may be connected to arbitrary servers by using gpgme_ctx_set_engine_info, passing the location of the servers socket as FILE_NAME argument, and an empty string as HOME_DIR argument.

The Assuan protocol functions use three kinds of callbacks to transfer data:

-- Data type: gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN)

SINCE: 1.2.0

This callback receives any data sent by the server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, DATA of length DATALEN refers to the data sent.

-- Data type: gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA)

SINCE: 1.2.0

This callback is used to provide additional data to the Assuan

server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, NAME and ARGS specify what kind of data the server requested, and R_DATA is used to return the actual data.

Note: Returning data is currently not implemented in GPGME.

-- Data type: gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE, const char *STATUS, const char *ARGS)

SINCE: 1.2.0

This callback receives any status lines sent by the server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, STATUS and ARGS denote the status update sent.

-- Function: gpgme_error_t gpgme_op_assuan_transact_start (gpgme_ctx_t CTX, const char *COMMAND, gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE, gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE, gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE)

SINCE: 1.2.0

Send the Assuan COMMAND and return results via the callbacks. Any callback may be NULL. The result of the operation may be retrieved using gpgme_wait_ext.

Asynchronous variant.

-- Function: gpgme_error_t gpgme_op_assuan_transact_ext
(gpgme_ctx_t CTX, const char *COMMAND,
gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE,
gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE,
gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE,
gpgme_error_t *OP_ERR)

Send the Assuan COMMAND and return results via the callbacks. The result of the operation is returned in OP_ERR.

Synchronous variant.

File: gpgme.info, Node: Checking for updates, Prev: Using the Assuan protocol, Up: Miscellaneous

7.7.3 How to check for software updates

The GnuPG Project operates a server to query the current versions of software packages related to GnuPG. GPGME can be used to access this online database and check whether a new version of a software package is available.

-- Data type: gpgme_query_swdb_result_t
SINCE: 1.8.0

This is a pointer to a structure used to store the result of a gpgme_op_query_swdb operation. After success full call to that function, you can retrieve the pointer to the result with gpgme_op_query_swdb_result. The structure contains the following member:

name
This is the name of the package.

iversion
The currently installed version or an empty string. This value is either a copy of the argument given to gpgme_op_query_swdb or the version of the installed software as figured out by GPGME or GnuPG.

created
This gives the date the file with the list of version numbers has originally be created by the GnuPG project.

retrieved
This gives the date the file was downloaded.

warning
If this flag is set either an error has occurred or some of
the
information in this structure are not properly set. For
example if the version number of the installed software could
not be figured out, the update flag may not reflect a
required update status.

update
If this flag is set an update of the software is available.

urgent
If this flag is set an available update is important.

noinfo
If this flag is set, no valid information could be retrieved.

unknown
If this flag is set the given name is not known.

tooold
If this flag is set the available information is not fresh
enough.

error
If this flag is set some other error has occurred.

version
The version string of the latest released version.

reldate
The release date of the latest released version.

-- Function: gpgme_error_t gpgme_op_query_swdb (gpgme_ctx_t CTX,
const char *NAME, const char *IVERSION, gpgme_data_t RESERVED)

SINCE: 1.8.0

Query the software version database for software package NAME and
check against the installed version given by IVERSION. If IVERSION
is given as NULL a check is only done if GPGME can figure out the
version by itself (for example when using "gpgme" or "gnupg"). If
NULL is used for NAME the current gpgme version is checked.
RESERVED must be set to 0.

-- Function: gpgme_query_swdb_result_t gpgme_op_query_swdb_result
(gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_op_query_swdb_result returns a gpgme_query_swdb_result_t pointer to a structure holding the result of a gpgme_op_query_swdb operation. The pointer is only valid if the last operation on the context was a successful call to gpgme_op_query_swdb. If that call failed, the result might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context CTX.

Here is an example on
how to check whether GnuPG is current:

```
#include <gpgme.h>

int
main (void)
{
  gpg_error_t err;
  gpgme_ctx_t ctx;
  gpgme_query_swdb_result_t result;

  gpgme_check_version (NULL);
  err = gpgme_new (&ctx);
  if (err)
    fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
  else
    {
      gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

      err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
      if (err)
        fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
      else
        {
          result = gpgme_op_query_swdb_result (ctx);
          if (!result)
            fprintf (stderr, "error querying swdb\n");
          if (!result->warning && !result->update)
            printf ("GnuPG version %s is current\n",
                    result->iversion);
          else if (!result->warning && result->update)

      printf ("GnuPG version %s can be updated to %s\n",
                    result->iversion, result->version);
```

```
          else
            fprintf (stderr, "error finding the update status\n");
         }
       gpgme_release (ctx);
     }
   return 0;
 }
```

File: gpgme.info, Node: Run Control, Prev: Miscellaneous, Up: Contexts

7.8 Run Control

GPGME supports running operations synchronously and asynchronously. You can use asynchronous operation to set up a context up to initiating the desired operation, but delay performing it to a later point.

Furthermore, you can use an external event loop to control exactly when GPGME runs. This ensures that GPGME only runs when necessary and also prevents it from blocking for a long time.

* Menu:

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

File: gpgme.info, Node: Waiting For Completion, Next: Using External Event Loops, Up: Run Control

7.8.1 Waiting For Completion

-- Function: gpgme_ctx_t gpgme_wait (gpgme_ctx_t CTX, gpgme_error_t *STATUS, int HANG)

The function gpgme_wait continues the pending operation within the context CTX. In particular, it ensures the data exchange between GPGME and the crypto backend and watches over the run time status of the backend process.

If HANG is true, the function does not return until the operation is completed or cancelled. Otherwise the function will not block for a long time.

The error status of the finished operation is returned in STATUS if gpgme_wait does not return NULL.

The CTX argument can be NULL. In that case, gpgme_wait waits for any context to complete its operation.

gpgme_wait can be used only in conjunction with any context that has a pending operation initiated with one of the gpgme_op_*_start functions except gpgme_op_keylist_start and gpgme_op_trustlist_start (for which you should use the corresponding gpgme_op_*_next functions). If CTX is NULL, all of such contexts are waited upon and possibly returned. Synchronous operations running in parallel, as well as key and trust item list operations, do not affect gpgme_wait.

In a multi-threaded environment, only one thread should ever call gpgme_wait at any time, regardless of whether CTX is specified or not. This means that all calls to this function should be fully synchronized by locking primitives. It is safe to start asynchronous operations while a thread is running in gpgme_wait.

The function returns the CTX of the context which has finished the operation. If HANG is false, and the timeout expires, NULL is returned and *status will be set to 0. If an error occurs, NULL is returned and the error is returned in *status.

File: gpgme.info, Node: Using External Event Loops, Next: Cancellation, Prev: Waiting For Completion, Up: Run Control

7.8.2 Using External Event Loops

GPGME hides the complexity of the communication between the library and the crypto engine. The price of this convenience is that the calling thread can block arbitrary long waiting for the data returned by the crypto engine. In single-threaded programs, in particular if they are interactive, this is an unwanted side-effect. OTOH, if gpgme_wait is used without the HANG option being enabled, it might be called unnecessarily often, wasting CPU time that could be used otherwise.

The I/O callback interface described in this section lets the user take control over what happens when. GPGME will provide the user with the file descriptors that should be monitored, and the callback functions that should be invoked when a file descriptor is ready for reading or writing. It is then the users responsibility to decide when to check the file descriptors and when to invoke the callback functions.

Usually this is done in an event loop, that also checks for events in other parts of the program. If the callback functions are only called when the file descriptors are ready, GPGME will never block. This gives the user more control over the program flow, and allows to perform other tasks when GPGME would block otherwise.

By using this advanced mechanism, GPGME can be integrated smoothly into GUI toolkits like GTK+ even for single-threaded programs.

* Menu:

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use GPGME with GTK+.
* I/O Callback Example GDK:: How to use GPGME with GDK.
* I/O Callback Example Qt:: How to use GPGME with Qt.

File: gpgme.info, Node: I/O Callback Interface, Next: Registering I/O Callbacks, Up: Using External Event Loops

7.8.2.1 I/O Callback Interface
.....

-- Data type: gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD)
The gpgme_io_cb_t type is the type of functions which GPGME wants to register as I/O callback handlers using the gpgme_register_io_cb_t functions provided by the user.

DATA and FD are provided by GPGME when the I/O callback handler is registered, and should be passed through to the handler when it is invoked by the user because it noticed activity on the file descriptor FD.

The callback handler always returns 0, but you should consider the return value to be reserved for later use.

-- Data type: gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG)
The gpgme_register_io_cb_t type is the type of functions which can be called by GPGME to register an I/O callback function FNC for the file descriptor FD with the user. FNC_DATA should be passed as the first argument to FNC when the handler is invoked (the second argument should be FD). If DIR is 0, FNC should be called by the user when FD is ready for writing. If DIR is 1, FNC should be

called when FD is ready for reading.

DATA was provided by the user when registering the gpgme_register_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the event loop to which the file descriptor should be added.

GPGME will call this function when a crypto operation is initiated in a context for which the user has registered I/O callback handler functions with gpgme_set_io_cbs. It can also call this function when it is in an I/O callback handler for a file descriptor associated to this context.

The user should return a unique handle in TAG identifying this I/O callback registration, which will be passed to the gpgme_register_io_cb_t function without interpretation when the file descriptor should not be monitored anymore.

-- Data type: void (*gpgme_remove_io_cb_t) (void *TAG)
The gpgme_remove_io_cb_t type is the type of functions which can be called by GPGME to remove an I/O callback handler that was registered before. TAG is the handle that was returned by the gpgme_register_io_cb_t for this I/O callback.

GPGME can call this function when a crypto operation is in an I/O callback. It will also call this function when the context is destroyed while an operation is pending.

-- Data type: enum gpgme_event_io_t
The gpgme_event_io_t type specifies the type of an event that is reported to the user by GPGME as a consequence of an I/O operation. The following events are defined:

GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the registered I/O callback handlers now. Note that registered I/O callback handlers must not be run before this event is signalled. TYPE_DATA is NULL and reserved for later use.

GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation was removed. The accompanying TYPE_DATA points to a struct gpgme_io_event_done_data variable that contains the status of the operation that finished. This event is

signalled after the last I/O callback has been removed.

GPGME_EVENT_NEXT_KEY
In a gpgme_op_keylist_start operation, the next key was received from the crypto engine. The accompanying TYPE_DATA is a gpgme_key_t variable that contains the key with one reference for the user.

-- Data type: void (*gpgme_event_io_cb_t)
(void *DATA,
gpgme_event_io_t TYPE, void *TYPE_DATA)
The gpgme_event_io_cb_t type is the type of functions which can be called by GPGME to signal an event for an operation running in a context which has I/O callback functions registered by the user.

DATA was provided by the user when registering the gpgme_event_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the context in which this event has occurred.

TYPE will specify the type of event that has occurred. TYPE_DATA specifies the event further, as described in the above list of possible gpgme_event_io_t types.

GPGME can call this function in an I/O callback handler.

File: gpgme.info, Node: Registering I/O Callbacks, Next: I/O Callback Example, Prev: I/O Callback Interface, Up: Using External Event Loops

7.8.2.2 Registering I/O Callbacks
.....

-- Data type: struct gpgme_io_cbs
This structure is used to store the I/O callback interface functions described in the previous section. It has the following members:

gpgme_register_io_cb_t add
This is the function called by GPGME to register an I/O callback handler. It must be specified.

void *add_priv
This is passed as the first argument to the add function when it is called by GPGME. For example, it can be used to determine the event loop to which the file descriptor should be added.

gpgme_remove_io_cb_t remove
This is the function called by GPGME to remove an I/O callback handler. It must be specified.

gpgme_event_io_cb_t event
This is the function called by GPGME to signal an event for an operation. It must be specified, because at least the start event must be processed.

void *event_priv
This is passed as the first argument to the event function when it is called by GPGME. For example, it can be used to determine the context in which the event has occurred.

-- Function: void gpgme_set_io_cbs (gpgme_ctx_t CTX, struct gpgme_io_cbs *IO_CBS)
The function gpgme_set_io_cbs enables the I/O callback interface for the context CTX. The I/O callback functions are specified by IO_CBS.

If IO_CBS->add is NULL, the I/O callback interface is disabled for the context, and normal operation is restored.

-- Function: void gpgme_get_io_cbs (gpgme_ctx_t CTX, struct gpgme_io_cbs *IO_CBS)
The function gpgme_get_io_cbs returns the I/O callback functions set with gpgme_set_io_cbs in IO_CBS.

File: gpgme.info, Node: I/O Callback Example, Next: I/O Callback Example GTK+, Prev: Registering I/O Callbacks, Up: Using External Event Loops

7.8.2.3 I/O Callback Example
.....

To actually use an external event loop, you have to implement the I/O callback functions that are used by GPGME to register and unregister file descriptors. Furthermore, you have to actually monitor these file descriptors for activity and call the appropriate I/O callbacks.

The following example illustrates how to do that. The example uses locking to show in which way the callbacks and the event loop can run concurrently. For the event loop, we use a fixed array. For a real-world implementation, you should use a dynamically sized structure because the number of file descriptors needed for a crypto operation in GPGME is not predictable.

```
  #include <assert.h>
  #include <errno.h>
  #include <stdlib.h>
  #include <pthread.h>
  #include <sys/types.h>
  #include <gpgme.h>

  /* The following structure holds the result of a crypto operation.  */
  struct op_result
  {
    int done;
    gpgme_error_t err;
  };

  /* The following structure holds the
data associated with one I/O
  callback.  */
  struct one_fd
  {
    int fd;
    int dir;
    gpgme_io_cb_t fnc;
    void *fnc_data;
    void *loop;
  };

  struct event_loop
  {
    pthread_mutex_t lock;
  #define MAX_FDS 32
    /* Unused slots are marked with FD being -1.  */
    struct one_fd fds[MAX_FDS];
  };
```

The following functions implement the I/O callback interface.

```
  gpgme_error_t
  add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
     void **r_tag)
  {
    struct event_loop *loop = data;
    struct one_fd *fds = loop->fds;
    int i;

    pthread_mutex_lock (&loop->lock);
    for (i = 0; i < MAX_FDS; i++)
      {
```

```
      if (fds[i].fd == -1)
    {
     fds[i].fd = fd;
     fds[i].dir = dir;
     fds[i].fnc = fnc;
     fds[i].fnc_data = fnc_data;
     fds[i].loop = loop;
     break;
    }
      }
    pthread_mutex_unlock (&loop->lock);
     if (i == MAX_FDS)
      return gpg_error (GPG_ERR_GENERAL);
    *r_tag = &fds[i];
    return 0;
  }

  void
  remove_io_cb (void *tag)
  {
    struct one_fd *fd = tag;
    struct event_loop *loop = fd->loop;

    pthread_mutex_lock (&loop->lock);
    fd->fd = -1;
    pthread_mutex_unlock (&loop->lock);
  }

  void
  event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
  {
    struct op_result *result = data;

    /* We don't support list operations here.  */
    if (type == GPGME_EVENT_DONE)
      {
        result->done = 1;
        result->err = *type_data;
      }
  }
```

The final missing piece is the event loop, which will be presented next. We only support waiting for the success of a single operation.

```
  int
  do_select (struct event_loop *loop)
  {
    fd_set rfds;
```

```
    fd_set wfds;
    int i, n;
    int any = 0;
    struct timeval tv;
    struct one_fd *fdlist
= loop->fds;

    pthread_mutex_lock (&loop->lock);
    FD_ZERO (&rfds);
    FD_ZERO (&wfds);
    for (i = 0; i < MAX_FDS; i++)
      if (fdlist[i].fd != -1)
        FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
    pthread_mutex_unlock (&loop->lock);

    tv.tv_sec = 0;
    tv.tv_usec = 1000;

    do
      {
        n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
      }
    while (n < 0 && errno == EINTR);

    if (n < 0)
      return n; /* Error or timeout.  */

    pthread_mutex_lock (&loop->lock);
    for (i = 0; i < MAX_FDS && n; i++)
      {
        if (fdlist[i].fd != -1)
   {
     if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
       {
         assert (n);
         n--;
         any = 1;
               /* The I/O callback handler can register/remove callbacks,
                  so we have to unlock the file descriptor list.  */
               pthread_mutex_unlock (&loop->lock);
          (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
               pthread_mutex_lock (&loop->lock);
       }
   }
      }
    pthread_mutex_unlock (&loop->lock);
    return any;
  }
```

```
void
wait_for_op (struct event_loop *loop, struct op_result *result)
{
  int ret;

  do
    {
      ret = do_select (loop);
    }
  while (ret >= 0 && !result->done);
}
```

The main function shows how to put it all together.

```
int
main (int argc, char *argv[])
{
  struct event_loop loop;
  struct op_result result;
  gpgme_ctx_t ctx;
  gpgme_error_t err;
  gpgme_data_t sig, text;
  int i;
  pthread_mutexattr_t attr;
  struct gpgme_io_cbs io_cbs =
  {
    add_io_cb,
    &loop,
    remove_io_cb,
    event_io_cb,
    &result
  };

  init_gpgme ();

  /* Initialize the loop structure.  */

  /* The mutex must be
recursive, since remove_io_cb (which acquires a
     lock) can be called while holding a lock acquired in do_select.  */
  pthread_mutexattr_init (&attr);
  pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
  pthread_mutex_init (&loop.lock, &attr);
  pthread_mutexattr_destroy (&attr);

  for (i = 0; i < MAX_FDS; i++)
    loop.fds[i].fd = -1;
```

```
    /* Initialize the result structure.  */
    result.done = 0;

    err = gpgme_data_new_from_file (&sig, "signature", 1);
    if (!err)
      err = gpgme_data_new_from_file (&text, "text", 1);
    if (!err)
      err = gpgme_new (&ctx);
    if (!err)
      {
        gpgme_set_io_cbs (ctx, &io_cbs);
        err = gpgme_op_verify_start (ctx, sig, text, NULL);
      }
    if (err)
      {
        fprintf (stderr, "gpgme error: %s: %s\n",
                 gpgme_strsource (err), gpgme_strerror (err));
        exit (1);
      }

    wait_for_op (&loop,
&result);
    if (!result.done)
      {
        fprintf (stderr, "select error\n");
        exit (1);
      }
    if (!result.err)
      {
        fprintf (stderr, "verification failed: %s: %s\n",
                 gpgme_strsource (result.err), gpgme_strerror (result.err));
        exit (1);
      }
    /* Evaluate verify result.  */
    ...
    return 0;
  }
```

File: gpgme.info, Node: I/O Callback Example GTK+, Next: I/O Callback Example GDK, Prev: I/O Callback Example, Up: Using External Event Loops

7.8.2.4 I/O Callback Example GTK+

The I/O callback interface can be used to integrate GPGME with the GTK+ event loop. The following code snippets shows how this can be done

using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GTK+ specific setup.

```
#include <gtk/gtk.h>

struct my_gpgme_io_cb
{
  gpgme_io_cb_t fnc;
  void *fnc_data;
  guint input_handler_id
};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
{
  struct my_gpgme_io_cb *iocb = data;
  (*(iocb->fnc)) (iocb->data, source);
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gtk_input_remove (data->input_handler_id);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->input_handler_id = gtk_input_add_full (fd, dir
                                               ? GDK_INPUT_READ
                                               : GDK_INPUT_WRITE,
                                              my_gpgme_io_callback,
                                              0, iocb, NULL);
  *tag = iocb;
  return 0;
}
```

File: gpgme.info, Node: I/O Callback Example GDK, Next: I/O Callback Example Qt, Prev: I/O Callback Example GTK+, Up: Using External Event Loops

7.8.2.5 I/O Callback Example GDK
.....

The I/O callback interface can also be used to integrate GPGME with the GDK event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

```
#include <gdk/gdk.h>

struct my_gpgme_io_cb
{
  gpgme_io_cb_t fnc;
  void *fnc_data;
  gint tag;

};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
{
  struct my_gpgme_io_cb *iocb = data;
  (*(iocb->fnc)) (iocb->data, source);
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gdk_input_remove (data->tag);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                  my_gpgme_io_callback, iocb, NULL);
  *tag = iocb;
  return 0;
```

```
}
```

File: gpgme.info, Node: I/O Callback Example Qt, Prev: I/O Callback Example GDK, Up: Using External Event Loops

7.8.2.6 I/O Callback Example Qt
.....

The
I/O callback interface can also be used to integrate GPGME with the
Qt event loop. The following code snippets show how this can be done
using the appropriate register and remove I/O callback functions. In
this example, the private data of the register I/O callback function is
unused. The event notifications is missing because it does not require
any Qt specific setup.

```
#include <qsocketnotifier.h>
#include <qapplication.h>

struct IOCB {
  IOCB( GpgmeIOCb f, void * d, QSocketNotifier * n )
    : func( f ), data( d ), notifier( n ) {}
  GpgmeIOCb func;
  void * data;
  QSocketNotifier * notifier;
}

class MyApp : public QApplication {

  // ...

  static void registerGpgmeIOCallback( void * data, int fd, int dir,
                                       GpgmeIOCb func, void * func_data,
                                       void ** tag ) {
    QSocketNotifier * n =
      new QSocketNotifier(
fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write );
    connect( n, SIGNAL(activated(int)),
             qApp, SLOT(slotGpgmeIOCallback(int)) );
    qApp->mIOCBs.push_back( IOCB( func, func_data, n ) );
    *tag = (void*)n;
  }

  static void removeGpgmeIOCallback( void * tag ) {
    if ( !tag ) return;
    QSocketNotifier * n = static_cast<QSocketNotifier*>( tag );
```

```
      for ( QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
            it != qApp->mIOCBs.end() ; ++it )
        if ( it->notifier == n ) {
          delete it->notifier;
          qApp->mIOCBs.erase( it );
          return;
        }
      }

    public slots:
      void slotGpgmeIOCallback( int fd ) {
        for ( QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
              it != mIOCBs.end() ; ++it )
          if ( it->notifier && it->notifier->socket() == fd )
            (*(it->func))
  ( it->func_data, fd );
      }

      // ...

    private:
      QValueList<IOCB> mIOCBs;
      // ...
    };
```


7.8.3 Cancellation

Sometimes you do not want to wait for an operation to finish. GPGME provides two different functions to achieve that. The function gpgme_cancel takes effect immediately. When it returns, the operation is effectively canceled. However, it has some limitations and can not be used with synchronous operations. In contrast, the function gpgme_cancel_async can be used with any context and from any thread, but it is not guaranteed to take effect immediately. Instead, cancellation occurs at the next possible time (typically the next time I/O occurs in the target context).

-- Function: gpgme_ctx_t gpgme_cancel (gpgme_ctx_t CTX)
SINCE: 0.4.5

The function gpgme_cancel attempts to cancel a pending operation in the context
CTX. This only works if you use the global event loop or your own event loop.

If you use the global event loop, you must not call gpgme_wait during cancellation. After successful cancellation, you can call gpgme_wait (optionally waiting on CTX), and the context CTX will appear as if it had finished with the error code GPG_ERR_CANCEL.

If you use an external event loop, you must ensure that no I/O callbacks are invoked for this context (for example by halting the event loop). On successful cancellation, all registered I/O callbacks for this context will be unregistered, and a GPGME_EVENT_DONE event with the error code GPG_ERR_CANCEL will be signalled.

The function returns an error code if the cancellation failed (in this case the state of CTX is not modified).

-- Function: gpgme_ctx_t gpgme_cancel_async (gpgme_ctx_t CTX)
SINCE: 1.1.7

The function gpgme_cancel_async attempts to cancel a pending operation
in the context CTX. This can be called by any thread at any time after starting an operation on the context, but will not take effect immediately. The actual cancellation happens at the next time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in this case the state of CTX is not modified).

Appendix A The GnuPG UI Server Protocol

This section specifies the protocol used between clients and a User Interface Server (UI server). This protocol helps to build a system where all cryptographic operations are done by a server and the server is responsible for all dialogs. Although GPGME has no direct support for this protocol it is believed that servers will utilize the GPGME library; thus having the specification included in this manual is an appropriate choice. This protocol
should be referenced as The GnuPG UI Server Protocol.

A server needs to implement these commands:(1)

* Menu:

* UI Server Encrypt:: Encrypt a message.
* UI Server Sign:: Sign a message.
* UI Server Decrypt:: Decrypt a message.
* UI Server Verify:: Verify a message.
* UI Server Set Input Files:: Specifying the input files to operate on.
* UI Server Sign/Encrypt Files:: Encrypting and signing files.
* UI Server Verify/Decrypt Files:: Decrypting and verifying files.
* UI Server Import/Export Keys:: Managing certificates.
* UI Server Checksum Files:: Create and verify checksums for files.
* Miscellaneous UI Server Commands:: Commands not related to a specific operation.

---------- Footnotes ----------

(1) In all examples we assume that the connection has already been established; see the Assuan manual for details.

File: gpgme.info, Node: UI Server Encrypt, Next: UI Server Sign, Up: UI Server Protocol

A.1 UI Server: Encrypt a Message
==========

Before encryption can be done the recipients must be set using the command:

-- Command: RECIPIENT STRING

Set the recipient for the encryption. STRING is an RFC-2822 recipient name ("mailbox" as per section 3.4). This command may or may not check the recipient for validity right away; if it does not all recipients are expected to be checked at the time of the ENCRYPT command. All RECIPIENT commands are cumulative until a successful ENCRYPT command or until a RESET command. Linefeeds are obviously not allowed in STRING and should be folded into spaces (which are equivalent).

To tell the server the source and destination of the data, the next two commands are to be used:

-- Command: INPUT FD=N

Set the file descriptor for the message to be encrypted to N. The message send to the server is binary encoded.

GpgOL is a Windows only program, thus N is not a libc file descriptor but a regular system handle. Given that the Assuan

connection works over a socket, it is not possible to use regular
inheritance to make the file descriptor available to the server.
Thus DuplicateHandle needs to be used to duplicate a handle to
the server process. This is the reason that the server needs to
implement the GETINFO pid command. Sending this command a second
time replaces the file descriptor set by the last one.

-- Command: OUTPUT FD=N [--binary]
Set the file descriptor to be used for the output (i.e. the
encrypted message) to N. If the option --binary is given the
output shall be in binary format; if not given, the output for
OpenPGP needs to be ASCII armored and for CMS Base-64 encoded. For
details on the file descriptor, see the INPUT command.

The setting of the recipients, the data source and destination may
happen in any order, even intermixed. If this has been
done the actual
encryption operation is called using:

-- Command: ENCRYPT --protocol=NAME

This command reads the plaintext from the file descriptor set by
the INPUT command, encrypts it and writes the ciphertext to the
file descriptor set by the OUTPUT command. The server may (and
should) overlap reading and writing. The recipients used for the
encryption are all the recipients set so far. If any recipient is
not usable the server should take appropriate measures to notify
the user about the problem and may cancel the operation by
returning an error code. The used file descriptors are void after
this command; the recipient list is only cleared if the server
returns success.

Because GpgOL uses a streaming mode of operation the server is not
allowed to auto select the protocol and must obey to the mandatory
PROTOCOL parameter:

OpenPGP
Use the OpenPGP protocol (RFC-2440).
CMS
Use the CMS
(PKCS#7) protocol (RFC-3852).

To support automagically selection of the protocol depending on the
selected keys, the server MAY implement the command:

-- Command: PREP_ENCRYPT [--protocol=NAME] [--expect-sign]

This commands considers all recipients set so far and decides

whether it is able to take input and start the actual encryption.
This is kind of a dry-run ENCRYPT without requiring or using the
input and output file descriptors. The server shall cache the
result of any user selection to avoid asking this again when the
actual ENCRYPT command is send. The --protocol option is
optional; if it is not given, the server should allow the user to
select the protocol to be used based on the recipients given or by
any other means.

If --expect-sign is given the server should expect that the
message will also be signed and use this hint to present a unified
recipient and signer selection dialog if possible and desired.
A
selected signer should then be cached for the expected SIGN command
(which is expected in the same session but possible on another
connection).

If this command is given again before a successful ENCRYPT
command, the second one takes effect.

Before sending the OK response the server shall tell the client the
protocol to be used (either the one given by the argument or the
one selected by the user) by means of a status line:

-- Status line: PROTOCOL NAME
Advise the client to use the protocol NAME for the ENCRYPT
command. The valid protocol names are listed under the description
of the ENCRYPT command. The server shall emit exactly one
PROTOCOL status line.

Here is an example of a complete encryption sequence; client lines are
indicated by a C:, server responses by C::

C: RESET
S: OK
C: RECIPIENT foo@example.net
S: OK
C: RECIPIENT bar@example.com
S: OK
C: PREP_ENCRYPT
S: S PROTOCOL OpenPGP
S: OK
C: INPUT FD=17
S: OK
C: OUTPUT FD=18
S: OK
C: ENCRYPT
S: OK

File: gpgme.info, Node: UI Server Sign, Next: UI Server Decrypt, Prev: UI Server Encrypt, Up: UI Server Protocol

A.2 UI Server: Sign a Message
==========

The server needs to implement opaque signing as well as detached signing. Due to the nature of OpenPGP messages it is always required to send the entire message to the server; sending just the hash is not possible. The following two commands are required to set the input and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be signed to N. The message send to the server is binary encoded. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N [--binary]
Set the file descriptor to be used for the output. The output is either the complete signed message or in case of a detached signature just that detached signature. If the option --binary is given the output shall be in binary format; if not given, the output for OpenPGP needs to be ASCII armored and for CMS Base-64 encoded. For details on the file descriptor, see the INPUT command.

To allow the server the selection of a non-default signing key the client may optionally use the SENDER command, see *note command SENDER::.

The signing operation is then initiated by:

-- Command: SIGN --protocol=NAME [--detached]
Sign the data set with the INPUT command and write it to the sink set by OUTPUT. NAME is the signing protocol used for the message. For a description of the allowed protocols see the ENCRYPT command. With option --detached given, a detached signature is created; this is actually the usual way the command is used.

The client expects the server to send at least this status information before the final OK response:

-- Status line: MICALG STRING

The STRING represents the hash algorithm used to create the
signature. It is used with RFC-1847 style signature messages and
defined by PGP/MIME (RFC-3156) and S/MIME (RFC-3851). The GPGME
library has a supporting function gpgme_hash_algo_name to return
the algorithm name as a string. This string needs to be lowercased
and for OpenPGP prefixed with "pgp-".

-----BEGIN PGP PRIVATE KEY BLOCK-----

lQOYBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAEAB/wLJ0gyMjs2fFfT83wM
5Lzz2yQIwV4t3bblBAujdHTqeN5Zmsm/oakFyjSokULK96Kv0R4ej9eoIgMFvxFk
HRkrggxTrbsNJ7I6QcKYHTPeIIj318ykNL6fj0WJUcdPIENukXl5jbqNyk3/4D2y
TTDySyq6jHTgvMH4K4KJUSpglvSJPntTk9RhuFGHAF+sNR9atygDYctAaERMRtSg
LCoSt/AoX5GRMlQjXT9oqQjwSQoZyF4s8HMC8wdTFIE/E0L4IVdHVp8sz2UszNtT
W/evmCA+KVruKjRH/Fhrq4hHkEamW28+j4L6uAyagONP7BONs+S5Oo2zTT9+tV2R
ILTZBADdgLuAgF6C5Lu9jCF6DfFgaT/uafMyQNkEGNlxOHMWHTgLHe475V2eG9gA
amd4yXKyEFKU1PWnvlGuicQSGdzVcwmq61msvXgYD0FK3LP3yWzKnE4X1tzrC9Vp
/uHJxKjewCuyt1f5in919v+T8TbUxBYKC0zX/qWtX+10cTx77QQA6leqhToJ95Yc
u4UBrKMEO+y2v8Svb3LG7yI5oY8tkw0EkJ/kpZ8xTAfZYCe6fXdvVE3PHg2lrxyc
Wv/EU3QY/qA3G82mbXYeJ2jNZaTNYo4MylMrt4Mx25x4ke7JlsE8SVrQ+4CrHkqp
OjSIa7fppLrQ78uW980AtN8NNQGrlTsD/A9aoA60Igxy1Q3K2uSyDCyjLknv57ym
ZSBD3/t7m0l6Q6gbdfhNGosT+Hd4y3actqEqzXZHW2VG4dKZ/wRNkxtSm9adU9vs
EHyzxjb6mKIH32zAG5TaFT20hC+NK6lsyHr9UE2ZrS6ma2sLxGW2O40hqNsdD+5m
NrqeBc2I/js1PMK0EHRlc3RAZXhhbXBsZS5vcmeJAVQEEwEIAD4WIQTUFzW5Ejb9
uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8JnAAULCQgHAgYVCgkICwIEFgIDAQIe
AQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGwFq07W9N01HWULyhHKoMmcHL6rfZ6
4oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6kaBe+wF6Kqir6udFSBW9rPcFg6/V
ZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rNGkYo1JCBR0XdRJYCSX3yB4TWv/eX
nZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k70DevQeBsv+UjVXjWpNTZmPbvDnd9
95uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6UunOf9Rlp1oMzdxMool/d1MlCxg2h
3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ1J8Nsv87SZeEnQOYBFrsKEkBCADj
oEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6yE+x2hk5FoQCajxKa/d4AVxOnJpd
whAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0pO7bgAiZxkA6RHxtNqhpPnPQoXvUz
kzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/8i9Taz67pdZwuJjac8qBuJHjzAo1
bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt3RuqVGP316Fk+Sy2+60tC/HlX8jg
MyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyLUGKU+L8cB2g1PGGp2biBFWqZbudZ
oyRBet/0yH/zirBdQJw1ABEBAAEAB/4lN3gXOI4OuoOcsvHak4pebx61Mt0YP9cT
qZASIBqxok5x8E28pFh/tYfkYdqRCtdNYZOnxcEoUWh5j6nfwZkEnJ9P/T8GPNk7
pMKnKXmExi05b5uGHD8nU1rSbf/YkvAF0vpbxd4/RDxbbtQhbUwGzusSI+pBLM0w
5TreEB+vRGBc2gOvXXOtKLNEa7M9rH2EwbAkP3jOGGwgk6adxbQdBcRxq4merqhL
YrVz73bCj8TDc0fsNJyIaZZJ++ejfBFYavsF1pvx9z7FNFi8rSXoiB3SBtaWGfhr
bwNaMZrDc7TRIq/fgGaL6g//bzcWrr1YaHXZ10Bgx6UymDOlYkCpBADm0Hv46sPw
07SO8+IACcaQliOto1pndOPwTimCeo58/7rf8I2a5uuJloGrnPwAX65bKDnUALp6
X3lnXRNMhnB3Uewx4i00LQmjsxhJfQiGLpMv0j58tn64s7GqQzGVV1JKcQm992RV

```
jFOydyjZ+K4LGWEOITG/bZrMEVNGCM+OnQQA/Haz8xN0NFSlq7tyfFc0pkx/TiCX
xGfBqbO0wU2b5GMnZbY/06HENpidIzpa231VQaw5/nPTvfhlLKW1iGAkc148cX1q
lL9w2ksXuaHR3LXud2VcfVTIdxU/7h7u1dD/85+c0+7jlGObD9cXKxlM6OjpIJz1
l5/1h3C5S0TuxHkEAL/3BGihkhNfv1Xx0rWu0/732usX/nE/A9C26hGu41FUf3fp
0ilonKpKZUEwWt5hWSEFCSrznNVekiO0rxvuu3RVegvzThPNU4Pf4JZtJpRVhvUQ
d9ulxJw7V9rs75uNBatTNC0kXuGoXhehw4Bn93xa67gYGd3LfrH+oT0GCDpTSHCJ
ATwEGAEIACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAK
CRAjAWNe7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ
5F32NDJ9PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7
Jq3e/4Iy0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02L
kr+2Cc/Qk6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe
23nntMSDA+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t
9Mmd7bM1+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=hkUm
-----END
 PGP PRIVATE KEY BLOCK-----
from __future__ import absolute_import

import cython
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

if cython.compiled is True:
  cc = "Powered by Cython compiled C code."
else:
  cc = "Powered by Python."

print("""
  Number of secret keys:  {0}
  Number of public keys:  {1}

 {2}
""".format(secnum, pubnum, cc))
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright  20022008, 2010, 20122018 g10 Code GmbH.

   Permission is granted to copy, distribute and/or modify this
   document under the terms of the GNU General Public License as
```

published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

Indirect:
gpgme.info-1: 1688
gpgme.info-2: 301751

Tag Table:
(Indirect)
Node: Top1688
Node: Introduction9067
Node: Getting Started9857
Node: Features11318
Node: Overview12630
Node: Preparation13739
Node: Header14736
Node: Building the Source15483
Node: Largefile Support (LFS)17627

Node: Using Automake23043
Node: Using Libtool25596
Node: Library Version
Check25958
Node: Signal Handling32018
Node: Multi-Threading33288
Ref: Multi-Threading-Footnote-134704
Node: Protocols and Engines35127
Node: Engine Version Check37878
Node: Engine Information40401
Node: Engine Configuration44261
Node: OpenPGP45565
Node: Cryptographic Message Syntax45905
Node: Assuan46218
Node: Algorithms46592
Ref: Algorithms-Footnote-147071
Node: Public Key Algorithms47199
Node: Hash Algorithms49801
Node: Error Handling51015
Node: Error Values52889
Node: Error Sources58092
Node: Error Codes60532
Node: Error Strings65325
Node: Exchanging Data67132
Node: Creating Data Buffers69017
Node: Memory Based Data Buffers69533
Node: File Based Data Buffers72966
Node: Callback Based Data Buffers76079
Node: Destroying Data Buffers80270
Node: Manipulating Data Buffers81777
Node: Data Buffer I/O Operations82269
Node: Data Buffer Meta-Data84642
Node: Data Buffer Convenience89161
Node: Contexts91381
Node: Creating Contexts92500
Node: Destroying Contexts93347
Node: Result Management93686
Node:
Context Attributes95267
Node: Protocol Selection96434
Node: Crypto Engine97480
Node: Setting the Sender99369
Node: ASCII Armor100882
Node: Text Mode101511
Node: Offline Mode102445
Node: Pinentry Mode103943
Node: Included Certificates105837
Node: Key Listing Mode107283

Node: Passphrase Callback112407
Node: Progress Meter Callback115969
Node: Status Message Callback117954
Node: Context Flags119719
Node: Locale126330
Node: Additional Logs127922
Node: Key Management130120
Node: Key objects131344
Node: Listing Keys145918
Node: Information About Keys154571
Node: Manipulating Keys155879
Node: Generating Keys158777
Node: Signing Keys177097
Node: Exporting Keys182611
Node: Importing Keys189891
Ref: Importing Keys-Footnote-1197294
Node: Deleting Keys197422
Node: Changing Passphrases199702
Node: Changing TOFU Data201029
Node: Advanced Key Editing203137
Node: Crypto Operations205870
Node: Decrypt207127
Node: Verify214407
Node: Decrypt and Verify227500
Node: Sign230355
Node: Selecting Signers230919
Node:
Creating a Signature232325
Node: Signature Notation Data237095
Node: Encrypt239380
Node: Encrypting a Plaintext239736
Node: Miscellaneous254148
Node: Running other Programs254560
Node: Using the Assuan protocol256723
Node: Checking for updates259521
Node: Run Control264338
Node: Waiting For Completion265082
Node: Using External Event Loops267207
Node: I/O Callback Interface269179
Node: Registering I/O Callbacks274107
Node: I/O Callback Example276146
Node: I/O Callback Example GTK+282771
Node: I/O Callback Example GDK284560
Node: I/O Callback Example Qt286202
Node: Cancellation288490
Node: UI Server Protocol290798
Ref: UI Server Protocol-Footnote-1292233
Node: UI Server Encrypt292352

Node: UI Server Sign297710
Node: UI Server Decrypt301751
Node: UI Server Verify303406
Node: UI Server Set Input Files306978
Node: UI Server Sign/Encrypt Files308048
Node: UI Server Verify/Decrypt Files309856
Node: UI Server Import/Export Keys311732
Node: UI Server Checksum Files312794
Node:
Miscellaneous UI Server Commands315012
Ref: command SENDER316943
Node: Debugging318645
Node: Deprecated Functions320394
Node: Library Copying343403
Node: Copying371623
Node: Concept Index409373
Node: Function and Data Index424085

End Tag Table

Local Variables:
coding: utf-8
End:
000
*H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
certify@pca.dfn.de0
001102164724Z
011230180000Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1+0)U"DFN Server Certification Authority1!0 *H
certify@pca.dfn.de0"0
*H
0
W`r;wXu)QYHm1t]4?|-.B(iw6G01N>[mQSwC'muw~E'l-M
+<[A|F)F%
ZiRaW=OC,,meKW@J-*<,L}:Bnm-kv
EYBmu tt[-%,R+n0j0U00U0U{upz*D\
v0Ux0v09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfnpca.crx09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfn
pca.crl0 `HB0) `HBhttps://mystic.pca.dfn.de/0A `HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html0 `HB
This certificate was issued by the DFN-PCA, the Top
Level Certification Authority of the German Research
Network (Deutsches Forschungsnetz, DFN).
The key owner's identity was authenticated in
accordance with the DFN World Wide Web Policy, v1.00! `HBcgi/check-rev.cgi?0
*H
\C)2

+ZYG| UCA|PzYFnTj@SA)/<HU+4t?@g?pb5w'Z;dqLi9\(d=
,}h?c(MeM44=Qe/_^^JyYN/61&jPFXifP&#;/KZ
1 xOK?ps
\input texinfo @c -*- mode: texinfo; coding: utf-8; -*-
@documentencoding UTF-8
@setfilename gpgme.info
@include defs.inc
@settitle The `GnuPG Made Easy' Reference Manual

@dircategory GNU Libraries
@direntry
* @acronym{GPGME}: (gpgme). Adding support for cryptography to your program.
@end direntry

@c Unify some of the indices.
@syncodeindex tp fn
@syncodeindex pg fn

@copying
Copyright @copyright{} 2002--2008, 2010, 2012--2018 g10 Code GmbH.

@quotation
Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU General Public License as published by the
Free Software Foundation; either version 3 of the License, or (at your
option) any later version. The text of the license can be found in the
section entitled ``Copying''.
@end quotation

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See
the GNU
General Public License for more details.
@end copying

@c Macros used by the description of the UI server protocol
@macro clnt{string}
@sc{c:} \string\
@end macro
@macro srvr{string}
@sc{s:} \string\
@end macro

@c API version.
@macro since{string}
@sc{Since:} \string\
@end macro

@c
@c T I T L E P A G E
@c
@ifinfo
This file documents the @acronym{GPGME} library.

This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version
@value{VERSION}.

@c NOTE: Don't forget to update the year for the TeX version, too.
@insertcopying

@end ifinfo

@c We do not want that bastard short titlepage.
@c @iftex
@c @shorttitlepage The `GnuPG Made Easy' Reference Manual
@c @end iftex
@titlepage
@center @titlefont{The `GnuPG Made Easy'}
@sp 1
@center @titlefont{Reference Manual}
@sp 6
@center Edition @value{EDITION}
@sp 1
@center last updated @value{UPDATED}
@sp 1
@center for version @value{VERSION}
@page
@vskip 0pt plus 1filll
Published
 by The GnuPG Project@* c/o g10 Code GmbH@* Httenstr. 61@* 40699 Erkrath, Germany

@insertcopying
@end titlepage
@page

@summarycontents
@contents

@ifnottex
@node Top
@top Main Menu
This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version

@value{VERSION} of the @acronym{GPGME} library.
@end ifnottex

@menu
* Introduction:: How to use this manual.
* Preparation:: What you should do before using the library.
* Protocols and Engines:: Supported crypto protocols.
* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from @acronym{GPGME}.
* Contexts:: Handling @acronym{GPGME} contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated
Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share `GnuPG Made Easy'.
* Copying:: The GNU General Public License says how you
can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

@detailmenu
--- The Detailed Node Listing ---

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS)::
How to use @acronym{GPGME} with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How @acronym{GPGME} affects signal handling.

* Multi-Threading:: How @acronym{GPGME} can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error
value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new @acronym{GPGME} contexts.
*
Destroying Contexts:: Releasing @acronym{GPGME} contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.

* Key Management:: Managing keys with @acronym{GPGME}.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode::
Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of
a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.

* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting
until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate @acronym{GPGME} in GTK+.
* I/O Callback Example GDK:: How to integrate @acronym{GPGME} in GDK.
* I/O Callback Example Qt:: How to integrate @acronym{GPGME} in Qt.

@end detailmenu
@end menu

@node Introduction
@chapter Introduction

`GnuPG Made Easy' (@acronym{GPGME}) is a C language library that
allows to add support for cryptography to a program. It is designed
to make access to public key crypto engines like GnuPG or GpgSM easier
for applications. @acronym{GPGME} provides a high-level crypto API
for
encryption, decryption, signing, signature verification and key
management.

@acronym{GPGME} uses GnuPG and GpgSM as its backends to support
OpenPGP and the Cryptographic Message Syntax (CMS).

@menu
* Getting Started:: Purpose of the manual, and how to use it.

* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.
@end menu

@node Getting Started
@section Getting Started

This manual documents the @acronym{GPGME} library programming interface. All functions and data types provided by the library are explained.

The reader is assumed to possess basic knowledge about cryptography in general, and public key cryptography in particular. The underlying cryptographic engines that are used by the library are not explained, but where necessary, special features or requirements by an engine are mentioned as far as they are relevant to @acronym{GPGME} or its users.

This manual
can be used in several ways. If read from the beginning to the end, it gives a good introduction into the library and how it can be used in an application. Forward references are included where necessary. Later on, the manual can be used as a reference manual to get just the information needed about any particular interface of the library. Experienced programmers might want to start looking at the examples at the end of the manual, and then only read up those parts of the interface which are unclear.

The documentation for the language bindings is currently not included in this manual. Those languages bindings follow the general programming model of @acronym{GPGME} but may provide some extra high level abstraction on top of the @acronym{GPGME} style API. For now please see the README files in the @file{lang/} directory of the source distribution.

@node Features
@section Features

@acronym{GPGME} has a couple of advantages over other libraries doing a similar job, and over
implementing support for GnuPG or other crypto engines into your application directly.

@table @asis
@item it's free software
Anybody can use, modify, and redistribute it under the terms of the GNU Lesser General Public License (@pxref{Library Copying}).

@item it's flexible
@acronym{GPGME} provides transparent support for several cryptographic protocols by different engines. Currently, @acronym{GPGME} supports the OpenPGP protocol using GnuPG as the backend, and the Cryptographic Message Syntax using GpgSM as the backend.

@item it's easy
@acronym{GPGME} hides the differences between the protocols and engines from the programmer behind an easy-to-use interface. This way the programmer can focus on the other parts of the program, and still integrate strong cryptography in his application. Once support for @acronym{GPGME} has been added to a program, it is easy to add support for other crypto protocols once @acronym{GPGME} backends provide them.

@item it's language friendly
@acronym{GPGME}
comes with languages bindings for several common programming languages: Common Lisp, C++, Python 2, and Python 3.
@end table

@node Overview
@section Overview

@acronym{GPGME} provides a data abstraction that is used to pass data to the crypto engine, and receive returned data from it. Data can be read from memory or from files, but it can also be provided by a callback function.

The actual cryptographic operations are always set within a context. A context provides configuration parameters that define the behaviour of all operations performed within it. Only one operation per context is allowed at any time, but when one operation is finished, you can run the next operation in the same context. There can be more than one context, and all can run different operations at the same time.

Furthermore, @acronym{GPGME} has rich key management facilities including listing keys, querying their attributes, generating, importing, exporting and deleting keys, and acquiring information about
the trust path.

With some precautions, @acronym{GPGME} can be used in a multi-threaded environment, although it is not completely thread safe and thus needs the support of the application.

@node Preparation

@chapter Preparation

To use @acronym{GPGME}, you have to perform some changes to your
sources and the build system. The necessary changes are small and
explained in the following sections. At the end of this chapter, it
is described how the library is initialized, and how the requirements
of the library are verified.

@menu
* Header::   What header file you need to include.
* Building the Source::   Compiler options to be used.
* Largefile Support (LFS):: How to use @acronym{GPGME} with LFS.
* Using Automake::   Compiler options to be used the easy way.
* Using Libtool::   Avoiding compiler options entirely.
* Library Version Check::   Getting and verifying the library version.
* Signal Handling::
        How @acronym{GPGME} affects signal handling.
* Multi-Threading::   How @acronym{GPGME} can be used in an MT environment.
@end menu

@node Header
@section Header
@cindex header file
@cindex include file

All interfaces (data types and functions) of the library are defined
in the header file `gpgme.h'. You must include this in all programs
using the library, either directly or through some other header file,
like this:

@example
#include <gpgme.h>
@end example

The name space of @acronym{GPGME} is @code{gpgme_*} for function names
and data types and @code{GPGME_*} for other symbols. Symbols internal
to @acronym{GPGME} take the form @code{_gpgme_*} and @code{_GPGME_*}.

Because @acronym{GPGME} makes use of the GPG Error library, using
@acronym{GPGME} will also use the @code{GPG_ERR_*} name space
directly, and the @code{gpg_err*}, @code{gpg_str*}, and @code{gpgrt_*}
name space indirectly.

@node Building the Source
@section Building the Source
@cindex compiler options

@cindex
compiler flags

If you want to compile a source file including the `gpgme.h' header file, you must make sure that the compiler can find it in the directory hierarchy. This is accomplished by adding the path to the directory in which the header file is located to the compilers include file search path (via the @option{-I} option).

However, the path to the include file is determined at the time the source is configured. To solve this problem, gpgme ships with a small helper program @command{gpgme-config} that knows about the path to the include file and other configuration options. The options that need to be added to the compiler invocation at compile time are output by the @option{--cflags} option to @command{gpgme-config}. The following example shows how it can be used at the command line:

@example
gcc -c foo.c `gpgme-config --cflags`
@end example

Adding the output of @samp{gpgme-config --cflags} to the compiler command line will ensure that the compiler can find the
@acronym{GPGME}
header file.

A similar problem occurs when linking the program with the library. Again, the compiler has to find the library files. For this to work, the path to the library files has to be added to the library search path (via the @option{-L} option). For this, the option @option{--libs} to @command{gpgme-config} can be used. For convenience, this option also outputs all other options that are required to link the program with @acronym{GPGME} (in particular, the @samp{-lgpgme} option). The example shows how to link @file{foo.o} with the @acronym{GPGME} library to a program @command{foo}.

@example
gcc -o foo foo.o `gpgme-config --libs`
@end example

Of course you can also combine both examples to a single command by specifying both options to @command{gpgme-config}:

@example
gcc -o foo foo.c `gpgme-config --cflags --libs`
@end example

If you need to detect the installed language bindings you can use list

them using:

@example
gpgme-config --print-lang
@end example

or
test for the availability using

@example
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
@end example

@node Largefile Support (LFS)
@section Largefile Support (LFS)
@cindex largefile support
@cindex LFS

@acronym{GPGME} is compiled with largefile support by default, if it is available on the system. This means that GPGME supports files larger than two gigabyte in size, if the underlying operating system can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those
new functions have the same name as their
smallfile counterparts, but with a suffix of 64.

An example: The data type @code{off_t} is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type @code{off64_t} is provided, which is 64 bit wide. Or you can replace the existing @code{off_t} data type with its 64 bit wide counterpart. All occurrences of @code{off_t} are then automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for @acronym{GPGME}, because some data types it uses in its interfaces are affected by that. For example, the @code{off_t} data type is used in the @code{gpgme_data_seek} function, to match its @acronym{POSIX} counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow for a transitional period.

On POSIX platforms @acronym{GPGME} is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the @file{gpgme.h} header file. All types in this header files refer to their largefile counterparts, if they are different from any default types on the system.

On 32 and 64 bit Windows platforms @code{off_t} is declared as 32 bit signed integer. There is no specific support for LFS in the C library. The recommendation from Microsoft is to use the native interface (@code{CreateFile} et al.) for large files. Released binary versions of @acronym{GPGME} (libgpgme-11.dll) have always been build with a 32 bit @code{off_t}. To avoid an ABI break we stick to this convention for 32 bit Windows by using @code{long} there. @acronym{GPGME} versions for 64 bit Windows have never been released and thus we are able to use @code{int64_t} instead of @code{off_t} there. For easier migration the typedef @code{gpgme_off_t} has been defined. The reason we cannot use @code{off_t} directly is that some toolchains (e.g. mingw64) introduce a POSIX compatible hack for @code{off_t}. Some widely used toolkits make use of this hack and in turn @acronym{GPGME} would need to use it also. However, this would introduce an ABI break and existing software making use of libgpgme might suffer from a severe break. Thus with version 1.4.2 we redefined all functions using @code{off_t} to use @code{gpgme_off_t} which is defined as explained above. This way we keep the ABI well defined and independent of any toolchain hacks. The bottom line is that LFS support in @acronym{GPGME} is only available on 64 bit versions of Windows.

On POSIX platforms you can enable largefile support, if it is
different from the default on the system the application is compiled
on, by using the Autoconf macro @code{AC_SYS_LARGEFILE}. If you do
this, then you don't need to worry about anything else: It will just
work. In this case you might also want to use @code{AC_FUNC_FSEEKO}
to take advantage of some new interfaces, and @code{AC_TYPE_OFF_T}
(just in case).

If you do not use Autoconf, you can define the preprocessor symbol
@code{_FILE_OFFSET_BITS} to 64 @emph{before} including
any header
files, for example by specifying the option
@code{-D_FILE_OFFSET_BITS=64} on the compiler command line. You will
also want to define the preprocessor symbol @code{LARGEFILE_SOURCE} to
1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough
about the issue to invent your own solution. Just keep in mind that
the @acronym{GPGME} header file expects that largefile support is
enabled, if it is available. In particular, we do not support dual
mode (@code{_LARGEFILE64_SOURCE}).

@node Using Automake
@section Using Automake
@cindex automake
@cindex autoconf

It is much easier if you use GNU Automake instead of writing your own
Makefiles. If you do that you do not have to worry about finding and
invoking the @command{gpgme-config} script at all. @acronym{GPGME}
provides an extension to Automake that does all the work for you.

@c A simple macro for optional variables.
@macro ovar{varname}
@r{[}@var{\varname\}@r{]}
@end
macro
@defmac AM_PATH_GPGME (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTH (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTHREAD (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
Check whether @acronym{GPGME} (at least version @var{minimum-version},
if given) exists on the host system. If it is found, execute
@var{action-if-found}, otherwise do @var{action-if-not-found}, if
given.

Additionally, the function defines @code{GPGME_CFLAGS} to the flags
needed for compilation of the program to find the @file{gpgme.h}
header file, and @code{GPGME_LIBS} to the linker flags needed to link
the program to the @acronym{GPGME} library. If the used helper script
does not match the target type you are building for a warning is
printed and the string @code{libgcrypt} is appended to the variable
@code{gpg_config_script_warn}.

@code{AM_PATH_GPGME_PTH}
 checks for the version of @acronym{GPGME}
that can be used with GNU Pth, and defines @code{GPGME_PTH_CFLAGS} and
@code{GPGME_PTH_LIBS}.

@code{AM_PATH_GPGME_PTHREAD} checks for the version of @acronym{GPGME}
that can be used with the native pthread implementation, and defines
@code{GPGME_PTHREAD_CFLAGS} and @code{GPGME_PTHREAD_LIBS}. Since
version 1.8.0 this is no longer required to GPGME_PTHREAD as
@acronym{GPGME} itself is thread safe.

This macro searches for @command{gpgme-config} along the PATH. If
you are cross-compiling, it is useful to set the environment variable
@code{SYSROOT} to the top directory of your target. The macro will
then first look for the helper program in the @file{bin} directory
below that top directory. An absolute directory name must be used for
@code{SYSROOT}. Finally, if the configure command line option
@code{--with-gpgme-prefix} is used, only its value is used for the top
directory below which the helper script is expected.

@end defmac

You can
 use the defined Autoconf variables like this in your
@file{Makefile.am}:

@example
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
@end example

@node Using Libtool
@section Using Libtool
@cindex libtool

The easiest way is to just use GNU Libtool. If you use libtool, and
link to @code{libgpgme.la}, @code{libgpgme-pth.la} or
@code{libgpgme-pthread.la} respectively, everything will be done
automatically by Libtool.

@node Library Version Check
@section Library Version Check
@cindex version check, of the library

@deftypefun {const char *} gpgme_check_version (@w{const char *@var{required_version}})
The function @code{gpgme_check_version} has four purposes. It can be
used to retrieve the version number of the library. In addition it
can verify that the version number is higher than a certain required
version number. In either case, the function initializes some
sub-systems, and for this reason alone it must be invoked early in
your program, before you make use of the other functions
in
@acronym{GPGME}. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get
initialized.

If @var{required_version} is @code{NULL}, the function returns a
pointer to a statically allocated string containing the version number
of the library.

If @var{required_version} is not @code{NULL}, it should point to a
string containing a version number, and the function checks that the
version of the library is at least as high as the version number
provided. In this case, the function returns a pointer to a
statically allocated string containing the version number of the
library. If @var{REQUIRED_VERSION} is not a valid version number, or
if the version requirement is not met, the function returns
@code{NULL}.

If you use a version of a library that is backwards compatible with
older releases, but contains additional interfaces which your program
uses, this function provides a run-time check if the necessary
features are provided by the
installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors
are returned later when invoking @code{gpgme_new} or
@code{gpgme-data_new}, so that a detailed error code can be returned
(historically, @code{gpgme_check_version} does not return a detailed
error code).
@end deftypefun

@deftypefun {int} gpgme_set_global_flag @

(@w{const char *@var{name}}, @
@w{const char *@var{value}})

@since{1.4.0}

On some systems it is not easy to set environment variables and thus
hard to use @acronym{GPGME}'s internal trace facility for debugging.
This function has been introduced as an alternative way to enable
debugging and for a couple of other rarely used tweaks. It is
important to assure that only one thread accesses @acronym{GPGME}
functions between a call to this function and after the return from
the call to @code{gpgme_check_version}.

All currently supported features require that this function is called
as early as possible
 --- even before @code{gpgme_check_version}. The
features are identified by the following values for @var{name}:

@table @code
@item debug
To enable debugging use the string ``debug'' for @var{name} and
@var{value} identical to the value used with the environment variable
@code{GPGME_DEBUG}.

@item disable-gpgconf
Using this feature with any @var{value} disables the detection of the
gpgconf program and thus forces GPGME to fallback into the simple
OpenPGP only mode. It may be used to force the use of GnuPG-1 on
systems which have both GPG versions installed. Note that in general
the use of @code{gpgme_set_engine_info} is a better way to select a
specific engine version.

@item gpgconf-name
@itemx gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are
@code{GNU/GnuPG/gpgconf} and @code{GNU/GnuPG/gpg}. Under Unix the
leading directory part is ignored. Under Windows the leading
directory part is used as the default installation directory; the
@code{.exe} suffix
 is added by GPGME. Use forward slashed even under
Windows.

@item require-gnupg
Set the minimum version of the required GnuPG engine. If that version
is not met, GPGME fails early instead of trying to use the existent
version. The given version must be a string with major, minor, and
micro number. Example: "2.1.0".

@item w32-inst-dir
On Windows GPGME needs to know its installation directory to find its spawn helper. This is in general no problem because a DLL has this information. Some applications however link statically to GPGME and thus GPGME can only figure out the installation directory of this application which may be wrong in certain cases. By supplying an installation directory as value to this flag, GPGME will assume that that directory is the installation directory. This flag has no effect on non-Windows platforms.

@end table

This function returns @code{0} on success. In contrast to other functions the non-zero return value on failure does not convey any error
code. For setting ``debug'' the only possible error cause is an out of memory condition; which would exhibit itself later anyway. Thus the return value may be ignored.
@end deftypefun

After initializing @acronym{GPGME}, you should set the locale information to the locale required for your output terminal. This locale information is needed for example for the curses and Gtk pinentry. Here is an example of a complete initialization:

@example
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
@{
 /* Initialize the locale environment. */
 setlocale (LC_ALL, "");
 gpgme_check_version (NULL);
 gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
#ifdef LC_MESSAGES
 gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
@}
@end example

Note that you are highly recommended to initialize the locale settings like this. @acronym{GPGME} can not do this for you because it would not be thread safe. The conditional on LC_MESSAGES is only necessary for

portability to W32 systems.

@node Signal Handling
@section Signal Handling
@cindex signals
@cindex signal handling

The @acronym{GPGME} library communicates with child processes (the crypto engines). If a child process dies unexpectedly, for example due to a bug, or system problem, a @code{SIGPIPE} signal will be delivered to the application. The default action is to abort the program. To protect against this, @code{gpgme_check_version} sets the @code{SIGPIPE} signal action to @code{SIG_IGN}, which means that the signal will be ignored.

@acronym{GPGME} will only do that if the signal action for @code{SIGPIPE} is @code{SIG_DEF} at the time @code{gpgme_check_version} is called. If it is something different, @code{GPGME} will take no action.

This means that if your application does not install any signal handler for @code{SIGPIPE}, you don't need to take any precautions. If you do install a signal handler for @code{SIGPIPE}, you must be prepared to handle any @code{SIGPIPE} events that occur due to @acronym{GPGME} writing to a defunct pipe. Furthermore, if your application is multi-threaded, and you install a signal action for @code{SIGPIPE}, you must make sure you do this either before @code{gpgme_check_version} is called or afterwards.

@node Multi-Threading
@section Multi-Threading
@cindex thread-safeness
@cindex multi-threading

The @acronym{GPGME} library is mostly thread-safe, and can be used in a multi-threaded environment but there are some requirements for multi-threaded use:

@itemize @bullet
@item
The function @code{gpgme_check_version} must be called before any other function in the library, because it initializes the thread support subsystem in @acronym{GPGME}. To achieve this in multi-threaded programs, you must synchronize the memory with respect to other threads that also want to use @acronym{GPGME}. For this, it

is sufficient to call @code{gpgme_check_version} before creating the
other threads using @acronym{GPGME}@footnote{At least
 this is true for
POSIX threads, as @code{pthread_create} is a function that
synchronizes memory with respects to other threads. There are many
functions which have this property, a complete list can be found in
POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the
definition of the term ``Memory Synchronization". For other thread
packages other, more relaxed or more strict rules may apply.}.

@item
Any @code{gpgme_data_t} and @code{gpgme_ctx_t} object must only be
accessed by one thread at a time. If multiple threads want to deal
with the same object, the caller has to make sure that operations on
that object are fully synchronized.

@item
Only one thread at any time is allowed to call @code{gpgme_wait}. If
multiple threads call this function, the caller must make sure that
all invocations are fully synchronized. It is safe to start
asynchronous operations while a thread is running in gpgme_wait.

@item
The function @code{gpgme_strerror} is not thread safe. You have
 to
use @code{gpgme_strerror_r} instead.
@end itemize

@node Protocols and Engines
@chapter Protocols and Engines
@cindex protocol
@cindex engine
@cindex crypto engine
@cindex backend
@cindex crypto backend

@acronym{GPGME} supports several cryptographic protocols, however, it
does not implement them. Rather it uses backends (also called
engines) which implement the protocol. @acronym{GPGME} uses
inter-process communication to pass data back and forth between the
application and the backend, but the details of the communication
protocol and invocation of the backend is completely hidden by the
interface. All complexity is handled by @acronym{GPGME}. Where an
exchange of information between the application and the backend is
necessary, @acronym{GPGME} provides the necessary callback function
hooks and further interfaces.

@deftp {Data type} {enum gpgme_protocol_t}
@tindex gpgme_protocol_t
The @code{gpgme_protocol_t} type specifies the set of possible protocol
values that are supported
by @acronym{GPGME}. The following protocols
are supported:

@table @code
@item GPGME_PROTOCOL_OpenPGP
@itemx GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

@item GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

@item GPGME_PROTOCOL_GPGCONF
Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_ASSUAN
@since{1.2.0}

This specifies the raw Assuan protocol.

@item GPGME_PROTOCOL_G13
@since{1.3.0}

Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_UISERVER
Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_SPAWN
@since{1.5.0}

Special protocol for use with @code{gpgme_op_spawn}.

@item GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the
used protocol is not known to the application. Currently,
@acronym{GPGME} does not accept this value in any operation, though,
except for @code{gpgme_get_protocol_name}.
@end
 table
@end deftp

@deftypefun {const char *} gpgme_get_protocol_name (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_get_protocol_name} returns a statically

allocated string describing the protocol @var{protocol}, or
@code{NULL} if the protocol number is not valid.
@end deftypefun

@menu
* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan:: Support for the raw Assuan protocol.
@end menu

@node Engine Version Check
@section Engine Version Check
@cindex version check, of the engines

@deftypefun @w{const char *} gpgme_get_dirinfo (@w{cons char *@var{what}})
@since{1.5.0}

The function @code{gpgme_get_dirinfo} returns a statically
 allocated
string with the value associated to @var{what}. The returned values
are the defaults and won't change even after
@code{gpgme_set_engine_info} has been used to configure a different
engine. @code{NULL} is returned if no value is available. Commonly
supported values for @var{what} are:

@table @code
@item homedir
Return the default home directory.

@item sysconfdir
Return the name of the system configuration directory

@item bindir
Return the name of the directory with GnuPG program files.

@item libdir
Return the name of the directory with GnuPG related library files.

@item libexecdir
Return the name of the directory with GnuPG helper program files.

@item datadir
Return the name of the directory with GnuPG shared data.

@item localedir
Return the name of the directory with GnuPG locale data.

@item agent-socket
Return the name of the socket to connect to the gpg-agent.

@item agent-ssh-socket
Return the name of the socket to connect to the ssh-agent component of
gpg-agent.

@item
dirmngr-socket
Return the name of the socket to connect to the dirmngr.

@item uiserver-socket
Return the name of the socket to connect to the user interface server.

@item gpgconf-name
Return the file name of the engine configuration tool.

@item gpg-name
Return the file name of the OpenPGP engine.

@item gpgsm-name
Return the file name of the CMS engine.

@item g13-name
Return the name of the file container encryption engine.

@item gpg-wks-client-name
Return the name of the Web Key Service tool.

@end table

@end deftypefun

@deftypefun gpgme_error_t gpgme_engine_check_version (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_engine_check_version} verifies that the
engine implementing the protocol @var{PROTOCOL} is installed in the
expected path and meets the version requirement of @acronym{GPGME}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if the
engine is available and @code{GPG_ERR_INV_ENGINE} if it is not.
@end deftypefun

@node Engine

Information
@section Engine Information
@cindex engine, information about

@deftp {Data type} {gpgme_engine_info_t}
@tindex gpgme_protocol_t
The @code{gpgme_engine_info_t} type specifies a pointer to a structure
describing a crypto engine. The structure contains the following
elements:

@table @code
@item gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_protocol_t protocol
This is the protocol for which the crypto engine is used. You can
convert this to a string with @code{gpgme_get_protocol_name} for
printing.

@item const char *file_name
This is a string holding the file name of the executable of the crypto
engine. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.

@item const char *home_dir
This is a string holding the directory name of the crypto engine's
configuration directory. If it is @code{NULL}, then
the default
directory is used. See @code{gpgme_get_dirinfo} on how to get the
default directory.

@item const char *version
This is a string containing the version number of the crypto engine.
It might be @code{NULL} if the version number can not be determined,
for example because the executable doesn't exist or is invalid.

@item const char *req_version
This is a string containing the minimum required version number of the
crypto engine for @acronym{GPGME} to work correctly. This is the
version number that @code{gpgme_engine_check_version} verifies
against. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_get_engine_info (@w{gpgme_engine_info_t *@var{info}})
The function @code{gpgme_get_engine_info} returns a linked list of

engine info structures in @var{info}. Each info structure describes
the defaults of one configured backend.

The memory for the info
 structures is allocated the first time this
function is invoked, and must not be freed by the caller.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, and a system error if the memory could not be allocated.
@end deftypefun

Here is an example how you can provide more diagnostics if you receive
an error message which indicates that the crypto engine is invalid.

@example
gpgme_ctx_t ctx;
gpgme_error_t err;

[...]

```
if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
 @{
   gpgme_engine_info_t info;
   err = gpgme_get_engine_info (&info);
   if (!err)
     @{
       while (info && info->protocol != gpgme_get_protocol (ctx))
         info = info->next;
       if (!info)
         fprintf (stderr, "GPGME compiled without support for protocol %s",
                  gpgme_get_protocol_name (info->protocol));
       else if (info->file_name && !info->version)
         fprintf (stderr, "Engine %s not installed properly",
                  info->file_name);
        else if (info->file_name && info->version && info->req_version)
         fprintf (stderr, "Engine %s version %s installed, "
                  "but at least version %s required", info->file_name,
                  info->version, info->req_version);
       else
         fprintf (stderr, "Unknown problem with engine for protocol %s",
                  gpgme_get_protocol_name (info->protocol));
     @}
 @}
```
@end example

@node Engine Configuration
@section Engine Configuration

@cindex engine, configuration of
@cindex configuration of crypto backend

You can change the configuration of a backend engine, and thus change
the executable program and configuration directory to be used. You
can make these changes the default or set them for some contexts
individually.

@deftypefun gpgme_error_t gpgme_set_engine_info (@w{gpgme_protocol_t @var{proto}}, @w{const char *@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_set_engine_info} changes
 the default
configuration of the crypto engine implementing the protocol
@var{proto}.

@var{file_name} is the file name of the executable program
implementing this protocol, and @var{home_dir} is the directory name
of the configuration directory for this crypto engine. If
@var{home_dir} is @code{NULL}, the engine's default will be used.

The new defaults are not applied to already created GPGME contexts.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, or an error code on failure.
@end deftypefun

The functions @code{gpgme_ctx_get_engine_info} and
@code{gpgme_ctx_set_engine_info} can be used to change the engine
configuration per context. @xref{Crypto Engine}.

@node OpenPGP
@section OpenPGP
@cindex OpenPGP
@cindex GnuPG
@cindex protocol, GnuPG
@cindex engine, GnuPG

OpenPGP is implemented by GnuPG, the @acronym{GNU} Privacy Guard.
This is the first protocol that was supported by @acronym{GPGME}.

The OpenPGP protocol is specified by @code{GPGME_PROTOCOL_OpenPGP}.

@node

Cryptographic Message Syntax
@section Cryptographic Message Syntax
@cindex CMS
@cindex cryptographic message syntax
@cindex GpgSM
@cindex protocol, CMS
@cindex engine, GpgSM
@cindex S/MIME
@cindex protocol, S/MIME

@acronym{CMS} is implemented by GpgSM, the S/MIME implementation for GnuPG.

The @acronym{CMS} protocol is specified by @code{GPGME_PROTOCOL_CMS}.

@node Assuan
@section Assuan
@cindex ASSUAN
@cindex protocol, ASSUAN
@cindex engine, ASSUAN

Assuan is the RPC library used by the various @acronym{GnuPG} components. The Assuan protocol allows one to talk to arbitrary Assuan servers using @acronym{GPGME}. @xref{Using the Assuan protocol}.

The ASSUAN protocol is specified by @code{GPGME_PROTOCOL_ASSUAN}.

@node Algorithms
@chapter Algorithms
@cindex algorithms

The crypto backends support a variety of algorithms used in public key cryptography.@footnote{Some engines also provide symmetric only encryption; see the description of the encryption function on how to use this.} The following sections list the identifiers used to denote such an algorithm.

@menu
* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.
@end menu

@node Public Key Algorithms

@section Public Key Algorithms
@cindex algorithms, public key
@cindex public key algorithms

Public key algorithms are used for encryption, decryption, signing and verification of signatures.

@deftp {Data type} {enum gpgme_pubkey_algo_t}
@tindex gpgme_pubkey_algo_t
The @code{gpgme_pubkey_algo_t} type specifies the set of all public key algorithms that are supported by @acronym{GPGME}. Possible values are:

@table @code
@item GPGME_PK_RSA
This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

@item GPGME_PK_RSA_E
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for encryption and decryption only.

@item GPGME_PK_RSA_S
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman)
algorithm for signing and verification only.

@item GPGME_PK_DSA
This value indicates DSA, the Digital Signature Algorithm.

@item GPGME_PK_ELG
This value indicates ElGamal.

@item GPGME_PK_ELG_E
This value also indicates ElGamal and is used specifically in GnuPG.

@item GPGME_PK_ECC
@since{1.5.0}

This value is a generic indicator for ellipic curve algorithms.

@item GPGME_PK_ECDSA
@since{1.3.0}

This value indicates ECDSA, the Elliptic Curve Digital Signature Algorithm as defined by FIPS 186-2 and RFC-6637.

@item GPGME_PK_ECDH
@since{1.3.0}

This value indicates ECDH, the Eliptic Curve Diffie-Hellmann
encryption algorithm as defined by RFC-6637.

@item GPGME_PK_EDDSA
@since{1.7.0}

This value indicates the EdDSA algorithm.

@end table
@end deftp

@deftypefun {const char *} gpgme_pubkey_algo_name (@w{gpgme_pubkey_algo_t @var{algo}})
The function @code{gpgme_pubkey_algo_name} returns a pointer to a
statically allocated string containing a description of the public key
algorithm
 @var{algo}. This string can be used to output the name of
the public key algorithm to the user.

If @var{algo} is not a valid public key algorithm, @code{NULL} is
returned.
@end deftypefun

@deftypefun {char *} gpgme_pubkey_algo_string (@w{gpgme_subkey_t @var{key}})
@since{1.7.0}

The function @code{gpgme_pubkey_algo_string} is a convenience function
to build and return an algorithm string in the same way GnuPG does
(e.g. ``rsa2048'' or ``ed25519''). The caller must free the result
using @code{gpgme_free}. On error (e.g. invalid argument or memory
exhausted), the function returns NULL and sets @code{ERRNO}.
@end deftypefun

@node Hash Algorithms
@section Hash Algorithms
@cindex algorithms, hash
@cindex algorithms, message digest
@cindex hash algorithms
@cindex message digest algorithms

Hash (message digest) algorithms are used to compress a long message
to make it suitable for public key cryptography.

@deftp {Data type} {enum gpgme_hash_algo_t}
@tindex gpgme_hash_algo_t
The

@code{gpgme_hash_algo_t} type specifies the set of all hash algorithms
that are supported by @acronym{GPGME}. Possible values are:

@table @code
@item GPGME_MD_MD5
@item GPGME_MD_SHA1
@item GPGME_MD_RMD160
@item GPGME_MD_MD2
@item GPGME_MD_TIGER
@item GPGME_MD_HAVAL
@item GPGME_MD_SHA256
@item GPGME_MD_SHA384
@item GPGME_MD_SHA512
@item GPGME_MD_SHA224
@since{1.5.0}

@item GPGME_MD_MD4
@item GPGME_MD_CRC32
@item GPGME_MD_CRC32_RFC1510
@item GPGME_MD_CRC24_RFC2440
@end table
@end deftp

@deftypefun {const char *} gpgme_hash_algo_name (@w{gpgme_hash_algo_t @var{algo}})
The function @code{gpgme_hash_algo_name} returns a pointer to a
statically allocated string containing a description of the hash
algorithm @var{algo}. This string can be used to output the name of
the hash algorithm to the user.

If @var{algo} is not a valid hash algorithm, @code{NULL} is returned.
@end deftypefun

@node Error Handling
@chapter Error Handling
@cindex error handling

Many functions in @acronym{GPGME}
 can return an error if they fail.
For this reason, the application should always catch the error
condition and take appropriate measures, for example by releasing the
resources and passing the error up to the caller, or by displaying a
descriptive message to the user and cancelling the operation.

Some error values do not indicate a system error or an error in the
operation, but the result of an operation that failed properly. For
example, if you try to decrypt a tempered message, the decryption will
fail. Another error value actually means that the end of a data

buffer or list has been reached. The following descriptions explain
for many error codes what they mean usually. Some error values have
specific meanings if returned by a certain functions. Such cases are
described in the documentation of those functions.

@acronym{GPGME} uses the @code{libgpg-error} library. This allows to
share the error codes with other components of the GnuPG system, and
thus pass error values transparently
 from the crypto engine, or some
helper application of the crypto engine, to the user. This way no
information is lost. As a consequence, @acronym{GPGME} does not use
its own identifiers for error codes, but uses those provided by
@code{libgpg-error}. They usually start with @code{GPG_ERR_}.

However, @acronym{GPGME} does provide aliases for the functions
defined in libgpg-error, which might be preferred for name space
consistency.

@menu
* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.
* Error Strings:: How to get a descriptive string from a value.
@end menu

@node Error Values
@section Error Values
@cindex error values
@cindex error codes
@cindex error sources

@deftp {Data type} {gpgme_err_code_t}
The @code{gpgme_err_code_t} type is an alias for the @code{libgpg-error}
type @code{gpg_err_code_t}. The
 error code indicates the type of an
error, or the reason why an operation failed.

A list of important error codes can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_err_source_t}
The @code{gpgme_err_source_t} type is an alias for the
@code{libgpg-error} type @code{gpg_err_source_t}. The error source
has not a precisely defined meaning. Sometimes it is the place where
the error happened, sometimes it is the place where an error was
encoded into an error value. Usually the error source will give an
indication to where to look for the problem. This is not always true,

but it is attempted to achieve this goal.

A list of important error sources can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_error_t}
The @code{gpgme_error_t} type is an alias for the @code{libgpg-error}
type @code{gpg_error_t}. An error value like this has always two
components, an error code and an error source. Both together form the
error value.

Thus, the error value
can not be directly compared against an error
code, but the accessor functions described below must be used.
However, it is guaranteed that only 0 is used to indicate success
(@code{GPG_ERR_NO_ERROR}), and that in this case all other parts of
the error value are set to 0, too.

Note that in @acronym{GPGME}, the error source is used purely for
diagnostical purposes. Only the error code should be checked to test
for a certain outcome of a function. The manual only documents the
error code part of an error value. The error source is left
unspecified and might be anything.
@end deftp

@deftypefun {static inline gpgme_err_code_t} gpgme_err_code (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_code} returns the
@code{gpgme_err_code_t} component of the error value @var{err}. This
function must be used to extract the error code from an error value in
order to compare it with the @code{GPG_ERR_*} error code macros.
@end deftypefun

@deftypefun {static inline gpgme_err_source_t}
gpgme_err_source (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_source} returns the
@code{gpgme_err_source_t} component of the error value @var{err}. This
function must be used to extract the error source from an error value in
order to compare it with the @code{GPG_ERR_SOURCE_*} error source macros.
@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_err_make (@w{gpgme_err_source_t @var{source}},
@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_err_make} returns the error
value consisting of the error source @var{source} and the error code
@var{code}.

This function can be used in callback functions to construct an error
value to return it to the library.

@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_error (@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_error} returns the error value
consisting of the default error source and the error code @var{code}.

For @acronym{GPGME}
 applications, the default error source is
@code{GPG_ERR_SOURCE_USER_1}. You can define
@code{GPGME_ERR_SOURCE_DEFAULT} before including @file{gpgme.h} to
change this default.

This function can be used in callback functions to construct an error
value to return it to the library.
@end deftypefun

The @code{libgpg-error} library provides error codes for all system
error numbers it knows about. If @var{err} is an unknown error
number, the error code @code{GPG_ERR_UNKNOWN_ERRNO} is used. The
following functions can be used to construct error values from system
errnor numbers.

@deftypefun {gpgme_error_t} gpgme_err_make_from_errno (@w{gpgme_err_source_t @var{source}}, @w{int @var{err}})
The function @code{gpgme_err_make_from_errno} is like
@code{gpgme_err_make}, but it takes a system error like @code{errno}
instead of a @code{gpgme_err_code_t} error code.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_error_from_errno (@w{int @var{err}})
The function @code{gpgme_error_from_errno}
 is like @code{gpgme_error},
but it takes a system error like @code{errno} instead of a
@code{gpgme_err_code_t} error code.
@end deftypefun

Sometimes you might want to map system error numbers to error codes
directly, or map an error code representing a system error back to the
system error number. The following functions can be used to do that.

@deftypefun {gpgme_err_code_t} gpgme_err_code_from_errno (@w{int @var{err}})
The function @code{gpgme_err_code_from_errno} returns the error code
for the system error @var{err}. If @var{err} is not a known system
error, the function returns @code{GPG_ERR_UNKNOWN_ERRNO}.
@end deftypefun

@deftypefun {int} gpgme_err_code_to_errno (@w{gpgme_err_code_t @var{err}})
The function @code{gpgme_err_code_to_errno} returns the system error

for the error code @var{err}. If @var{err} is not an error code
representing a system error, or if this system error is not defined on
this system, the function returns @code{0}.
@end deftypefun

@node Error Sources
@section
 Error Sources
@cindex error codes, list of

The library @code{libgpg-error} defines an error source for every
component of the GnuPG system. The error source part of an error
value is not well defined. As such it is mainly useful to improve the
diagnostic error message for the user.

If the error code part of an error value is @code{0}, the whole error
value will be @code{0}. In this case the error source part is of
course @code{GPG_ERR_SOURCE_UNKNOWN}.

The list of error sources that might occur in applications using
@acronym{GPGME} is:

@table @code
@item GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is
@code{0}.

@item GPG_ERR_SOURCE_GPGME
The error source is @acronym{GPGME} itself. This is the default for
errors that occur in the @acronym{GPGME} library.

@item GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the
OpenPGP protocol.

@item GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is
 the crypto engine used for the
CMS protocol.

@item GPG_ERR_SOURCE_GCRYPT
The error source is @code{libgcrypt}, which is used by crypto engines
to perform cryptographic operations.

@item GPG_ERR_SOURCE_GPGAGENT
The error source is @command{gpg-agent}, which is used by crypto
engines to perform operations with the secret key.

@item GPG_ERR_SOURCE_PINENTRY
The error source is @command{pinentry}, which is used by
@command{gpg-agent} to query the passphrase to unlock a secret key.

@item GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by
@command{gpg-agent} to delegate operations with the secret key to a
SmartCard.

@item GPG_ERR_SOURCE_KEYBOX
The error source is @code{libkbx}, a library used by the crypto
engines to manage local keyrings.

@item GPG_ERR_SOURCE_USER_1
@item GPG_ERR_SOURCE_USER_2
@item GPG_ERR_SOURCE_USER_3
@item GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be
used by other software. For example, applications
 using
@acronym{GPGME} can use them to mark error values coming from callback
handlers. Thus @code{GPG_ERR_SOURCE_USER_1} is the default for errors
created with @code{gpgme_error} and @code{gpgme_error_from_errno},
unless you define @code{GPGME_ERR_SOURCE_DEFAULT} before including
@file{gpgme.h}.
@end table

@node Error Codes
@section Error Codes
@cindex error codes, list of

The library @code{libgpg-error} defines many error values. Most of
them are not used by @code{GPGME} directly, but might be returned by
@acronym{GPGME} because it received them from the crypto engine. The
below list only includes such error codes that have a specific meaning
in @code{GPGME}, or which are so common that you should know about
them.

@table @code
@item GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

@item GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is
@code{0}. Also, it is guaranteed that an error value made from the
error code @code{0}

will be @code{0} itself (as a whole). This means
that the error source information is lost for this error code,
however, as this error code indicates that no error occurred, this is
generally not a problem.

@item GPG_ERR_GENERAL
This value means that something went wrong, but either there is not
enough information about the problem to return a more useful error
value, or there is no separate error value for this type of problem.

@item GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

@item GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO where FOO is the symbol for
the system error.

@item GPG_ERR_INV_VALUE
This value means that some user provided data was out of range. This
can also refer to objects. For example, if an empty
@code{gpgme_data_t} object was expected, but one containing data was
provided, this error value is returned.

@item GPG_ERR_UNUSABLE_PUBKEY
This value means that some recipients for a message were invalid.

@item GPG_ERR_UNUSABLE_SECKEY
This
value means that some signers were invalid.

@item GPG_ERR_NO_DATA
This value means that a @code{gpgme_data_t} object which was expected
to have content was found empty.

@item GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

@item GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is not
implemented. This error should never happen. It can only occur if
you use certain values or configuration options which do not work,
but for which we think that they should work at some later time.

@item GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

@item GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase

when requested.

@item GPG_ERR_CANCELED
This value means that the operation was canceled.

@item GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired protocol
is currently not available. This can either be because
 the sources
were configured to exclude support for this engine, or because the
engine is not installed properly.

@item GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify
a unique key.

@item GPG_ERR_WRONG_KEY_USAGE
This value indicates that a key is not used appropriately.

@item GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

@item GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

@item GPG_ERR_NO_CRL_KNOWN
This value indicates that no certificate revocation list is known for
the certificate.

@item GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

@item GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

@item GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the
issuer certificate is missing.

@item GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its
certificate
 chain is not good, for example it could be too long.

@item GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic
algorithm is not supported by the crypto backend.

@item GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

@item GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not
available.

@item GPG_ERR_USER_1
@item GPG_ERR_USER_2
@item ...
@item GPG_ERR_USER_16
These error codes are not used by any GnuPG component and can be
freely used by other software. Applications using @acronym{GPGME}
might use them to mark specific errors returned by callback handlers
if no suitable error codes (including the system errors) for
these errors exist already.
@end table

@node Error Strings
@section Error Strings
@cindex error values, printing of
@cindex error codes, printing of
@cindex error sources, printing of
@cindex error strings

@deftypefun {const char *} gpgme_strerror
 (@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error code contained
in the error value @var{err}. This string can be used to output a
diagnostic message to the user.

This function is not thread safe. Use @code{gpgme_strerror_r} in
multi-threaded programs.
@end deftypefun

@deftypefun {int} gpgme_strerror_r (@w{gpgme_error_t @var{err}}, @w{char *@var{buf}}, @w{size_t
@var{buflen}})
The function @code{gpgme_strerror_r} returns the error string for
@var{err} in the user-supplied buffer @var{buf} of size @var{buflen}.
This function is, in contrast to @code{gpgme_strerror}, thread-safe if
a thread-safe @code{strerror_r} function is provided by the system.
If the function succeeds, 0 is returned and @var{buf} contains the
string describing the error. If the buffer was not large enough,
ERANGE is returned and @var{buf} contains as much of the beginning of
the error string as fits into

the buffer.
@end deftypefun

@deftypefun {const char *} gpgme_strsource (@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error source
contained in the error value @var{err}. This string can be used to
output a diagnostic message to the user.
@end deftypefun

The following example illustrates the use of @code{gpgme_strerror}:

@example
gpgme_ctx_t ctx;
gpgme_error_t err = gpgme_new (&ctx);
if (err)
 @{
   fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",
            argv[0], gpgme_strsource (err), gpgme_strerror (err));
   exit (1);
 @}
@end example

@node Exchanging Data
@chapter Exchanging Data
@cindex data, exchanging

A lot of data has to be exchanged between the user and the crypto
engine, like plaintext messages, ciphertext, signatures and
information about the keys. The technical details about exchanging
the data information are completely abstracted by @acronym{GPGME}.
The
 user provides and receives the data via @code{gpgme_data_t} objects,
regardless of the communication protocol between @acronym{GPGME} and
the crypto engine in use.

@deftp {Data type} {gpgme_data_t}
The @code{gpgme_data_t} type is a handle for a container for generic
data, which is used by @acronym{GPGME} to exchange data with the user.
@end deftp

@code{gpgme_data_t} objects do not provide notifications on events.
It is assumed that read and write operations are blocking until data
is available. If this is undesirable, the application must ensure
that all GPGME data operations always have data available, for example
by using memory buffers or files rather than pipes or sockets. This

might be relevant, for example, if the external event loop mechanism
is used.

@deftp {Data type} {gpgme_off_t}
@since{1.4.1}

On POSIX platforms the @code{gpgme_off_t} type is an alias for
@code{off_t}; it may be used interchangeable. On Windows platforms
@code{gpgme_off_t} is defined as
 a long (i.e. 32 bit) for 32 bit
Windows and as a 64 bit signed integer for 64 bit Windows.
@end deftp

@deftp {Data type} {gpgme_ssize_t}
The @code{gpgme_ssize_t} type is an alias for @code{ssize_t}. It has
only been introduced to overcome portability problems pertaining to
the declaration of @code{ssize_t} by different toolchains.
@end deftp

@menu
* Creating Data Buffers::   Creating new data buffers.
* Destroying Data Buffers::   Releasing data buffers.
* Manipulating Data Buffers::   Operations on data buffers.
@end menu

@node Creating Data Buffers
@section Creating Data Buffers
@cindex data buffer, creation

Data objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all
objects.

@menu
* Memory Based Data Buffers::   Creating memory based data buffers.
* File Based Data Buffers::   Creating file based data buffers.
* Callback Based Data Buffers::   Creating callback based data buffers.
@end menu

@node
 Memory Based Data Buffers
@subsection Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is

convenient, but only practical for an amount of data that is a
fraction of the available physical memory. The data has to be copied
from its source and to its destination, which can often be avoided by
using one of the other data object

@deftypefun gpgme_error_t gpgme_data_new (@w{gpgme_data_t *@var{dh}})
The function @code{gpgme_data_new} creates a new @code{gpgme_data_t}
object and returns a handle for it in @var{dh}. The data object is
memory based and initially empty.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_mem (@w{gpgme_data_t *@var{dh}}, @w{const char
*@var{buffer}}, @w{size_t @var{size}},
 @w{int @var{copy}})
The function @code{gpgme_data_new_from_mem} creates a new
@code{gpgme_data_t} object and fills it with @var{size} bytes starting
from @var{buffer}.

If @var{copy} is not zero, a private copy of the data is made. If
@var{copy} is zero, the data is taken from the specified buffer as
needed, and the user has to ensure that the buffer remains valid for
the whole life span of the data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{buffer} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_file (@w{gpgme_data_t *@var{dh}}, @w{const char
*@var{filename}}, @w{int @var{copy}})
The function @code{gpgme_data_new_from_file} creates a new
@code{gpgme_data_t} object and fills it with the content of the file
@var{filename}.

If @var{copy} is not zero, the whole file is
 read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for @var{copy} might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the

data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{filename} is not a valid pointer,
@code{GPG_ERR_NOT_IMPLEMENTED} if @var{code} is zero, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_filepart (@w{gpgme_data_t *@var{dh}}, @w{const char *@var{filename}}, @w{FILE *@var{fp}}, @w{off_t @var{offset}}, @w{size_t @var{length}})
The function @code{gpgme_data_new_from_filepart} creates a new
@code{gpgme_data_t} object and fills it with a part of the file specified
by @var{filename} or @var{fp}.

Exactly one of @var{filename} and @var{fp} must be non-zero, the other
must
be zero. The argument that is not zero specifies the file from
which @var{length} bytes are read into the data object, starting from
@var{offset}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} and exactly one of @var{filename} and @var{fp} is not a valid
pointer, and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@node File Based Data Buffers
@subsection File Based Data Buffers

File based data objects operate directly on file descriptors or
streams. Only a small amount of data is stored in core at any time,
so the size of the data objects is not limited by @acronym{GPGME}.

@deftypefun gpgme_error_t gpgme_data_new_from_fd (@w{gpgme_data_t *@var{dh}}, @w{int @var{fd}})
The function @code{gpgme_data_new_from_fd} creates a new
@code{gpgme_data_t} object and uses the file descriptor @var{fd} to read
from (if used as an input data object) and write to (if used as
an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the file descriptor than is actually needed by the
crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking
mode. Errors during I/O operations, except for EINTR, are usually
fatal for crypto operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the

data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_stream (@w{gpgme_data_t *@var{dh}}, @w{FILE *@var{stream}})
The function @code{gpgme_data_new_from_stream} creates a new
@code{gpgme_data_t} object and uses the I/O stream @var{stream} to read
from (if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the
 stream than is actually needed by the crypto
engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors
during I/O operations, except for EINTR, are usually fatal for crypto
operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_estream (@w{gpgme_data_t *@var{dh}}, @w{gpgrt_stream_t @var{stream}})
The function @code{gpgme_data_new_from_estream} creates a new
@code{gpgme_data_t} object and uses the gpgrt stream @var{stream} to read
from (if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the stream than is actually needed by the crypto
engine in the desired operation because of internal buffering.

Note that GPGME
 assumes that the stream is in blocking mode. Errors
during I/O operations, except for EINTR, are usually fatal for crypto
operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@node Callback Based Data Buffers

@subsection Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your
application, you can implement the functions a data object provides
yourself and create a data object from these callback functions.

@deftp {Data type} {ssize_t (*gpgme_data_read_cb_t) (@w{void *@var{handle}}, @w{void @var{*buffer}},
@w{size_t @var{size}})}
@tindex gpgme_data_read_cb_t
The @code{gpgme_data_read_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to read data from a user-implemented
data object. The function should read up to @var{size} bytes from the
current read position into the space
 starting at @var{buffer}. The
@var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available.
Errors during I/O operations, except for EINTR, are usually fatal for
crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1
on error. If an error occurs, @var{errno} should be set to describe
the type of the error.
@end deftp

@deftp {Data type} {ssize_t (*gpgme_data_write_cb_t) (@w{void *@var{handle}}, @w{const void
@var{*buffer}}, @w{size_t @var{size}})}
@tindex gpgme_data_write_cb_t
The @code{gpgme_data_write_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to write data to a user-implemented
data object. The function should write up to @var{size} bytes to the
current write position from the space starting at @var{buffer}. The
@var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data
 is available.
Errors during I/O operations, except for EINTR, are usually fatal for
crypto operations.

The function should return the number of bytes written, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {off_t (*gpgme_data_seek_cb_t) (@w{void *@var{handle}}, @w{off_t @var{offset}},
@w{int @var{whence}})}
@tindex gpgme_data_seek_cb_t
The @code{gpgme_data_seek_cb_t} type is the type of functions which

@acronym{GPGME} calls if it wants to change the current read/write
position in a user-implemented data object, just like the @code{lseek}
function.

The function should return the new read/write position, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {void (*gpgme_data_release_cb_t) (@w{void *@var{handle}})}
@tindex gpgme_data_release_cb_t
The @code{gpgme_data_release_cb_t} type is the type of functions which
@acronym{GPGME}
calls if it wants to destroy a user-implemented data
object. The @var{handle} is provided by the user at data object
creation time.
@end deftp

@deftp {Data type} {struct gpgme_data_cbs}
This structure is used to store the data callback interface functions
described above. It has the following members:

@table @code
@item gpgme_data_read_cb_t read
This is the function called by @acronym{GPGME} to read data from the
data object. It is only required for input data object.

@item gpgme_data_write_cb_t write
This is the function called by @acronym{GPGME} to write data to the
data object. It is only required for output data object.

@item gpgme_data_seek_cb_t seek
This is the function called by @acronym{GPGME} to change the current
read/write pointer in the data object (if available). It is optional.

@item gpgme_data_release_cb_t release
This is the function called by @acronym{GPGME} to release a data
object. It is optional.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_data_new_from_cbs
(@w{gpgme_data_t *@var{dh}}, @w{gpgme_data_cbs_t @var{cbs}}, @w{void *@var{handle}})
The function @code{gpgme_data_new_from_cbs} creates a new
@code{gpgme_data_t} object and uses the user-provided callback functions
to operate on the data object.

The handle @var{handle} is passed as first argument to the callback

functions. This can be used to identify this data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@node Destroying Data Buffers
@section Destroying Data Buffers
@cindex data buffer, destruction

@deftypefun void gpgme_data_release (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_release} destroys the data object with
the handle @var{dh}. It releases all associated resources that were
not provided by the user in the first place.
@end deftypefun

@deftypefun {char *} gpgme_data_release_and_get_mem (@w{gpgme_data_t
 @var{dh}}, @w{size_t *@var{length}})
The function @code{gpgme_data_release_and_get_mem} is like
@code{gpgme_data_release}, except that it returns the data buffer and
its length that was provided by the object.

The user has to release the buffer with @code{gpgme_free}. In case
the user provided the data buffer in non-copy mode, a copy will be
made for this purpose.

In case an error returns, or there is no suitable data buffer that can
be returned to the user, the function will return @code{NULL}. In any
case, the data object @var{dh} is destroyed.
@end deftypefun

@deftypefun void gpgme_free (@w{void *@var{buffer}})
@since{1.1.1}

The function @code{gpgme_free} releases the memory returned by
@code{gpgme_data_release_and_get_mem} and
@code{gpgme_pubkey_algo_string}. It should be used instead of the
system libraries @code{free} function in case different allocators are
used by a program. This is often the case if gpgme is used under
Windows as a DLL.
@end deftypefun

@node

Manipulating Data Buffers
@section Manipulating Data Buffers
@cindex data buffer, manipulation

Data buffers contain data and meta-data. The following operations can be used to manipulate both.

@menu
* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.
@end menu

@node Data Buffer I/O Operations
@subsection Data Buffer I/O Operations
@cindex data buffer, I/O operations
@cindex data buffer, read
@cindex data buffer, write
@cindex data buffer, seek

@deftypefun ssize_t gpgme_data_read (@w{gpgme_data_t @var{dh}}, @w{void *@var{buffer}}, @w{size_t @var{length}})
The function @code{gpgme_data_read} reads up to @var{length} bytes from the data object with the handle @var{dh} into the space starting at @var{buffer}.

If no error occurs, the actual amount read is returned. If the end of the data object is reached, the function returns 0.

In all other cases, the function returns -1 and sets @var{errno}.
@end deftypefun

@deftypefun ssize_t gpgme_data_write (@w{gpgme_data_t @var{dh}}, @w{const void *@var{buffer}}, @w{size_t @var{size}})
The function @code{gpgme_data_write} writes up to @var{size} bytes starting from @var{buffer} into the data object with the handle @var{dh} at the current write position.

The function returns the number of bytes actually written, or -1 if an error occurs. If an error occurs, @var{errno} is set.
@end deftypefun

@deftypefun off_t gpgme_data_seek (@w{gpgme_data_t @var{dh}}, @w{off_t @var{offset}}, @w{int @var{whence}})
The function @code{gpgme_data_seek} changes the current read/write

position.

The @var{whence} argument specifies how the @var{offset} should be
interpreted. It must be one of the following symbolic constants:

@table @code
@item SEEK_SET
Specifies that @var{offset} is a count of characters from the
beginning of the data object.

@item SEEK_CUR
Specifies that @var{offset}
 is a count of characters from the current
file position. This count may be positive or negative.

@item SEEK_END
Specifies that @var{offset} is a count of characters from the end of
the data object. A negative count specifies a position within the
current extent of the data object; a positive count specifies a
position past the current end. If you set the position past the
current end, and actually write data, you will extend the data object
with zeros up to that position.
@end table

If successful, the function returns the resulting file position,
measured in bytes from the beginning of the data object. You can use
this feature together with @code{SEEK_CUR} to read the current
read/write position.

If the function fails, -1 is returned and @var{errno} is set.
@end deftypefun

@node Data Buffer Meta-Data
@subsection Data Buffer Meta-Data
@cindex data buffer, meta-data
@cindex data buffer, file name
@cindex data buffer, encoding

@deftypefun {char *} gpgme_data_get_file_name
 (@w{gpgme_data_t @var{dh}})
@since{1.1.0}

The function @code{gpgme_data_get_file_name} returns a pointer to a
string containing the file name associated with the data object. The
file name will be stored in the output when encrypting or signing the
data and will be returned to the user when decrypting or verifying the
output data.

If no error occurs, the string containing the file name is returned.
Otherwise, @code{NULL} will be returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_file_name (@w{gpgme_data_t @var{dh}}, @w{const char *@var{file_name}})
@since{1.1.0}

The function @code{gpgme_data_set_file_name} sets the file name
associated with the data object. The file name will be stored in the
output when encrypting or signing the data and will be returned to the
user when decrypting or verifying the output data.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{dh} is not a valid pointer and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end
deftypefun

@deftp {Data type} {enum gpgme_data_encoding_t}
@tindex gpgme_data_encoding_t
The @code{gpgme_data_encoding_t} type specifies the encoding of a
@code{gpgme_data_t} object. For input data objects, the encoding is
useful to give the backend a hint on the type of data. For output
data objects, the encoding can specify the output data format on
certain operations. Please note that not all backends support all
encodings on all operations. The following data types are available:

@table @code
@item GPGME_DATA_ENCODING_NONE
This specifies that the encoding is not known. This is the default
for a new data object. The backend will try its best to detect the
encoding automatically.

@item GPGME_DATA_ENCODING_BINARY
This specifies that the data is encoding in binary form; i.e. there is
no special encoding.

@item GPGME_DATA_ENCODING_BASE64
This specifies that the data is encoded using the Base-64 encoding
scheme as used by @acronym{MIME} and other protocols.

@item
GPGME_DATA_ENCODING_ARMOR
This specifies that the data is encoded in an armored form as used by

OpenPGP and PEM.

@item GPGME_DATA_ENCODING_MIME
@since{1.7.0}

This specifies that the data is encoded as a MIME part.

@item GPGME_DATA_ENCODING_URL
@since{1.2.0}

The data is a list of linefeed delimited URLs. This is only useful with
@code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URL0
@since{1.2.0}

The data is a list of binary zero delimited URLs. This is only useful
with @code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URLESC
@since{1.2.0}

The data is a list of linefeed delimited URLs with all control and space
characters percent escaped. This mode is is not yet implemented.

@end table
@end deftp

@deftypefun gpgme_data_encoding_t gpgme_data_get_encoding (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_get_encoding} returns the encoding of
the data object with the handle @var{dh}. If @var{dh} is not a valid
pointer (e.g. @code{NULL}) @code{GPGME_DATA_ENCODING_NONE}
 is
returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_encoding (@w{gpgme_data_t @var{dh}, gpgme_data_encoding_t
@var{enc}})
The function @code{gpgme_data_set_encoding} changes the encoding of
the data object with the handle @var{dh} to @var{enc}.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_data_set_flag @
        (@w{gpgme_data_t @var{dh}}, @
        @w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the data object can be controlled with flags
set by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item size-hint
The value is a decimal number with the length gpgme shall assume for
this data object. This is useful if the data is provided by callbacks
or via file descriptors but the applications knows the total size of
the data. If this is set the OpenPGP engine may use this to decide on
buffer allocation strategies and to provide a total
 value for its
progress information.

@end table

This function returns @code{0} on success.
@end deftypefun

@node Data Buffer Convenience
@subsection Data Buffer Convenience Functions
@cindex data buffer, convenience
@cindex type of data
@cindex identify

@deftp {Data type} {enum gpgme_data_type_t}
@tindex gpgme_data_type_t
@since{1.4.3}

The @code{gpgme_data_type_t} type is used to return the detected type
of the content of a data buffer.
@end deftp

@table @code
@item GPGME_DATA_TYPE_INVALID
This is returned by @code{gpgme_data_identify} if it was not possible
to identify the data. Reasons for this might be a non-seekable stream
or a memory problem. The value is 0.
@item GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
@item GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary
signature, a detached one or a cleartext signature.
@item GPGME_DATA_TYPE_PGP_ENCRYPTED
@since{1.7.0}

The data is an OpenPGP encrypted message.
@item GPGME_DATA_TYPE_PGP_SIGNATURE
@since{1.7.0}

The
 data is an OpenPGP detached signature.
@item GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be
encrypted data.
@item GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
@item GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
@item GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
@item GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
@item GPGME_DATA_TYPE_X509_CERT
The data is a X.509 certificate
@item GPGME_DATA_TYPE_PKCS12
The data is a PKCS#12 message. This is commonly used to exchange
private keys for X.509.
@end table

@deftypefun gpgme_data_type_t gpgme_data_identify (@w{gpgme_data_t @var{dh}})
@since{1.4.3}

The function @code{gpgme_data_identify} returns the type of the data
with the handle @var{dh}. If it is not possible to perform the
identification, the function returns zero
(@code{GPGME_DATA_TYPE_INVALID}). Note that depending
 on how the data
object has been created the identification may not be possible or the
data object may change its internal state (file pointer moved). For
file or memory based data object, the state should not change.
@end deftypefun

@c
@c Chapter Contexts
@c
@node Contexts
@chapter Contexts
@cindex context

All cryptographic operations in @acronym{GPGME} are performed within a
context, which contains the internal state of the operation as well as
configuration parameters. By using several contexts you can run

several cryptographic operations in parallel, with different
configuration.

@deftp {Data type} {gpgme_ctx_t}
The @code{gpgme_ctx_t} type is a handle for a @acronym{GPGME} context,
which is used to hold the configuration, status and result of
cryptographic operations.
@end deftp

@menu
* Creating Contexts:: Creating new @acronym{GPGME} contexts.
* Destroying Contexts:: Releasing @acronym{GPGME} contexts.
* Result Management:: Managing the
 result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with @acronym{GPGME}.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations
* Run Control:: Controlling how operations are run.
@end menu

@node Creating Contexts
@section Creating Contexts
@cindex context, creation

@deftypefun gpgme_error_t gpgme_new (@w{gpgme_ctx_t *@var{ctx}})
The function @code{gpgme_new} creates a new @code{gpgme_ctx_t} object
and returns a handle for it in @var{ctx}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
context was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available. Also, it returns
@code{GPG_ERR_NOT_OPERATIONAL} if @code{gpgme_check_version} was not
called to initialize GPGME, and @code{GPG_ERR_SELFTEST_FAILED}
 if a
selftest failed. Currently, the only selftest is for Windows MingW32
targets to see if @code{-mms-bitfields} was used (as required).
@end deftypefun

@node Destroying Contexts
@section Destroying Contexts
@cindex context, destruction

@deftypefun void gpgme_release (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_release} destroys the context with the handle

@var{ctx} and releases all associated resources.
@end deftypefun

@node Result Management
@section Result Management
@cindex context, result of operation

The detailed result of an operation is returned in operation-specific
structures such as @code{gpgme_decrypt_result_t}. The corresponding
retrieval functions such as @code{gpgme_op_decrypt_result} provide
static access to the results after an operation completes. Those
structures shall be considered read-only and an application must not
allocate such a structure on its own. The following interfaces make
it possible to detach a result structure from its associated
context
and give it a lifetime beyond that of the current operation or
context.

@deftypefun void gpgme_result_ref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_ref} acquires an additional reference
for the result @var{result}, which may be of any type
@code{gpgme_*_result_t}. As long as the user holds a reference, the
result structure is guaranteed to be valid and unmodified.
@end deftypefun

@deftypefun void gpgme_result_unref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_unref} releases a reference for the
result @var{result}. If this was the last reference, the result
structure will be destroyed and all resources associated to it will be
released.
@end deftypefun

Note that a context may hold its own references to result structures,
typically until the context is destroyed or the next operation is
started. In fact, these references are accessed through the
@code{gpgme_op_*_result} functions.

@node Context Attributes
@section
Context Attributes
@cindex context, attributes

@menu
* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
*
Additional Logs:: Additional logs of a context.
@end menu

@node Protocol Selection
@subsection Protocol Selection
@cindex context, selecting protocol
@cindex protocol, selecting

@deftypefun gpgme_error_t gpgme_set_protocol (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t @var{proto}})
The function @code{gpgme_set_protocol} sets the protocol used within the context @var{ctx} to @var{proto}. All crypto operations will be performed by the crypto engine configured for that protocol. @xref{Protocols and Engines}.

Setting the protocol with @code{gpgme_set_protocol} does intentionally not check if the crypto engine for that protocol is available and installed correctly. @xref{Engine Version Check}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the protocol could be set successfully, and @code{GPG_ERR_INV_VALUE} if @var{protocol} is not a valid protocol.
@end deftypefun

@deftypefun gpgme_protocol_t gpgme_get_protocol (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_protocol} retrieves the protocol currently use with the context @var{ctx}.
@end deftypefun

@node Crypto Engine
@subsection Crypto Engine
@cindex context, configuring engine
@cindex engine, configuration per context

The following functions can be used to set and retrieve the
configuration of the crypto engines of a specific context. The
default can also be retrieved without any particular context.
@xref{Engine Information}. The default can also be changed globally.
@xref{Engine Configuration}.

@deftypefun gpgme_engine_info_t gpgme_ctx_get_engine_info (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_ctx_get_engine_info} returns a linked list of
engine info structures. Each info structure describes the
configuration of one configured backend, as used by the context
@var{ctx}.

The result is valid until the next invocation of
@code{gpgme_ctx_set_engine_info} for this particular context.

This function can not fail.
@end deftypefun

@deftypefun
gpgme_error_t gpgme_ctx_set_engine_info (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t
@var{proto}}, @w{const char *@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_ctx_set_engine_info} changes the
configuration of the crypto engine implementing the protocol
@var{proto} for the context @var{ctx}.

@var{file_name} is the file name of the executable program
implementing this protocol, and @var{home_dir} is the directory name
of the configuration directory for this crypto engine. If
@var{home_dir} is @code{NULL}, the engine's default will be used.

Currently this function must be used before starting the first crypto
operation. It is unspecified if and when the changes will take effect
if the function is called after starting the first operation on the
context @var{ctx}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, or an error code on failure.
@end deftypefun

@node Setting the Sender
@subsection How to tell
 the engine the sender.
@cindex context, sender
@cindex sender
@cindex From:

Some engines can make use of the senders address, for example to
figure out the best user id in certain trust models. For verification
and signing of mails, it is thus suggested to let the engine know the
sender ("From:") address. @acronym{GPGME} provides two functions to
accomplish that. Note that the esoteric use of multiple "From:"
addresses is not supported.

@deftypefun gpgme_error_t gpgme_set_sender @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{int @var{address}})

@since{1.8.0}

The function @code{gpgme_set_sender} specifies the sender address for
use in sign and verify operations. @var{address} is expected to be
the ``addr-spec'' part of an address but my also be a complete mailbox
address, in which case this function extracts the ``addr-spec'' from
it. Using @code{NULL} for @var{address} clears the sender address.

The function returns 0 on success or an error code on failure. The
most likely
 failure is that no valid ``addr-spec'' was found in
@var{address}.

@end deftypefun

@deftypefun @w{const char *} gpgme_get_sender @
    (@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_get_sender} returns the current sender
address from the context, or NULL if none was set. The returned
value is valid as long as the @var{ctx} is valid and
@code{gpgme_set_sender} has not been called again.

@end deftypefun

@c FIXME: Unfortunately, using @acronym here breaks texi2dvi.
@node ASCII Armor
@subsection @acronym{ASCII} Armor
@cindex context, armor mode
@cindex @acronym{ASCII} armor
@cindex armor mode

@deftypefun void gpgme_set_armor (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_armor} specifies if the output should be
@acronym{ASCII} armored. By default, output is not @acronym{ASCII}
armored.

@acronym{ASCII} armored output is disabled if @var{yes} is zero, and
enabled otherwise.
@end deftypefun

@deftypefun int gpgme_get_armor (@w{gpgme_ctx_t
 @var{ctx}})
The function @code{gpgme_get_armor} returns 1 if the output is
@acronym{ASCII} armored, and @code{0} if it is not, or if @var{ctx} is
not a valid pointer.
@end deftypefun

@node Text Mode
@subsection Text Mode
@cindex context, text mode
@cindex text mode
@cindex canonical text mode

@deftypefun void gpgme_set_textmode (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_textmode} specifies if canonical text mode
should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that
the updated RFC 3156 mandates that the mail user agent does some
preparations so that text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored
by all other engines.

Canonical text mode is disabled if @var{yes} is zero, and enabled
otherwise.
@end deftypefun

@deftypefun int gpgme_get_textmode (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_textmode} returns

1 if canonical text
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Offline Mode
@subsection Offline Mode
@cindex context, offline mode
@cindex offline mode

@deftypefun void gpgme_set_offline (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
@since{1.6.0}

The function @code{gpgme_set_offline} specifies if offline mode should
be used. Offline mode is disabled if @var{yes} is zero, and enabled
otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its
backend engine. It may eventually be extended to be more stricter and
for example completely disable the use of Dirmngr for any engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall
be used to do additional validation that might require connecting
external services (e.g. CRL / OCSP checks). Here the offline mode
only affects the keylist mode @code{GPGME_KEYLIST_MODE_VALIDATE}.

For the OpenPGP
protocol offline mode entirely disables the use of the
Dirmngr and will thus guarantee that no network connections are done
as part of an operation on this context. It has only an effect with
GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

@end deftypefun

@deftypefun int gpgme_get_offline (@w{gpgme_ctx_t @var{ctx}})
@since{1.6.0}

The function @code{gpgme_get_offline} returns 1 if offline
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Pinentry Mode
@subsection Pinentry Mode

@cindex context, pinentry mode
@cindex pinentry mode

@deftypefun gpgme_error_t gpgme_set_pinentry_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_pinentry_mode_t @var{mode}})

@since{1.4.0}

The function @code{gpgme_set_pinentry_mode} specifies the pinentry mode
to be used.

For GnuPG >= 2.1 this option is required to be set to
@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback
mechanism in GPGME
through @code{gpgme_set_passphrase_cb}.
@end deftypefun

@deftypefun gpgme_pinentry_mode_t gpgme_get_pinentry_mode (@w{gpgme_ctx_t @var{ctx}})
@since{1.4.0}

The function @code{gpgme_get_pinenty_mode} returns the
mode set for the context.
@end deftypefun

@deftp {Data type} {enum gpgme_pinentry_mode_t}
@tindex gpgme_pinentry_mode_t
@since{1.4.0}

The @code{gpgme_minentry_mode_t} type specifies the set of possible pinentry
modes that are supported by @acronym{GPGME} if GnuPG >= 2.1 is used.
The following modes are supported:

@table @code
@item GPGME_PINENTRY_MODE_DEFAULT
@since{1.4.0}

Use the default of the agent, which is ask.

@item GPGME_PINENTRY_MODE_ASK
@since{1.4.0}

Force the use of the Pinentry.

@item GPGME_PINENTRY_MODE_CANCEL
@since{1.4.0}

Emulate use of Pinentry's cancel button.

@item GPGME_PINENTRY_MODE_ERROR
@since{1.4.0}

Return a Pinentry error @code{No Pinentry}.

@item GPGME_PINENTRY_MODE_LOOPBACK
@since{1.4.0}

Redirect Pinentry queries to the caller.
This enables
the use of @code{gpgme_set_passphrase_cb} because pinentry
queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires @code{allow-loopback-pinentry}
to be enabled in the @file{gpg-agent.conf} or an agent started with that option.

@end table
@end deftp

@node Included Certificates
@subsection Included Certificates
@cindex certificates, included

@deftypefun void gpgme_set_include_certs (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{nr_of_certs}})
The function @code{gpgme_set_include_certs} specifies how many
certificates should be included in an S/MIME signed message. By
default, only the sender's certificate is included. The possible
values of @var{nr_of_certs} are:

@table @code
@item GPGME_INCLUDE_CERTS_DEFAULT
@since{1.0.3}

Fall back to the default of the crypto backend. This is the default
for GPGME.
@item -2
Include all certificates except the root certificate.
@item -1
Include all certificates.
@item 0
Include no certificates.
@item 1
Include the sender's
certificate only.
@item n
Include the first n certificates of the certificates path, starting
from the sender's certificate. The number @code{n} must be positive.

@end table

Values of @var{nr_of_certs} smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by
all other engines.
@end deftypefun

@deftypefun int gpgme_get_include_certs (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_include_certs} returns the number of
certificates to include into an S/MIME signed message.
@end deftypefun

@node Key Listing Mode
@subsection Key Listing Mode
@cindex key listing mode
@cindex key listing, mode of

@deftypefun gpgme_error_t gpgme_set_keylist_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_keylist_mode_t @var{mode}})
The function @code{gpgme_set_keylist_mode} changes the default
behaviour of the key listing functions. The value in @var{mode} is a
bitwise-or combination of one or multiple of the following bit values:

@table @code
@item GPGME_KEYLIST_MODE_LOCAL
The
 @code{GPGME_KEYLIST_MODE_LOCAL} symbol specifies that the local
keyring should be searched for keys in the keylisting operation. This
is the default.

Using only this option results in a @code{--list-keys}.

@item GPGME_KEYLIST_MODE_EXTERN
The @code{GPGME_KEYLIST_MODE_EXTERN} symbol specifies that an external
source should be searched for keys in the keylisting operation. The
type of external source is dependent on the crypto engine used and
whether it is combined with @code{GPGME_KEYLIST_MODE_LOCAL}. For
example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a @code{--search-keys} for
@code{GPGME_PROTOCOL_OpenPGP} and something similar to
@code{--list-external-keys} for @code{GPGME_PROTOCOL_CMS}.

@item GPGME_KEYLIST_MODE_LOCATE
This is a shortcut for the combination of
@code{GPGME_KEYLIST_MODE_LOCAL} and @code{GPGME_KEYLIST_MODE_EXTERN}, which

results in a @code{--locate-keys} for @code{GPGME_PROTOCOL_OpenPGP}.

@item
GPGME_KEYLIST_MODE_SIGS
The @code{GPGME_KEYLIST_MODE_SIGS} symbol specifies that the key
signatures should be included in the listed keys.

@item GPGME_KEYLIST_MODE_SIG_NOTATIONS
@since{1.1.1}

The @code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} symbol specifies that the
signature notations on key signatures should be included in the listed
keys. This only works if @code{GPGME_KEYLIST_MODE_SIGS} is also
enabled.

@item GPGME_KEYLIST_MODE_WITH_TOFU
@since{1.7.0}

The @code{GPGME_KEYLIST_MODE_WITH_TOFU} symbol specifies that
information pertaining to the TOFU trust model should be included in
the listed keys.

@item GPGME_KEYLIST_MODE_WITH_KEYGRIP
@since{1.14.0}

The @code{GPGME_KEYLIST_MODE_WITH_KEYRIP} symbol specifies that the
keygrip is always included in the listing. The default depends on the
version of the backend and the used protocol.

@item GPGME_KEYLIST_MODE_WITH_SECRET
@since{1.5.1}

The @code{GPGME_KEYLIST_MODE_WITH_SECRET} returns information about
the presence of a corresponding
secret key in a public key listing. A
public key listing with this mode is slower than a standard listing
but can be used instead of a second run to list the secret keys. This
is only supported for GnuPG versions >= 2.1. Note that using this
option also makes sure that the keygrip is available in the output.

@item GPGME_KEYLIST_MODE_EPHEMERAL
@since{1.2.0}

The @code{GPGME_KEYLIST_MODE_EPHEMERAL} symbol specifies that keys
flagged as ephemeral are included in the listing.

@item GPGME_KEYLIST_MODE_VALIDATE
@since{0.4.5}

The @code{GPGME_KEYLIST_MODE_VALIDATE} symbol specifies that the
backend should do key or certificate validation and not just get the
validity information from an internal cache. This might be an
expensive operation and is in general not useful. Currently only
implemented for the S/MIME backend and ignored for other backends.

@end table

At least one of @code{GPGME_KEYLIST_MODE_LOCAL} and
@code{GPGME_KEYLIST_MODE_EXTERN} must be specified. For future binary
compatibility,
 you should get the current mode with
@code{gpgme_get_keylist_mode} and modify it by setting or clearing the
appropriate bits, and then using that calculated value in the
@code{gpgme_set_keylisting_mode} operation. This will leave all other
bits in the mode value intact (in particular those that are not used
in the current version of the library).

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
mode could be set correctly, and @code{GPG_ERR_INV_VALUE} if @var{ctx}
is not a valid pointer or @var{mode} is not a valid mode.
@end deftypefun

@deftypefun gpgme_keylist_mode_t gpgme_get_keylist_mode (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_keylist_mode} returns the current key
listing mode of the context @var{ctx}. This value can then be
modified and used in a subsequent @code{gpgme_set_keylist_mode}
operation to only affect the desired bits (and leave all others
intact).

The function returns 0 if @var{ctx} is not a valid pointer, and
 the
current mode otherwise. Note that 0 is not a valid mode value.
@end deftypefun

@node Passphrase Callback
@subsection Passphrase Callback
@cindex callback, passphrase
@cindex passphrase callback

@deftp {Data type} {gpgme_error_t (*gpgme_passphrase_cb_t)(void *@var{hook}, const char *@var{uid_hint},
const char *@var{passphrase_info}, @w{int @var{prev_was_bad}}, @w{int @var{fd}})}
@tindex gpgme_passphrase_cb_t
The @code{gpgme_passphrase_cb_t} type is the type of functions usable as
passphrase callback function.

The argument @var{uid_hint} might contain a string that gives an
indication for which user ID the passphrase is required. If this is
not available, or not applicable (in the case of symmetric encryption,
for example), @var{uid_hint} will be @code{NULL}.

The argument @var{passphrase_info}, if not @code{NULL}, will give
further information about the context in which the passphrase is
required. This information is engine and operation specific.

If this is the repeated attempt
 to get the passphrase, because
previous attempts failed, then @var{prev_was_bad} is 1, otherwise it
will be 0.

The user must write the passphrase, followed by a newline character,
to the file descriptor @var{fd}. The function @code{gpgme_io_writen}
should be used for the write operation. Note that if the user returns
0 to indicate success, the user must at least write a newline
character before returning from the callback.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. You can use the error code @code{GPG_ERR_CANCELED} to abort
the operation. Otherwise, return @code{0}.

Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not
with the 2.0.x series. See @code{gpgme_set_pinentry_mode} for more
details on 2.1.x usage.
@end deftp

@deftypefun void gpgme_set_passphrase_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t
@var{passfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_passphrase_cb} sets the function that is
used
 when a passphrase needs to be provided by the user to
@var{passfunc}. The function @var{passfunc} needs to implemented by
the user, and whenever it is called, it is called with its first
argument being @var{hook_value}. By default, no passphrase callback
function is set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase from
a trusted agent (a daemon process), rather than having each user to
implement their own passphrase query. Some engines do not even
support an external passphrase callback at all, in this case the error
code @code{GPG_ERR_NOT_SUPPORTED} is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to

@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback.
See @code{gpgme_set_pinentry_mode}.

The user can disable the use of a passphrase callback function by
calling @code{gpgme_set_passphrase_cb} with @var{passfunc} being
@code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_passphrase_cb
(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t *@var{passfunc}}, @w{void **@var{hook_value}})
The function @code{gpgme_get_passphrase_cb} returns the function that
is used when a passphrase needs to be provided by the user in
@var{*passfunc}, and the first argument for this function in
@var{*hook_value}. If no passphrase callback is set, or @var{ctx} is
not a valid pointer, @code{NULL} is returned in both variables.

@var{passfunc} or @var{hook_value} can be @code{NULL}. In this case,
the corresponding value will not be returned.
@end deftypefun

@node Progress Meter Callback
@subsection Progress Meter Callback
@cindex callback, progress meter
@cindex progress meter callback

@deftp {Data type} {void (*gpgme_progress_cb_t)(void *@var{hook}, const char *@var{what}, int @var{type}, int @var{current}, int @var{total})}
@tindex gpgme_progress_cb_t
The @code{gpgme_progress_cb_t} type is the type of functions usable as
progress callback function.

The arguments are
specific to the crypto engine. More information
about the progress information returned from the GnuPG engine can be
found in the GnuPG source code in the file @file{doc/DETAILS} in the
section PROGRESS.
@end deftp

@deftypefun void gpgme_set_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t @var{progfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_progress_cb} sets the function that is
used when progress information about a cryptographic operation is
available. The function @var{progfunc} needs to implemented by the
user, and whenever it is called, it is called with its first argument
being @var{hook_value}. By default, no progress callback function
is set.

Setting a callback function allows an interactive program to display
progress information about a long operation to the user.

The user can disable the use of a progress callback function by
calling @code{gpgme_set_progress_cb} with @var{progfunc} being
@code{NULL}.
@end deftypefun

@deftypefun void
gpgme_get_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t *@var{progfunc}},
@w{void **@var{hook_value}})
The function @code{gpgme_get_progress_cb} returns the function that is
used to inform the user about the progress made in @var{*progfunc},
and the first argument for this function in @var{*hook_value}. If no
progress callback is set, or @var{ctx} is not a valid pointer,
@code{NULL} is returned in both variables.

@var{progfunc} or @var{hook_value} can be @code{NULL}. In this case,
the corresponding value will not be returned.
@end deftypefun

@node Status Message Callback
@subsection Status Message Callback
@cindex callback, status message
@cindex status message callback

@deftp {Data type} {gpgme_error_t (*gpgme_status_cb_t)(void *@var{hook}, const char *@var{keyword}, const
char *@var{args})}
@tindex gpgme_status_cb_t
The @code{gpgme_status_cb_t} type is the type of function usable as
a status message callback function.

The argument @var{keyword} is the name
of the status message while the
@var{args} argument contains any arguments for the status message.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. Otherwise, return @code{0}.
@end deftp

@deftypefun void gpgme_set_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t
@var{statusfunc}}, @w{void *@var{hook_value}})
@since{1.6.0}

The function @code{gpgme_set_status_cb} sets the function that is used when a
status message is received from gpg to @var{statusfunc}. The function

@var{statusfunc} needs to be implemented by the user, and whenever it is
called, it is called with its first argument being @var{hook_value}. By
default, no status message callback function is set.

The user can disable the use of a status message callback function by calling
@code{gpgme_set_status_cb} with @var{statusfunc} being @code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t
*@var{statusfunc}}, @w{void **@var{hook_value}})
@since{1.6.0}

The
 function @code{gpgme_get_status_cb} returns the function that is used to
process status messages from gpg in @var{*statusfunc}, and the first argument
for this function in @var{*hook_value}. If no status message callback is set,
or @var{ctx} is not a valid pointer, @code{NULL} is returned in both
variables.
@end deftypefun

@node Context Flags
@subsection Context Flags
@cindex flags, of a context

@deftypefun {gpgme_error_t} gpgme_set_ctx_flag @
        (@w{gpgme_ctx_t @var{ctx}}, @
        @w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the context can be controlled with flags set
by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item "redraw"
This flag is normally not changed by the caller because GPGME sets and
clears it automatically: The flag is cleared before an operation and
set if an operation noticed that the engine has launched
 a Pinentry.
A Curses based application may use this information to redraw the
screen; for example:

@example
  err = gpgme_op_keylist_start (ctx, "foo@@example.org", 0);
  while (!err)
    @{

```
      err = gpgme_op_keylist_next (ctx, &key);
      if (err)
        break;
      show_key (key);
      gpgme_key_release (key);
    @}
  if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
    redraw_screen ();
  gpgme_release (ctx);
@end example
```

@item "full-status"
Using a @var{value} of "1" the status callback set by
gpgme_set_status_cb returns all status lines with the exception of
PROGRESS lines. With the default of "0" the status callback is only
called in certain situations.

@item "raw-description"
Setting the @var{value} to "1" returns human readable strings in a raw
format. For example the non breaking space characters ("~") will not
be removed from the @code{description} field of the
@code{gpgme_tofu_info_t} object.

@item "export-session-key"
Using a @var{value}
 of "1" specifies that the context should try to
export the symmetric session key when decrypting data. By default, or
when using an empty string or "0" for @var{value}, session keys are
not exported.

@item "override-session-key"
The string given in @var{value} is passed to the GnuPG engine to override
the session key for decryption. The format of that session key is
specific to GnuPG and can be retrieved during a decrypt operation when
the context flag "export-session-key" is enabled. Please be aware that
using this feature with GnuPG < 2.1.16 will leak the session key on
many platforms via ps(1).

@item "auto-key-retrieve"
Setting the @var{value} to "1" asks the backend to automatically
retrieve a key for signature verification if possible. Note that this
option makes a "web bug" like behavior possible. Keyserver or Web Key
Directory operators can see which keys you request, so by sending you
a message signed by a brand new key (which you naturally will not have
on your
 local keyring), the operator can tell both your IP address and
the time when you verified the signature.

@item "auto-key-import"
Setting the @var{value} to "1" forces the GPG backend to automatically
import a missing key for signature verification from the signature.

@item "include-key-block"
Setting the @var{value} to "1" forces the GPG backend to embed the
signing key as well as an encryption subkey into the the signature.

@item "request-origin"
The string given in @var{value} is passed to the GnuPG engines to
request restrictions based on the origin of the request. Valid values
are documented in the GnuPG manual and the gpg man page under the
option @option{--request-origin}. Requires at least GnuPG 2.2.6 to have an
effect.

@item "no-symkey-cache"
For OpenPGP disable the passphrase cache used for symmetrical en- and
decryption. This cache is based on the message specific salt value.
Requires at least GnuPG 2.2.7 to have an effect.

@item "ignore-mdc-error"
This flag passes
 the option @option{--ignore-mdc-error} to gpg. This
can be used to force decryption of a message which failed due to a
missing integrity check. This flag must be used with great caution
and only if it is a known non-corrupted old message and the decryption
result of the former try had the decryption result flag
@code{legacy_cipher_nomdc} set. For failsafe reasons this flag is
reset after each operation.

@item "auto-key-locate"
The string given in @var{value} is passed to gpg. This can be used
to change the behavior of a @code{GPGME_KEYLIST_MODE_LOCATE} keylisting.
Valid values are documented in the GnuPG manual and the gpg man page under
the option @option{--auto-key-locate}.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through @code{auto-key-locate} are automatically
imported in the keyring.

@item trust-model
@since{1.11.2}

Change the trust-model for all GnuPG engine operations. An empty
string sets the trust-model back to the users default. If the
trust-model is not

supported by GnuPG the behavior is undefined
and will likely cause all operations to fail. Example: "tofu+pgp".

This options should be used carefully with a strict version
requirement. In some versions of GnuPG setting the
trust-model changes the default trust-model for future operations.
A change in the trust-model also can have unintended side effects, like
rebuilding the trust-db.

@item "extended-edit"
This flag passes the option @option{--expert} to gpg key edit. This
can be used to get additional callbacks in @code{gpgme_op_edit}.

@end table

This function returns @code{0} on success.
@end deftypefun

@deftypefun {const char *} gpgme_get_ctx_flag @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const char *@var{name}})

@since{1.8.0}

The value of flags settable by @code{gpgme_set_ctx_flag} can be
retrieved by this function. If @var{name} is unknown the function
returns @code{NULL}. For boolean flags an empty string is returned
for False and the string "1" is
returned for True; either atoi(3) or a
test for an empty string can be used to get the boolean value.

@end deftypefun

@node Locale
@subsection Locale
@cindex locale, default
@cindex locale, of a context

A locale setting can be associated with a context. This locale is
passed to the crypto engine, and used for applications like the PIN
entry, which is displayed to the user when entering a passphrase is
required.

The default locale is used to initialize the locale setting of all
contexts created afterwards.

@deftypefun gpgme_error_t gpgme_set_locale (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{category}},
@w{const char *@var{value}})
@since{0.4.3}

The function @code{gpgme_set_locale} sets the locale of the context
@var{ctx}, or the default locale if @var{ctx} is a null pointer.

The locale settings that should be changed are specified by
@var{category}. Supported categories are @code{LC_CTYPE},
@code{LC_MESSAGES}, and @code{LC_ALL}, which is a wildcard you can use
if you want to change
 all the categories at once.

The value to be used for the locale setting is @var{value}, which will
be copied to @acronym{GPGME}'s internal data structures. @var{value}
can be a null pointer, which disables setting the locale, and will
make PIN entry and other applications use their default setting, which
is usually not what you want.

Note that the settings are only used if the application runs on a text
terminal, and that the settings should fit the configuration of the
output terminal. Normally, it is sufficient to initialize the default
value at startup.

The function returns an error if not enough memory is available.
@end deftypefun

@node Additional Logs
@subsection Additional Logs
@cindex auditlog, of the engine
@cindex auditlog

Additional logs can be associated with a context. These logs are
engine specific and can be be obtained with @code{gpgme_op_getauditlog}.

@deftypefun gpgme_error_t gpgme_op_getauditlog @
	(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}},
@
	@w{unsigned int @var{flags}})
@since{1.1.1}

The function @code{gpgme_op_getauditlog} is used to obtain additional
logs as specified by @var{flags} into the @var{output} data. If

The function returns the error code @code{GPG_ERR_NO_ERROR} if a
log could be queried from the engine, and @code{GPG_ERR_NOT_IMPLEMENTED}
if the log specified in @var{flags} is not available for this engine.

If no log is available @code{GPG_ERR_NO_DATA} is returned.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_AUDITLOG_DIAG
@since{1.11.2}

Obtain diagnostic output which would be written to @code{stderr} in
interactive use of the engine. This can be used to provide additional
diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will
be empty and @code{GPG_ERR_NO_DATA} will be returned.

Implemented for: @code{GPGME_PROTOCOL_OpenPGP}

@item
 GPGME_AUDITLOG_DEFAULT
@since{1.11.2}

This flag has the value 0 for compatibility reasons. Obtains additional
information from the engine by issuing the @code{GETAUDITLOG} command.
For @code{GPGME_PROTOCOL_CMS} this provides additional information about
the X509 certificate chain.

Implemented for: @code{GPGME_PROTOCOL_CMS}

@item GPGME_AUDITLOG_HTML
@since{1.1.1}

Same as @code{GPGME_AUDITLOG_DEFAULT} but in HTML.

Implemented for: @code{GPGME_PROTOCOL_CMS}
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_getauditlog_start @
      (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}}, @
      @w{unsigned int @var{flags}})
@since{1.1.1}

This is the asynchronous variant of @code{gpgme_op_getauditlog}.
@end deftypefun

@node Key Management
@section Key Management

@cindex key management

Some of the cryptographic operations require that recipients or
signers are specified. This is always done by specifying the
respective keys that should be used
 for the operation. The following
section describes how such keys can be selected and manipulated.

@menu
* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.
@end menu

@node Key objects
@subsection Key objects

The keys are represented in GPGME by
 structures which may only be read
by the application but never be allocated or changed. They are valid
as long as the key object itself is valid.

@deftp {Data type} gpgme_key_t

The @code{gpgme_key_t} type is a pointer to a key object. It has the
following members:

@table @code
@item gpgme_keylist_mode_t keylist_mode
@since{0.9.0}

The keylist mode that was active when the key was retrieved.

@item unsigned int revoked : 1
This is true if the key is revoked.

@item unsigned int expired : 1
This is true if the key is expired.

@item unsigned int disabled : 1
This is true if the key is disabled.

@item unsigned int invalid : 1
This is true if the key is invalid. This might have several reasons,
for a example for the S/MIME backend, it will be set during key
listings if the key could not be validated due to missing
certificates or unmatched policies.

@item unsigned int can_encrypt : 1
This is true if the key (ie one of its subkeys) can be used for
encryption.

@item unsigned int can_sign
: 1
This is true if the key (ie one of its subkeys) can be used to create
data signatures.

@item unsigned int can_certify : 1
This is true if the key (ie one of its subkeys) can be used to create
key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the key (ie one of its subkeys) can be used for
authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the key can be used for qualified signatures according
to local government regulations.

@item unsigned int secret : 1
This is true if the key is a secret key. Note, that this will always
be true even if the corresponding subkey flag may be false
(offline/stub keys). This is only set if a listing of secret keys has
been requested or if @code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this key.

@item gpgme_protocol_t protocol
This is the protocol supported by this key.

@item char *issuer_serial
If
 @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer serial.

@item char *issuer_name
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer name.

@item char *chain_id
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
chain ID, which can be used to built the certificate chain.

@item gpgme_validity_t owner_trust
If @code{protocol} is @code{GPGME_PROTOCOL_OpenPGP}, then this is the
owner trust.

@item gpgme_subkey_t subkeys
This is a linked list with the subkeys of the key. The first subkey
in the list is the primary key and usually available.

@item gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first user ID
in the list is the main (or primary) user ID.

@item char *fpr
@since{1.7.0}

This field gives the fingerprint of the primary key. Note that
this is a copy of the fingerprint of the first subkey. For an
incomplete key (for example from a verification result) a subkey may
be missing but this field
 may be set nevertheless.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this key.

@end table
@end deftp

@deftp {Data type} gpgme_subkey_t
@since{1.5.0}

The @code{gpgme_subkey_t} type is a pointer to a subkey structure.

Subkeys are one component of a @code{gpgme_key_t} object. In fact, subkeys are those parts that contains the real information about the individual cryptographic keys that belong to the same key object. One @code{gpgme_key_t} can contain several subkeys. The first subkey in the linked list is also called the primary key.

The subkey structure has the following members:

@table @code
@item gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked list, or @code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the subkey is revoked.

@item unsigned int expired : 1
This is true if the subkey is expired.

@item unsigned int disabled : 1
This is true if the subkey
is disabled.

@item unsigned int invalid : 1
This is true if the subkey is invalid.

@item unsigned int can_encrypt : 1
This is true if the subkey can be used for encryption.

@item unsigned int can_sign : 1
This is true if the subkey can be used to create data signatures.

@item unsigned int can_certify : 1
This is true if the subkey can be used to create key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the subkey can be used for authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the subkey can be used for qualified signatures
according to local government regulations.

@item unsigned int is_de_vs : 1
@since{1.8.0}

This is true if the subkey complies with the rules for classified
information in Germany at the restricted level (VS-NfD). This are
currently RSA keys of at least 2048 bits or ECDH/ECDSA keys using a
Brainpool curve.

@item unsigned int secret : 1
This is true if the subkey is a secret key. Note that
 it will be
false if the key is actually a stub key; i.e. a secret key operation
is currently not possible (offline-key). This is only set if a
listing of secret keys has been requested or if
@code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

@item unsigned int length
This is the length of the subkey (in bits).

@item char *keyid
This is the key ID of the subkey in hexadecimal digits.

@item char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if
available.

@item char *keygrip
@since{1.7.0}

The keygrip of the subkey in hex digit form or @code{NULL} if not
available.

@item long int timestamp
This is the creation timestamp of the subkey. This is -1 if the
timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey
does not expire.

@item unsigned int is_cardkey : 1
@since{1.2.0}

True if
 the secret key is stored on a smart card.

@item char *card_number

@since{1.2.0}

The serial number of a smart card holding this key or @code{NULL}.

@item char *curve
For ECC algorithms the name of the curve.

@end table
@end deftp

@deftp {Data type} gpgme_user_id_t

A user ID is a component of a @code{gpgme_key_t} object. One key can
have many user IDs. The first one in the list is the main (or
primary) user ID.

The user ID structure has the following members.

@table @code
@item gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or
@code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the user ID is revoked.

@item unsigned int invalid : 1
This is true if the user ID is invalid.

@item gpgme_validity_t validity
This specifies the validity of the user ID.

@item char *uid
This is the user ID string.

@item char *name
This is the name component of @code{uid}, if available.

@item char *comment
This is the comment
component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item char *address;
The mail address (addr-spec from RFC-5322) of the user ID string.
This is general the same as the @code{email} part of this structure

but might be slightly different. If no mail address is available
@code{NULL} is stored.

@item gpgme_tofu_info_t tofu
@since{1.7.0}

If not @code{NULL} information from the TOFU database pertaining to
this user id.

@item gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this user ID.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this user ID.

@item char *uidhash;
A string used by gpg to identify a user ID. This string can be used
at certain prompts of @code{gpgme_op_edit} to select a user ID. Users
must be prepared to see a @code{NULL} value here. The format
 of the
value is not specified and may depend on the GPGME or GnuPG version.

@end table
@end deftp

@deftp {Data type} gpgme_tofu_info_t

@since{1.7.0}

The @code{gpgme_tofu_info_t} type is a pointer to a tofu info
structure. Tofu info structures are one component of a
@code{gpgme_user_id_t} object, and provide information from the TOFU
database pertaining to the user ID.

The tofu info structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int validity : 3
This is the TOFU validity. It can have the following values:

@table @code
@item 0
The value @code{0} indicates a conflict.

@item 1
The value @code{1} indicates a key without history.

@item 2
The value @code{2} indicates a key with too little history.

@item 3
The value @code{3} indicates a key with enough history for basic trust.

@item 4
The value @code{4} indicates a key
 with a lot of history.

@end table

@item unsigned int policy : 4
This is the TOFU policy, see @code{gpgme_tofu_policy_t}.

@item unsigned short signcount
This is the number of signatures seen for this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned short encrcount
This is the number of encryptions done with this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with
this binding.

@item unsigned long signlast
Number of seconds since Epoch when the last signature was seen with
this binding.

@item unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with
this binding.

@item unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with

this binding.

@item char *description
A human-readable string summarizing the TOFU data (or NULL).

@end table
@end deftp

@deftp {Data type} gpgme_key_sig_t

The
@code{gpgme_key_sig_t} type is a pointer to a key signature structure.
Key signatures are one component of a @code{gpgme_key_t} object, and
validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved
via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS} mode
enabled, because it can be expensive to retrieve all signatures of a
key.

The signature notations on a key signature are only available if the
key was retrieved via a listing operation with the
@code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} mode enabled, because it can
be expensive to retrieve all signature notations.

The key signature structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next key signature structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the key signature is a revocation signature.

@item unsigned int expired : 1
This is
true if the key signature is expired.

@item unsigned int invalid : 1
This is true if the key signature is invalid.

@item unsigned int exportable : 1
This is true if the key signature is exportable.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm used to create the signature.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used to create the signature.

@item long int timestamp
This is the creation timestamp of the key signature. This is -1 if the timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the key signature, or 0 if the key signature does not expire.

@item gpgme_error_t status
This is the status of the signature and has the same meaning as the member of the same name in a @code{gpgme_signature_t} object.

@item unsigned int sig_class
This specifies the signature class of the key signature. The meaning is specific to the crypto engine.

@item char *uid
This is the main
user ID of the key used to create the signature.

@item char *name
This is the name component of @code{uid}, if available.

@item char *comment
This is the comment component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.
@end table
@end deftp

@node Listing Keys
@subsection Listing Keys
@cindex listing keys
@cindex key listing
@cindex key listing, start
@cindex key ring, list
@cindex key ring, search

@deftypefun gpgme_error_t gpgme_op_keylist_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}}, @w{int @var{secret_only}})

The function @code{gpgme_op_keylist_start} initiates a key listing operation inside the context @var{ctx}. It sets everything up so that subsequent invocations of @code{gpgme_op_keylist_next} return the keys in the list.

If @var{pattern} is @code{NULL}, all available keys are returned. Otherwise,
@var{pattern} contains an engine specific expression that is used to limit the list to all keys matching the pattern. Note that the total length of the pattern is restricted to an engine-specific maximum (a couple of hundred characters are usually accepted). The pattern should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list is restricted to secret keys only.

The context will be busy until either all keys are received (and @code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or @code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if @var{ctx} is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}[]}, @w{int @var{secret_only}}, @w{int @var{reserved}})

The function @code{gpgme_op_keylist_ext_start} initiates an extended key listing operation inside the context @var{ctx}. It sets everything up so that subsequent invocations of @code{gpgme_op_keylist_next} return the keys in the list.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys are returned. Otherwise, @var{pattern} is a @code{NULL} terminated array of strings that are used to limit the list to all keys matching at least one of the patterns verbatim. Note that the total length of all patterns is restricted to an engine-specific maximum (the exact limit also depends on the number of patterns and amount of quoting required, but a couple of hundred characters are usually accepted). Patterns should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their

fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list
is restricted to secret
keys only.

The value of @var{reserved} must be @code{0}.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_from_data_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_data_t @var{data}}, @
@w{int @var{reserved}})

@since{1.8.0}

The function @code{gpgme_op_keylist_from_data_start} initiates a key
listing operation inside the context @var{ctx}. In contrast to the
other key listing operation the keys are read from the supplied
@var{data} and not from the local key database. The keys are also not
imported into the local key database. The function
sets everything up
so that subsequent invocations of @code{gpgme_op_keylist_next} return
the keys from @var{data}.

The value of @var{reserved} must be @code{0}.

This function requires at least GnuPG version 2.1.14 and currently
works only with OpenPGP keys.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.
While the context is busy @var{data} may not be released.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_next (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t *@var{r_key}})

The function @code{gpgme_op_keylist_next} returns the next key in the list created by a previous @code{gpgme_op_keylist_start} operation in the context @var{ctx}. The key will have one reference for the user.
@xref{Manipulating Keys}.

This is the only way to get at @code{gpgme_key_t} objects in @acronym{GPGME}.

If the last key in the list has already been returned, @code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{r_key} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if there is not enough memory for the operation.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_end (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_keylist_end} ends a pending key list operation in the context @var{ctx}.

After the operation completed successfully, the result of the key listing operation can be retrieved with @code{gpgme_op_keylist_result}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if @var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if at some time during the operation there was not enough memory available.
@end deftypefun

The following example illustrates how all keys containing a certain string (@code{g10code}) can be listed with their key ID and the name and email address of the main user ID:

@example
gpgme_ctx_t ctx;
gpgme_key_t key;
gpgme_error_t err = gpgme_new (&ctx);

if (!err)
 @{
  err = gpgme_op_keylist_start (ctx, "g10code", 0);
  while (!err)

```
    @{
      err = gpgme_op_keylist_next (ctx, &key);
      if (err)
        break;
      printf ("%s:", key->subkeys->keyid);
      if (key->uids && key->uids->name)
        printf (" %s", key->uids->name);
      if (key->uids && key->uids->email)
        printf (" <%s>", key->uids->email);
      putchar ('\n');
      gpgme_key_release (key);
    @}
  gpgme_release (ctx);
 @}
if (gpg_err_code (err) != GPG_ERR_EOF)
 @{
  fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
  exit (1);
 @}
@end example

@deftp {Data type} {gpgme_keylist_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_keylist_*}
 operation.  After successfully ending a key
listing operation, you can retrieve the pointer to the result with
@code{gpgme_op_keylist_result}.  The structure contains the following
member:

@table @code
@item unsigned int truncated : 1
This is true if the crypto backend had to truncate the result, and
less than the desired keys could be listed.
@end table
@end deftp

@deftypefun gpgme_keylist_result_t gpgme_op_keylist_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_keylist_result} returns a
@code{gpgme_keylist_result_t} pointer to a structure holding the
result of a @code{gpgme_op_keylist_*} operation.  The pointer is only
valid if the last operation on the context was a key listing
operation, and if this operation finished successfully.  The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

In a simple program, for which a blocking operation is acceptable, the
following function can be used to retrieve
```

a single key.

@deftypefun gpgme_error_t gpgme_get_key (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{fpr}}, @w{gpgme_key_t *@var{r_key}}, @w{int @var{secret}})
The function @code{gpgme_get_key} gets the key with the fingerprint (or key ID) @var{fpr} from the crypto backend and return it in @var{r_key}. If @var{secret} is true, get the secret key. The currently active keylist mode is used to retrieve the key. The key will have one reference for the user.

If the key is not found in the keyring, @code{gpgme_get_key} returns the error code @code{GPG_ERR_EOF} and *@var{r_key} will be set to @code{NULL}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{r_key} is not a valid pointer or @var{fpr} is not a fingerprint or key ID, @code{GPG_ERR_AMBIGUOUS_NAME} if the key ID was not a unique specifier for a key, and @code{GPG_ERR_ENOMEM} if at some time during the operation there was not enough memory available.
@end deftypefun

@node Information About Keys
@subsection
Information About Keys
@cindex key, information about
@cindex key, attributes
@cindex attributes, of a key

Please see the beginning of this section for more information about @code{gpgme_key_t} objects.

@deftp {Data type} gpgme_validity_t
The @code{gpgme_validity_t} type is used to specify the validity of a user ID in a key. The following validities are defined:

@table @code
@item GPGME_VALIDITY_UNKNOWN
The user ID is of unknown validity. The string representation of this validity is ``?''.

@item GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this validity is ``q''.

@item GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this validity is ``n''.

@item GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this
validity is ``m''.

@item GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this
validity is ``f''.

@item GPGME_VALIDITY_ULTIMATE
The
 user ID is ultimately valid. The string representation of this
validity is ``u''.
@end table
@end deftp

@node Manipulating Keys
@subsection Manipulating Keys
@cindex key, manipulation

@deftypefun void gpgme_key_ref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_ref} acquires an additional reference for
the key @var{key}.
@end deftypefun

@deftypefun void gpgme_key_unref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_unref} releases a reference for the key
@var{key}. If this was the last reference, the key will be destroyed
and all resources associated to it will be released.
@end deftypefun

@c
@c gpgme_op_setexpire
@c
@deftypefun gpgme_error_t gpgme_op_setexpire @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{unsigned long @var{expires}}, @
     @w{const char *@var{subfprs}}, @
     @w{unsigned int @var{reserved}});

@since{1.14.1}

The function @code{gpgme_op_setexpire} sets the expiration time of
the

key @var{key} or of the specified subkeys.
This function requires at least version 2.1.22 of GnuPG.

@var{key} specifies the key to operate on.

@var{expires} specifies the expiration time in seconds from now.
To be similar to other usages where expiration times are provided
in unsigned long this is similar to the key creation date
and so it is in seconds from NOW.

The common case is to use 0 to not set an expiration time.
Note that this parameter takes an unsigned long value and not
a @code{time_t} to avoid problems on systems which use a signed
32 bit @code{time_t}. Note further that the OpenPGP protocol
uses 32 bit values for timestamps and thus can
only encode dates up to the year 2106.

@var{subfprs} selects the subkey(s) for which the expiration time
should be set. If @var{subfprs} is set to @code{NULL}, then the
expiration time of the primary key is set. If @var{subfprs} is
an asterisk (@code{*}), then the expiration times of all non-revoked
and not yet expired subkeys are set.
To select more than one subkey
put all subkey fingerprints into one string separated by linefeeds
characters (@code{\n}).

@var{reserved} is reserved for later use and must be @code{0}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_setexpire_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{unsigned long @var{expires}}, @
@w{const char *@var{subfprs}}, @
@w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire}
 operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@node Generating Keys
@subsection Generating Keys
@cindex key, creation
@cindex key ring, add

GPGME provides a set of functions to create public key pairs. Most of
these functions require the use of GnuPG 2.1 and later; for older
GnuPG versions the @code{gpgme_op_genkey} function can be used.
Existing code which wants to update to the new functions or new code
which shall supports older GnuPG versions may try the new functions
first and provide a fallback to the old function if the error code
@code{GPG_ERR_NOT_SUPPORTED} is received.

@c
@c gpgme_op_createkey
@c
@deftypefun gpgme_error_t gpgme_op_createkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{userid}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{gpgme_key_t @var{extrakey}},
 @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey} generates a new key for the
procotol active in the context @var{ctx}. As of now this function
does only work for OpenPGP and requires at least version 2.1.13 of

GnuPG.

@var{userid} is commonly the mail address associated with the key.
GPGME does not require a specific syntax but if more than a mail
address is given, RFC-822 style format is suggested. The value is
expected to be in UTF-8 encoding (i.e. no IDN encoding for mail
addresses). This is a required parameter.

@var{algo} specifies the algorithm for the new key (actually a keypair
of public and private key). For a list of supported algorithms, see
the GnuPG manual. If @var{algo} is @code{NULL} or the string
"default", the key is generated using the default algorithm of the
engine. If the string "future-default" is used the engine may use an
algorithm which is planned to be the default in a future release of
the engine;
however existing implementation of the protocol may not be
able to already handle such future algorithms. For the OpenPGP
protocol, the specification of a default algorithm, without requesting
a non-default usage via @var{flags}, triggers the creation of a
primary key plus a secondary key (subkey).

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode dates up to the year
2106.

@var{extrakey} is currently not used and must be set to @code{NULL}.
A future version of GPGME may use this parameter to create X.509 keys.

@var{flags} can be set to the bit-wise OR of the following
flags:

@table @code
@item GPGME_CREATE_SIGN
@itemx GPGME_CREATE_ENCR
@itemx GPGME_CREATE_CERT
@itemx GPGME_CREATE_AUTH
@since{1.7.0}

Do not create the key with the default capabilities (key usage) of the
requested algorithm but use those explicitly given by these flags:
``signing", ``encryption", ``certification", or ``authentication".

The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been
selected only one key is created in the case of the OpenPGP
protocol.

@item GPGME_CREATE_NOPASSWD
@since{1.7.0}

Request generation of the key without password protection.

@item GPGME_CREATE_SELFSIGNED
@since{1.7.0}

For an X.509 key do not create a CSR but a self-signed certificate.
This has not yet been implemented.

@item GPGME_CREATE_NOSTORE
@since{1.7.0}

Do not store the created key in the local key database.
This has not yet been implemented.

@item GPGME_CREATE_WANTPUB
@itemx GPGME_CREATE_WANTSEC
@since{1.7.0}

Return
 the public or secret key as part of the result structure.
This has not yet been implemented.

@item GPGME_CREATE_FORCE
@since{1.7.0}

The engine does not allow the creation of a key with a user ID
already existing in the local key database. This flag can be used to
override this check.

@item GPGME_CREATE_NOEXPIRE
@since{1.9.0}

Request generation of keys that do not expire.

@end table

After the operation completed successfully, information about the
created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{userid}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{gpgme_key_t @var{extrakey}}, @
     @w{unsigned int
 @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey_start} initiates a
@code{gpgme_op_createkey} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_createsubkey
@c
@deftypefun gpgme_error_t gpgme_op_createsubkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey} creates and adds a new
subkey to the primary OpenPGP key given by @var{KEY}. The only
allowed protocol in @var{ctx} is @code{GPGME_PROTOCOL_OPENPGP}.
Subkeys (aka secondary keys) are a concept in the OpenPGP protocol to
bind several keys to a primary key. As of now this function requires
at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate

on.

@var{algo} specifies the algorithm for the new subkey. For a list of
supported algorithms, see the GnuPG manual. If @var{algo} is
@code{NULL} or the string "default", the subkey is generated using the
default algorithm for an encryption subkey of the engine. If the
string "future-default" is used the engine may use an encryption
algorithm which is planned to be the default in a future release of
the engine; however existing implementation of the protocol may not be
able to already handle such future algorithms.

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode
 dates up to the year
2106.

@var{flags} takes the same values as described above for
@code{gpgme_op_createkey}.

After the operation completed successfully, information about the
created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createsubkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey_start} initiates a
@code{gpgme_op_createsubkey} operation; see there for details. It must

be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_adduid
@c
@deftypefun gpgme_error_t
 gpgme_op_adduid @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid} adds a new user ID to the OpenPGP
key given by @var{KEY}. Adding additional user IDs after key creation
is a feature of the OpenPGP protocol and thus the protocol for the
context @var{ctx} must be set to OpenPGP. As of now this function
requires at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to add to the key. A user ID is commonly
the mail address to be associated with the key. GPGME does not
require a specific syntax but if more than a mail address is given,
RFC-822 style format is suggested. The value is expected to be in
UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a
required parameter.

@var{flags} are currently not used and must be set to zero.

The function returns zero
 on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_adduid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid_start} initiates a
@code{gpgme_op_adduid} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revuid
@c
@deftypefun gpgme_error_t gpgme_op_revuid @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_revuid} revokes a user ID from the OpenPGP
key given by @var{KEY}. Revoking user IDs after key creation is a
feature of the OpenPGP protocol and thus the protocol
for the context
@var{ctx} must be set to OpenPGP. As of now this function requires at
least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to be revoked from the key. The user ID
must be given verbatim because the engine does an exact and case
sensitive match. Thus the @code{uid} field from the user ID object
(@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{flags} are currently not used and must be set to zero.

Note that the engine won't allow to revoke the last valid user ID. To
change a user ID is better to first add the new user ID, then revoke
the old one, and finally publish the key.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @

```
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}},
 @
     @w{unsigned int @var{flags}});
```

@since{1.7.0}

The function @code{gpgme_op_revuid_start} initiates a
@code{gpgme_op_revuid} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

```
@c
@c  gpgme_op_set_uid_flag
@c
@deftypefun gpgme_error_t gpgme_op_set_ui_flag @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{cons char * @var{name}}, @
     @w{cons char * @var{value}});
```

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag} is used to set flags on a
user ID from the OpenPGP key given by @var{KEY}. Setting flags on
user IDs after key creation is a feature of the OpenPGP protocol and
thus the protocol for the context @var{ctx} must be set to OpenPGP.

@var{key} specifies the key to operate on. This parameters is required.

@var{userid} is the user ID of the key to be manipulated. This user ID
must
 be given verbatim because the engine does an exact and case
sensitive match. Thus the @code{uid} field from the user ID object
(@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{name} names the flag which is to be changed. The only currently
supported flag is:

@table @code
@item primary
This sets the primary key flag on the given user ID. All other
primary key flag on other user IDs are removed. @var{value} must be

given as NULL. For technical reasons this functions bumps the
creation timestamp of all affected self-signatures up by one second.
At least GnuPG version 2.1.20 is required.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_set_uid_flag_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{cons char * @var{name}},
 @
     @w{cons char * @var{value}});

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag_start} initiates a
@code{gpgme_op_set_uid_flag} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_genkey
@c
@deftypefun gpgme_error_t gpgme_op_genkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{parms}}, @
     @w{gpgme_data_t @var{public}}, @
     @w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey} generates a new key pair in the
context @var{ctx}. The meaning of @var{public} and @var{secret}
depends on the crypto backend.

GPG does not support @var{public} and @var{secret}, they should be
@code{NULL}. GnuPG will generate a key pair and add it to the
standard key ring. The fingerprint of the generated key is available
with @code{gpgme_op_genkey_result}.

GpgSM requires @var{public} to be a writable data object. GpgSM will

generate
 a secret key (which will be stored by @command{gpg-agent},
and return a certificate request in @var{public}, which then needs to
be signed by the certification authority and imported before it can be
used. GpgSM does not make the fingerprint available.

The argument @var{parms} specifies parameters for the key in an string
that looks something like XML. The details about the format of
@var{parms} are specific to the crypto engine used by @var{ctx}. The
first line of the parameters must be @code{<GnupgKeyParams
format="internal">} and the last line must be
@code{</GnupgKeyParams>}. Every line in between the first and last
lines is treated as a Header: Value pair. In particular, no XML
escaping is necessary if you need to include the characters @code{<},
@code{>}, or @code{&}.

Here is an example for GnuPG as the crypto engine (all parameters of
OpenPGP key generation are documented in the GPG manual):

@example
<GnupgKeyParms format="internal">
Key-Type: default
Subkey-Type: default
Name-Real:
 Joe Tester
Name-Comment: with stupid passphrase
Name-Email: joe@@foo.bar
Expire-Date: 0
Passphrase: abc
</GnupgKeyParms>
@end example

Here is an example for GpgSM as the crypto engine (all parameters of
OpenPGP key generation are documented in the GPGSM manual):

@example
<GnupgKeyParms format="internal">
Key-Type: RSA
Key-Length: 1024
Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
Name-Email: joe@@foo.bar
</GnupgKeyParms>
@end example

Strings should be given in UTF-8 encoding. The only format supported
for now is ``internal". The content of the @code{GnupgKeyParms}
container is passed verbatim to the crypto backend. Control
statements are not allowed.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_genkey_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a well-formed string (e.g. does not have the
expected
 tag-like headers and footers), @code{GPG_ERR_NOT_SUPPORTED}
if @var{public} or @var{secret} is not valid, and
@code{GPG_ERR_GENERAL} if no key was created by the backend.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_genkey_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{parms}}, @w{gpgme_data_t @var{public}}, @w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey_start} initiates a
@code{gpgme_op_genkey} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a valid XML string, and
@code{GPG_ERR_NOT_SUPPORTED} if @var{public} or @var{secret} is not
@code{NULL}.
@end deftypefun

@c
@c gpgme_op_genkey_result
@c
@deftp {Data type} {gpgme_genkey_result_t}

This is a pointer to a structure used to store the result of a
@code{gpgme_op_genkey} operation.
 After successfully generating a
key, you can retrieve the pointer to the result with
@code{gpgme_op_genkey_result}. The structure contains the following
members:

@table @code
@item unsigned int primary : 1
This flag is set to 1 if a primary key was created and to 0
if not.

@item unsigned int sub : 1
This flag is set to 1 if a subkey was created and to 0 if not.

@item unsigned int uid : 1
This flag is set to 1 if a user ID was created and to 0 if not.

@item char *fpr
This is the fingerprint of the key that was created. If both a primary and a subkey were generated, the fingerprint of the primary key will be returned. If the crypto engine does not provide the fingerprint, @code{fpr} will be a null pointer.

@item gpgme_data_t pubkey
@since{1.7.0}

This will eventually be used to return the public key. It is currently not used.

@item gpgme_data_t seckey
@since{1.7.0}

This will eventually be used to return the secret key. It is currently not used.

@end table
@end deftp

@deftypefun
gpgme_genkey_result_t gpgme_op_genkey_result (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_genkey_result} returns a @code{gpgme_genkey_result_t} pointer to a structure holding the result of a @code{gpgme_op_genkey} operation. The pointer is only valid if the last operation on the context was a @code{gpgme_op_genkey} or @code{gpgme_op_genkey_start} operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

@end deftypefun

@c
@c SIGNING KEYS
@c
@node Signing Keys
@subsection Signing Keys
@cindex key, signing

Key signatures are a unique concept of the OpenPGP protocol. They can be used to certify the validity of a key and are used to create the Web-of-Trust (WoT). Instead of using the @code{gpgme_op_interact}

function along with a finite state machine, GPGME provides a
convenient function to create key signatures when using modern GnuPG
versions.

@c
@c gpgme_op_keysign
@c
@deftypefun
 gpgme_error_t gpgme_op_keysign @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign} adds a new key signature to the
public key @var{KEY}. This function requires at least version 2.1.12 of
GnuPG.

@var{CTX} is the usual context which describes the protocol to use
(which must be OpenPGP) and has also the list of signer keys to be
used for the signature. The common case is to use the default key for
signing other keys. If another key or more than one key shall be used
for a key signature, @code{gpgme_signers_add} can be used.
@xref{Selecting Signers}.

@var{key} specifies the key to operate on.

@var{userid} selects the user ID or user IDs to be signed. If
@var{userid} is set to @code{NULL} all valid user IDs are signed. The
user ID must be given verbatim because the engine does an exact
 and
case sensitive match. Thus the @code{uid} field from the user ID
object (@code{gpgme_user_id_t}) is to be used. To select more than
one user ID put them all into one string separated by linefeeds
characters (@code{\n}) and set the flag @code{GPGME_KEYSIGN_LFSEP}.

@var{expires} specifies the expiration time of the new signature in
seconds. The common case is to use 0 to not set an expiration date.
However, if the configuration of the engine defines a default
expiration for key signatures, that is still used unless the flag
@code{GPGME_KEYSIGN_NOEXPIRE} is used. Note that this parameter takes
an unsigned long value and not a @code{time_t} to avoid problems on
systems which use a signed 32 bit @code{time_t}. Note further that
the OpenPGP protocol uses 32 bit values for timestamps and thus can

only encode dates up to the year 2106.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_KEYSIGN_LOCAL
@since{1.7.0}

Instead of creating an exportable
key signature, create a key
signature which is is marked as non-exportable.

@item GPGME_KEYSIGN_LFSEP
@since{1.7.0}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@item GPGME_KEYSIGN_NOEXPIRE
Force the creation of a key signature without an expiration date. This
overrides @var{expire} and any local configuration of the engine.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keysign_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{unsigned long @var{expires}}, @
@w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign_start} initiates a
@code{gpgme_op_keysign} operation; see there for details. It must
be
completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revsig
@c
@deftypefun gpgme_error_t gpgme_op_revsig @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig} revokes key signatures of the
public key @var{key} made with the key @var{signing_key}. This
function requires at least version 2.2.24 of GnuPG.

@var{key} specifies the key to operate on.

@var{signing_key} specifies the key whose signatures shall be revoked.

@var{userid} selects the user ID or user IDs whose signatures shall
be revoked. If @var{userid} is set to @code{NULL} the signatures
on all user IDs are revoked. The user ID must be given verbatim
because the engine does an exact and case sensitive match. Thus the
@code{uid} field from the user ID object
 (@code{gpgme_user_id_t}) is to
be used. To select more than one user ID put them all into one string
separated by linefeeds characters (@code{\n}) and set the flag
@code{GPGME_REVSIG_LFSEP}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_REVSIG_LFSEP
@since{1.14.1}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revsig_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig_start} initiates a
@code{gpgme_op_revsig} operation; see there
 for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c EXPORTING KEYS
@c
@node Exporting Keys
@subsection Exporting Keys
@cindex key, export
@cindex key ring, export from

Exporting keys means the same as running @command{gpg} with the command
@option{--export}. However, a mode flag can be used to change the way
the export works. The available mode flags are described below, they
may be or-ed together.

@table @code

@item GPGME_EXPORT_MODE_EXTERN
If this bit is set, the output is send directly to the default
keyserver. This is currently only allowed for OpenPGP keys. It is good
practise to not send more than a few dozens key to a keyserver at one
time. Using this flag requires that the @var{keydata} argument of the
export function is set to @code{NULL}.

@item GPGME_EXPORT_MODE_MINIMAL
@since{1.3.1}

If this bit is set, the smallest possible key is exported. For OpenPGP
keys it removes all signatures

except for the latest self-signatures.
For X.509 keys it has no effect.

@item GPGME_EXPORT_MODE_SSH
@since{1.4.0}

If this bit is set, the latest authentication key of the requested
OpenPGP key is exported in the OpenSSH public key format. This
accepts just a single key; to force the export of a specific subkey
a fingerprint pattern with an appended exclamation mark may be used.

@item GPGME_EXPORT_MODE_SECRET
@since{1.6.0}

Instead of exporting the public key, the secret key is exported. This
may not be combined with @code{GPGME_EXPORT_MODE_EXTERN}. For X.509
the export format is PKCS#8.

@item GPGME_EXPORT_MODE_RAW
@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509
key the export format will be changed to PKCS#1. This flag may not be
used with OpenPGP.

@item GPGME_EXPORT_MODE_PKCS12
@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509
key the export format will be changed to PKCS#12 which also includes
the
certificate. This flag may not be used with OpenPGP.

@item GPGME_EXPORT_MODE_NOUID
@since{1.12.0 - experimental}
Do not export user ids. Works only with certain gpg version.

@end table

@deftypefun gpgme_error_t gpgme_op_export (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}},
@w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding

specified for @var{keydata}.

If @var{pattern} is @code{NULL}, all available keys are returned.
Otherwise, @var{pattern} contains an engine specific expression that
is used to limit the list to all keys matching the pattern.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation
completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export_start} initiates a
@code{gpgme_op_export} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public
keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys
are returned. Otherwise, @var{pattern} is a @code{NULL} terminated
array of strings that are used to limit the list to all keys matching
at least one of the patterns verbatim.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export_ext_start} initiates a @code{gpgme_op_export_ext} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be started successfully, and @code{GPG_ERR_INV_VALUE} if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t keys[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys} extracts public keys and returns them in the data buffer @var{keydata}. The output format of the key data returned is determined by the @acronym{ASCII} armor attribute set for the context @var{ctx}, or, if that is not set, by the encoding specified for @var{keydata}.

The keys to export are taken form the @code{NULL} terminated array @var{keys}. Only keys of the currently selected protocol of @var{ctx} which do have a fingerprint set are considered for export. Other keys specified by the @var{keys} are ignored. In particular OpenPGP keys retrieved via an external key listing are not included.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation completed successfully, @code{GPG_ERR_INV_VALUE} if @var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA} if no useful keys are in @var{keys} and passes through any errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{keys}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys_start} initiates a @code{gpgme_op_export_ext} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA}
if no useful keys are in @var{keys} and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@node Importing Keys
@subsection Importing Keys
@cindex key, import
@cindex key ring, import to

Importing keys means the same as running @command{gpg} with the command
@option{--import}.

@deftypefun gpgme_error_t gpgme_op_import (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_import} adds the keys in the data buffer
@var{keydata} to the key ring of the crypto engine used by @var{ctx}.
The format of @var{keydata} can be @acronym{ASCII} armored, for example,
but the details are specific to the crypto engine.

After the operation completed successfully, the result
 can be
retrieved with @code{gpgme_op_import_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx} or @var{keydata} is not a valid pointer,
and @code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_import_start} initiates a
@code{gpgme_op_import} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{keydata} is not a valid pointer, and
@code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{keys}})

@since{1.2.0}

The
function @code{gpgme_op_import_keys} adds the keys described by
the @code{NULL} terminated array @var{keys} to the key ring of the
crypto engine used by @var{ctx}. It is used to actually import and
make keys permanent which have been retrieved from an external source
(i.e. using @code{GPGME_KEYLIST_MODE_EXTERN}) earlier. The external
keylisting must have been made with the same context configuration (in
particular the same home directory). @footnote{Thus it is a
replacement for the usual workaround of exporting and then importing a
key to make an X.509 key permanent.} Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of @var{ctx} are
considered for import. Other keys specified by the @var{keys} are
ignored. As of now all considered keys must have been retrieved using
the same method, i.e. the used key listing mode must be identical.

After the operation completed successfully,
the result can be
retrieved with @code{gpgme_op_import_result}.

To move keys from one home directory to another, export and import the
keydata using @code{gpgme_op_export} and @code{gpgme_op_import}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, @code{GPG_ERR_CONFLICT} if the key
listing mode does not match, and @code{GPG_ERR_NO_DATA} if no keys are
considered for export.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{keys}})
@since{1.2.0}

The function @code{gpgme_op_import_keys_start} initiates a
@code{gpgme_op_import_keys} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx}
or @var{keydata} is not a valid pointer,
@code{GPG_ERR_CONFLICT} if the key listing mode does not match, and
@code{GPG_ERR_NO_DATA} if no keys are considered for export.
@end deftypefun

@deftp {Data type} {gpgme_import_status_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_import} operation. For each considered key one
status is added that contains information about the result of the
import. The structure contains the following members:

@table @code
@item gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or
@code{NULL} if this is the last element.

@item char *fpr
This is the fingerprint of the key that was considered.

@item gpgme_error_t result
If the import was not successful, this is the error value that caused
the import to fail. Otherwise the error code is
@code{GPG_ERR_NO_ERROR}.

@item unsigned int status
This is a bit-wise OR of the following flags that give more
information about what
 part of the key was imported. If the key was
already known, this might be 0.

@table @code
@item GPGME_IMPORT_NEW
The key was new.

@item GPGME_IMPORT_UID
The key contained new user IDs.

@item GPGME_IMPORT_SIG
The key contained new signatures.

@item GPGME_IMPORT_SUBKEY
The key contained new sub keys.

@item GPGME_IMPORT_SECRET
The key contained a secret key.
@end table
@end table
@end deftp

@deftp {Data type} {gpgme_import_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_import} operation. After a successful import

operation, you can retrieve the pointer to the result with
@code{gpgme_op_import_result}. The structure contains the following
members:

@table @code
@item int considered
The total number of considered keys.

@item int no_user_id
The number of keys without user ID.

@item int imported
The total number of imported keys.

@item int imported_rsa
The number of imported RSA keys.

@item int unchanged
The number of unchanged keys.

@item
int new_user_ids
The number of new user IDs.

@item int new_sub_keys
The number of new sub keys.

@item int new_signatures
The number of new signatures.

@item int new_revocations
The number of new revocations.

@item int secret_read
The total number of secret keys read.

@item int secret_imported
The number of imported secret keys.

@item int secret_unchanged
The number of unchanged secret keys.

@item int not_imported
The number of keys not imported.

@item gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more information
about the keys for which an import was attempted.

@item int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore support
v3 keys (created with PGP 2.x) and ignores them on import. This
counter provides the number of such skipped v3 keys.

@end table
@end deftp

@deftypefun gpgme_import_result_t gpgme_op_import_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_import_result} returns a
@code{gpgme_import_result_t}
 pointer to a structure holding the result
of a @code{gpgme_op_import} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_import} or
@code{gpgme_op_import_start} operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.
@end deftypefun

@node Deleting Keys
@subsection Deleting Keys
@cindex key, delete
@cindex key ring, delete from

@deftypefun gpgme_error_t gpgme_op_delete_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{unsigned int @var{flags}})
@since{1.9.1}

The function @code{gpgme_op_delete_ext} deletes the key @var{key} from
the key ring of the crypto engine used by @var{ctx}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_DELETE_ALLOW_SECRET
@since{1.9.1}

If not set, only public keys are deleted. If set, secret keys are
deleted as well, if that is supported.

@item
 GPGME_DELETE_FORCE
@since{1.9.1}

If set, the user is not asked to confirm the deletion.
@end table

The function returns the error code @code{GPG_ERR_NO_ERROR} if the key
was deleted successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or
@var{key} is not a valid pointer, @code{GPG_ERR_NO_PUBKEY} if
@var{key} could not be found in the keyring,
@code{GPG_ERR_AMBIGUOUS_NAME} if the key was not specified
unambiguously, and @code{GPG_ERR_CONFLICT} if the secret key for
@var{key} is available, but @var{allow_secret} is zero.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{unsigned int @var{flags}})
@since{1.9.1}

The function @code{gpgme_op_delete_ext_start} initiates a
@code{gpgme_op_delete} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully,
 and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

The following functions allow only to use one particular flag.

@deftypefun gpgme_error_t gpgme_op_delete (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{int @var{allow_secret}})
Similar to @code{gpgme_op_delete_ext}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{int @var{allow_secret}})
Similar to @code{gpgme_op_delete_ext_start}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@node Changing Passphrases
@subsection Changing Passphrases
@cindex passphrase, change

@deftypefun gpgme_error_t gpgme_op_passwd   @
        (@w{gpgme_ctx_t @var{ctx}},   @
         @w{const gpgme_key_t @var{key}}, @
         @w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd}
changes the passphrase of the
private key associated with @var{key}. The only allowed value for
@var{flags} is @code{0}. The backend engine will usually popup a window
to ask for the old and the new passphrase. Thus this function is not
useful in a server application (where passphrases are not required
anyway).

Note that old @code{gpg} engines (before version 2.0.15) do not support
this command and will silently ignore it.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_passwd_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd_start} initiates a
@code{gpgme_op_passwd} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the
oepration
could not be started.
@end deftypefun

@c
@c CHANGING TOFU DATA
@c
@node Changing TOFU Data
@subsection Changing TOFU Data
@cindex validity, TOFU

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation
model. For resolving conflicts it is necessary to declare the policy
for a key. See the GnuPG manual for details on the TOFU
implementation.

@deftp {Data type} {enum gpgme_tofu_policy_t}
@since{1.7.0}

@tindex gpgme_tofu_policy_t
The @code{gpgme_tofu_policy_t} type specifies the set of possible

policy values that are supported by @acronym{GPGME}:

@table @code
@item GPGME_TOFU_POLICY_AUTO
Set the policy to ``auto''.
@item GPGME_TOFU_POLICY_GOOD
Set the policy to ``good''.
@item GPGME_TOFU_POLICY_BAD
Set the policy to ``bad''.
@item GPGME_TOFU_POLICY_ASK
Set the policy to ``ask''.
@item GPGME_TOFU_POLICY_UNKNOWN
Set the policy to ``unknown''.
@end table

@end deftp

To change the policy for a key the following functions can be used:

@deftypefun gpgme_error_t
gpgme_op_tofu_policy @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}

The function @code{gpgme_op_tofu_policy} changes the TOFU policy of
@var{key}. The valid values for @var{policy} are listed above. As of
now this function does only work for OpenPGP and requires at least
version 2.1.10 of GnuPG.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_tofu_policy_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}

The function @code{gpgme_op_tofu_policy_start} initiates a
@code{gpgme_op_tofu_policy} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The
 function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the oepration
could not be started.

@end deftypefun

@node Advanced Key Editing
@subsection Advanced Key Editing
@cindex key, edit

@deftp {Data type} {gpgme_error_t (*gpgme_interact_cb_t) @
  (@w{void *@var{handle}}, @
   @w{const char *@var{status}}, @
   @w{const char *@var{args}}, @
   @w{int @var{fd}})}

@since{1.7.0}

@tindex gpgme_interact_cb_t
The @code{gpgme_interact_cb_t} type is the type of functions which
@acronym{GPGME} calls if it a key interact operation is on-going. The
status keyword @var{status} and the argument line @var{args} are
passed through by @acronym{GPGME} from the crypto engine. An empty
string represents EOF. The file descriptor @var{fd} is -1 for normal
status messages. If @var{status} indicates a command rather than a
status message, the response to the command should be written to
@var{fd}. The @var{handle} is
 provided by the user at start of
operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_interact (@w{gpgme_ctx_t @var{ctx}}, @
  @w{gpgme_key_t @var{key}}, @
  @w{unsigned int @var{flags}}, @
  @w{gpgme_interact_cb_t @var{fnc}}, @
  @w{void *@var{handle}}, @
  @w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact} processes the key @var{KEY}
interactively, using the interact callback function @var{FNC} with the

handle @var{HANDLE}. The callback is invoked for every status and
command request from the crypto engine. The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.

@var{flags} modifies the behaviour
 of the function; the only defined
bit value is:

@table @code
@item GPGME_INTERACT_CARD
@since{1.7.0}

This is used for smartcard based keys and uses gpgs
@code{--card-edit} command.

@end table

The function returns @code{0} if the edit operation completes
successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{key} is
not a valid pointer, and any error returned by the crypto engine or
the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_interact_start (@w{gpgme_ctx_t @var{ctx}}, @
  @w{gpgme_key_t @var{key}}, @
  @w{unsigned int @var{flags}}, @
  @w{gpgme_interact_cb_t @var{fnc}}, @
  @w{void *@var{handle}}, @
  @w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact_start} initiates a
@code{gpgme_op_interact} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started
successfully, and @code{GPG_ERR_INV_VALUE}
 if @var{ctx} or @var{key}
is not a valid pointer.
@end deftypefun

@node Crypto Operations
@section Crypto Operations
@cindex cryptographic operation

Sometimes, the result of a crypto operation returns a list of invalid keys encountered in processing the request. The following structure is used to hold information about such a key.

@deftp {Data type} {gpgme_invalid_key_t}
This is a pointer to a structure used to store a part of the result of a crypto operation which takes user IDs as one input parameter. The structure contains the following members:

@table @code
@item gpgme_invalid_key_t next
This is a pointer to the next invalid key structure in the linked list, or @code{NULL} if this is the last element.

@item char *fpr
The fingerprint or key ID of the invalid key encountered.

@item gpgme_error_t reason
An error code describing the reason why the key was found invalid.
@end table
@end deftp

@menu
* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.
@end menu

@node Decrypt
@subsection Decrypt
@cindex decryption
@cindex cryptographic operation, decryption

@deftypefun gpgme_error_t gpgme_op_decrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt} decrypts the ciphertext in the data object @var{cipher} and stores it into the data object @var{plain}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to
decrypt, @code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid
cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase
 for the
secret key could not be retrieved, and passes through some errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_start} initiates a
@code{gpgme_op_decrypt} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext (@
        @w{gpgme_ctx_t @var{ctx}}, @
        @w{gpgme_decrypt_flags_t @var{flags}}, @
        @w{gpgme_data_t @var{cipher}}, @
        @w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext} is the same as
@code{gpgme_op_decrypt}
 but has an additional argument
@var{flags}. If @var{flags} is 0 both function behave identically.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_DECRYPT_VERIFY
@since{1.8.0}

The @code{GPGME_DECRYPT_VERIFY} symbol specifies that this function
shall exactly act as @code{gpgme_op_decrypt_verify}.

@item GPGME_DECRYPT_UNWRAP
@since{1.8.0}

The @code{GPGME_DECRYPT_UNWRAP} symbol specifies that the output shall
be an OpenPGP message with only the encryption layer removed. This
requires GnuPG 2.1.12 and works only for OpenPGP. This is the
counterpart to @code{GPGME_ENCRYPT_WRAP}.

@end table

The function returns the error codes as described for
@code{gpgme_op_decrypt}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext_start (@
        @w{gpgme_ctx_t @var{ctx}}, @
        @w{gpgme_decrypt_flags_t @var{flags}}, @
        @w{gpgme_data_t @var{cipher}}, @

 @w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext_start} initiates a
@code{gpgme_op_decrypt_ext} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_recipient_t}
@since{1.1.0}

This is a pointer to a structure used to store information about the
recipient of an encrypted text which is decrypted in a
@code{gpgme_op_decrypt} operation. This information (except for the
status field) is even available before the operation finished
successfully, for example in a passphrase callback. The structure
contains the following members:

@table @code
@item gpgme_recipient_t next
This is a pointer to the next recipient structure in the linked list,
or @code{NULL} if this is
 the last element.

@item gpgme_pubkey_algo_t

The public key algorithm used in the encryption.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used as
recipient.

@item gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY if the
secret key for this recipient is not available, and 0 otherwise.
@end table
@end deftp

@deftp {Data type} {gpgme_decrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_decrypt} operation. After successfully decrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_decrypt_result}. As with all result structures, it
this structure shall be considered read-only and an application must
not allocate such a strucure on its own. The structure contains the
following members:

@table @code
@item char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the
algorithm that is not supported.

@item unsigned int wrong_key_usage
: 1
@since{0.9.0}
This is true if the key was not used according to its policy.

@item unsigned int legacy_cipher_nomdc : 1
@since{1.11.2}
The message was made by a legacy algorithm without any integrity
protection. This might be an old but legitimate message.

@item unsigned int is_mime : 1;
@since{1.11.0}
The message claims that the content is a MIME object.

@item unsigned int is_de_vs : 1;
@since{1.10.0}
The message was encrypted in a VS-NfD compliant way. This is a
specification in Germany for a restricted communication level.

@item gpgme_recipient_t recipients
@since{1.1.0}

This is a linked list of recipients to which this message was encrypted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer.

@item char *session_key
@since{1.8.0}

A textual representation (nul-terminated string) of the session key
used in symmetric encryption of the message, if the context has been
set to export session
 keys (see @code{gpgme_set_ctx_flag,
"export-session-key"}), and a session key was available for the most
recent decryption operation. Otherwise, this is a null pointer.

You must not try to access this member of the struct unless
@code{gpgme_set_ctx_flag (ctx, "export-session-key")} returns success
or @code{gpgme_get_ctx_flag (ctx, "export-session-key")} returns true
(non-empty string).

@item char *symkey_algo
@since{1.11.0}

A string with the symmetric encryption algorithm and mode using the
format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of
OpenPGP is given as "PGPCFB".

@end table
@end deftp

@deftypefun gpgme_decrypt_result_t gpgme_op_decrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_decrypt_result} returns a
@code{gpgme_decrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_decrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_decrypt} or @code{gpgme_op_decrypt_start}
 operation.
If the operation failed this might be a @code{NULL} pointer. The
returned pointer is only valid until the next operation is started on
the context.
@end deftypefun

@node Verify
@subsection Verify
@cindex verification
@cindex signature, verification

@cindex cryptographic operation, verification
@cindex cryptographic operation, signature check
@cindex signature notation data
@cindex notation data

@deftypefun gpgme_error_t gpgme_op_verify (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify} verifies that the signature in the data object @var{sig} is a valid signature. If @var{sig} is a detached signature, then the signed text should be provided in @var{signed_text} and @var{plain} should be a null pointer. Otherwise, if @var{sig} is a normal (or cleartext) signature, @var{signed_text} should be a null pointer and @var{plain} should be a writable data object that will contain the plaintext after successful verification.

The results of the individual signature verifications can be retrieved with @code{gpgme_op_verify_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be completed successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{sig} or @var{plain} is not a valid pointer, @code{GPG_ERR_NO_DATA} if @var{sig} does not contain any data to verify, and passes through any errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify_start} initiates a @code{gpgme_op_verify} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be started successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{sig} or @var{plain} is not a valid pointer, and @code{GPG_ERR_NO_DATA} if @var{sig} or @var{plain} does not contain any data to verify.
@end deftypefun

@deftp {Data type} {gpgme_sig_notation_t}
This is a pointer to a structure used to store a part of the result of a @code{gpgme_op_verify} operation. The structure contains the following members:

@table @code

@item gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure in the
linked list, or @code{NULL} if this is the last element.

@item char *name
The name of the notation field. If this is @code{NULL}, then the
member @code{value} will contain a policy URL.

@item int name_len
The length of the @code{name} field. For strings the length is
counted without the trailing binary zero.

@item char *value
The value of the notation field. If @code{name} is @code{NULL}, then
this is a policy URL.

@item int value_len
The length of the @code{value}
 field. For strings the length is
counted without the trailing binary zero.

@item gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags associated
with the notation data in an accumulated form which can be used as an
argument to the function @code{gpgme_sig_notation_add}. The value
@code{flags} is a bitwise-or combination of one or multiple of the
following bit values:

@table @code
@item GPGME_SIG_NOTATION_HUMAN_READABLE
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_HUMAN_READABLE} symbol specifies that the
notation data is in human readable form

@item GPGME_SIG_NOTATION_CRITICAL
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_CRITICAL} symbol specifies that the
notation data is critical.

@end table

@item unsigned int human_readable : 1
This is true if the @code{GPGME_SIG_NOTATION_HUMAN_READABLE} flag is
set and false otherwise. This flag is only valid for notation data,
not for policy URLs.

@item unsigned int critical : 1
This is true if the
@code{GPGME_SIG_NOTATION_CRITICAL} flag is set and
false otherwise. This flag is valid for notation data and policy URLs.

@end table
@end deftp

@deftp {Data type} {gpgme_signature_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_verify} operation. The structure contains the
following members:

@table @code
@item gpgme_signature_t next
This is a pointer to the next new signature structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status. It
provides an easy interface to a defined semantic of the signature
status. Checking just one bit is sufficient to see whether a
signature is valid without any restrictions. This means that
you can check for GPGME_SIGSUM_VALID like this:

@example
if ((sig.summary & GPGME_SIGSUM_VALID))
@{
  ..do stuff if valid..
@}
else
@{
  ..do stuff if not fully valid..
@}
@end example

The defined bits are:
 @table @code
@item GPGME_SIGSUM_VALID
The signature is fully valid.

@item GPGME_SIGSUM_GREEN
The signature is good but one might want to display some extra
information. Check the other bits.

@item GPGME_SIGSUM_RED
The signature is bad. It might be useful to check other bits and
display more information, i.e. a revoked certificate might not render a

signature invalid when the message was received prior to the cause for
the revocation.

@item GPGME_SIGSUM_KEY_REVOKED
The key or at least one certificate has been revoked.

@item GPGME_SIGSUM_KEY_EXPIRED
The key or one of the certificates has expired. It is probably a good
idea to display the date of the expiration.

@item GPGME_SIGSUM_SIG_EXPIRED
The signature has expired.

@item GPGME_SIGSUM_KEY_MISSING
Can't verify due to a missing key or certificate.

@item GPGME_SIGSUM_CRL_MISSING
The CRL (or an equivalent mechanism) is not available.

@item GPGME_SIGSUM_CRL_TOO_OLD
Available CRL is too
old.

@item GPGME_SIGSUM_BAD_POLICY
A policy requirement was not met.

@item GPGME_SIGSUM_SYS_ERROR
A system error occurred.

@item GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.
@end table

@item char *fpr
This is the fingerprint or key ID of the signature.

@item gpgme_error_t status
This is the status of the signature. In particular, the following
status codes are of interest:

@table @code
@item GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that
there is no signature. For the combined result this status
means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check
the @code{summary} field for that.

For example a @code{gpgme_op_decrypt_verify} returns a verification
result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

@item GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For
the combined result this
status means that all signatures are valid
and expired.

@item GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to
verify the signature has expired. For the combined result this status
means that all signatures are valid and all keys are expired.

@item GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used
to verify the signature has been revoked. For the combined result
this status means that all signatures are valid and all keys are
revoked.

@item GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined
result this status means that all signatures are invalid.

@item GPG_ERR_NO_PUBKEY
This status indicates that the signature could not be verified due to
a missing key. For the combined result this status means that all
signatures could not be checked due to missing keys.

@item GPG_ERR_GENERAL
This status indicates that there was some other
error which prevented
the signature verification.
@end table

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

@item unsigned long timestamp
The creation timestamp of this signature.

@item unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature does
not expire.

@item unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

@item unsigned int pka_trust : 2
This is set to the trust information gained by means of the PKA system.
Values are:
@table @code
@item 0
No PKA information available or verification not possible.
@item 1
PKA verification failed.
@item 2
PKA verification succeeded.
@item 3
Reserved for future use.
@end table
Depending on the configuration of the engine, this metric may also be
reflected by the validity of the signature.

@item unsigned int chain_model : 1
@since{1.1.6}

This is true if the
validity of the signature has been checked using the
chain model. In the chain model the time the signature has been created
must be within the validity period of the certificate and the time the
certificate itself has been created must be within the validity period
of the issuing certificate. In contrast the default validation model
checks the validity of signature as well at the entire certificate chain
at the current time.

@item gpgme_validity_t validity
The validity of the signature.

@item gpgme_error_t validity_reason
If a signature is not valid, this provides a reason why.

@item gpgme_pubkey_algo_t
The public key algorithm used to create this signature.

@item gpgme_hash_algo_t
The hash algorithm used to create this signature.

@item char *pka_address
The mailbox from the PKA information or @code{NULL}.

@item gpgme_key_t key
@since{1.7.0}

An object describing the key used to create the signature. This key
object may be incomplete in that it only conveys information
availabale
directly with a signature. It may also be @code{NULL} if
such information is not readily available.

@end table
@end deftp

@deftp {Data type} {gpgme_verify_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_verify} operation. After verifying a signature, you
can retrieve the pointer to the result with
@code{gpgme_op_verify_result}. If the operation failed this might be
a @code{NULL} pointer. The structure contains the following member:

@table @code
@item gpgme_signature_t signatures
A linked list with information about all signatures for which a
verification was attempted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer. Warning: The filename is
not covered by the signature.

@item unsigned int is_mime : 1;
@since{1.11.0}

The message claims that the content is a MIME object. Warning: This
flag is not covered by the signature.

@end table
@end deftp

@deftypefun
gpgme_verify_result_t gpgme_op_verify_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_verify_result} returns a
@code{gpgme_verify_result_t} pointer to a structure holding the result
of a @code{gpgme_op_verify} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_verify},
@code{gpgme_op_verify_start}, @code{gpgme_op_decrypt_verify} or
@code{gpgme_op_decrypt_verify_start} operation, and if this operation
finished successfully (for @code{gpgme_op_decrypt_verify} and
@code{gpgme_op_decrypt_verify_start}, the error code
@code{GPG_ERR_NO_DATA} counts as successful in this context). The
returned pointer is only valid until the next operation is started on
the context.

@end deftypefun

@node Decrypt and Verify
@subsection Decrypt and Verify
@cindex decryption and verification
@cindex verification and decryption
@cindex signature check
@cindex cryptographic operation, decryption and verification

@deftypefun gpgme_error_t gpgme_op_decrypt_verify
(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify} decrypts the ciphertext in
the data object @var{cipher} and stores it into the data object
@var{plain}. If @var{cipher} contains signatures, they will be
verified.

After the operation completed, @code{gpgme_op_decrypt_result} and
@code{gpgme_op_verify_result} can be used to retrieve more information
about the signatures.

If the error code @code{GPG_ERR_NO_DATA} is returned, @var{cipher}
does not contain any data to decrypt. However, it might still be
signed. The information about detected signatures is available with
@code{gpgme_op_verify_result} in this case.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to
decrypt,
@code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid
cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the
secret key could not be retrieved, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify_start} initiates a
@code{gpgme_op_decrypt_verify} operation. It can be completed by
calling @code{gpgme_wait} on the context. @xref{Waiting For
Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{cipher}, @var{plain} or @var{r_stat} is not a valid
pointer, and @code{GPG_ERR_NO_DATA} if @var{cipher} does not contain

any data to decrypt.
@end deftypefun

When processing mails it is sometimes useful to extract the actual
mail
address (the ``addr-spec'') from a string. GPGME provides this
helper function which uses the same semantics as the internal
functions in GPGME and GnuPG:

@deftypefun @w{char *} gpgme_addrspec_from_uid (@w{const char *@var{uid}})

@since{1.7.1}

Return the mail address (called ``addr-spec'' in RFC-5322) from the
string @var{uid} which is assumed to be a user id (called ``address''
in RFC-5322). All plain ASCII characters (i.e. those with bit 7
cleared) in the result are converted to lowercase. Caller must free
the result using @code{gpgme_free}. Returns @code{NULL} if no valid
address was found (in which case @code{ERRNO} is set to @code{EINVAL})
or for other errors.

@end deftypefun

@node Sign
@subsection Sign
@cindex signature, creation
@cindex sign
@cindex cryptographic operation, signing

A signature can contain signatures by one or more keys. The set of
keys used to create a signatures is contained in a context, and is
applied to all following signing operations in
this context (until the
set is changed).

@menu
* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.
@end menu

@node Selecting Signers
@subsubsection Selecting Signers
@cindex signature, selecting signers
@cindex signers, selecting

The key or the keys used to create a signature are stored in the
context. The following functions can be used to manipulate this list.
If no signer has been set into the context a default key is used for
signing.

@deftypefun void gpgme_signers_clear (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_signers_clear} releases a reference for each
key on the signers list and removes the list of signers from the
context @var{ctx}.

Every context starts with an empty list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_signers_add (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}})
The function
 @code{gpgme_signers_add} adds the key @var{key} to the
list of signers in the context @var{ctx}.

Calling this function acquires an additional reference for the key.
@end deftypefun

@deftypefun @w{unsigned int} gpgme_signers_count (@w{const gpgme_ctx_t @var{ctx}})
@since{1.4.3}

The function @code{gpgme_signers_count} returns the number of signer keys in
the context @var{ctx}.
@end deftypefun

@deftypefun gpgme_key_t gpgme_signers_enum (@w{const gpgme_ctx_t @var{ctx}}, @w{int @var{seq}})
The function @code{gpgme_signers_enum} returns the @var{seq}th key in
the list of signers in the context @var{ctx}. An additional reference
is acquired for the user.

If @var{seq} is out of range, @code{NULL} is returned.
@end deftypefun

@node Creating a Signature
@subsubsection Creating a Signature

@deftp {Data type} {enum gpgme_sig_mode_t}
@tindex gpgme_sig_mode_t
The @code{gpgme_sig_mode_t} type is used to specify the desired type of a
signature. The following modes are available:

@table @code
@item

GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the
signature.

@item GPGME_SIG_MODE_DETACH
A detached signature is made.

@item GPGME_SIG_MODE_CLEAR
A clear text signature is made. The @acronym{ASCII} armor and text
mode settings of the context are ignored.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{plain}},
@w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign} creates a signature for the text in
the data object @var{plain} and returns it in the data object
@var{sig}. The type of the signature created is determined by the
@acronym{ASCII} armor (or, if that is not set, by the encoding
specified for @var{sig}), the text mode attributes set for the context
@var{ctx} and the requested signature mode @var{mode}.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_sign_result}.

If an S/MIME
signed message is created using the CMS crypto engine,
the number of certificates to include in the message can be specified
with @code{gpgme_set_include_certs}. @xref{Included Certificates}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
signature could be created successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{plain} or @var{sig} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if the signature could not be created,
@code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the secret key
could not be retrieved, @code{GPG_ERR_UNUSABLE_SECKEY} if there are
invalid signers, and passes through any errors that are reported by the
crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{plain}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign_start} initiates a
@code{gpgme_op_sign} operation. It can be completed by calling
@code{gpgme_wait}
on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be

started successfully, and @code{GPG_ERR_INV_VALUE} if @var{ctx},
@var{plain} or @var{sig} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_new_signature_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_sign} operation. The structure contains the
following members:

@table @code
@item gpgme_new_signature_t next
This is a pointer to the next new signature structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_sig_mode_t type
The type of this signature.

@item gpgme_pubkey_algo_t pubkey_algo
The public key algorithm used to create this signature.

@item gpgme_hash_algo_t hash_algo
The hash algorithm used to create this signature.

@item unsigned int sig_class
The signature class of this signature.

@item long int timestamp
The creation timestamp of this signature.

@item
 char *fpr
The fingerprint of the key which was used to create this signature.
@end table
@end deftp

@deftp {Data type} {gpgme_sign_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_sign} operation. After successfully generating a
signature, you can retrieve the pointer to the result with
@code{gpgme_op_sign_result}. The structure contains the following
members:

@table @code
@item gpgme_invalid_key_t invalid_signers
A linked list with information about all invalid keys for which a
signature could not be created.

@item gpgme_new_signature_t signatures

A linked list with information about all signatures created.
@end table
@end deftp

@deftypefun gpgme_sign_result_t gpgme_op_sign_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_sign_result} returns a
@code{gpgme_sign_result_t} pointer to a structure holding the result
of a @code{gpgme_op_sign} operation. The pointer is only valid if the
last operation on the context was
 a @code{gpgme_op_sign},
@code{gpgme_op_sign_start}, @code{gpgme_op_encrypt_sign} or
@code{gpgme_op_encrypt_sign_start} operation. If that operation
failed, the function might return a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@node Signature Notation Data
@subsubsection Signature Notation Data
@cindex notation data
@cindex signature notation data
@cindex policy URL

Using the following functions, you can attach arbitrary notation data
to a signature. This information is then available to the user when
the signature is verified.

@deftypefun void gpgme_sig_notation_clear (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_clear} removes the notation data
from the context @var{ctx}. Subsequent signing operations from this
context will not include any notation data.

Every context starts with an empty notation data list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_sig_notation_add
 (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{name}}, @w{const char *@var{value}},
@w{gpgme_sig_notation_flags_t @var{flags}})
@since{1.1.0}

The function @code{gpgme_sig_notation_add} adds the notation data with
the name @var{name} and the value @var{value} to the context
@var{ctx}.

Subsequent signing operations will include this notation data, as well

as any other notation data that was added since the creation of the
context or the last @code{gpgme_sig_notation_clear} operation.

The arguments @var{name} and @var{value} must be @code{NUL}-terminated
strings in human-readable form. The flag
@code{GPGME_SIG_NOTATION_HUMAN_READABLE} is implied
(non-human-readable notation data is currently not supported). The
strings must be in UTF-8 encoding.

If @var{name} is @code{NULL}, then @var{value} should be a policy URL.

The function @code{gpgme_sig_notation_add} returns the error code
@code{GPG_ERR_NO_ERROR} if the notation data could be added
successfully, @code{GPG_ERR_INV_VALUE}
 if @var{ctx} is not a valid
pointer, or if @var{name}, @var{value} and @var{flags} are an invalid
combination. The function also passes through any errors that are
reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_sig_notation_t gpgme_sig_notation_get (@w{const gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_get} returns the linked list of
notation data structures that are contained in the context @var{ctx}.

If @var{ctx} is not a valid pointer, or there is no notation data
added for this context, @code{NULL} is returned.
@end deftypefun

@node Encrypt
@subsection Encrypt
@cindex encryption
@cindex cryptographic operation, encryption

One plaintext can be encrypted for several recipients at the same
time. The list of recipients is created independently of any context,
and then passed to the encryption operation.

@menu
* Encrypting a Plaintext::   How to encrypt a plaintext.
@end menu

@node Encrypting a
 Plaintext
@subsubsection Encrypting a Plaintext

@deftypefun gpgme_error_t gpgme_op_encrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt} encrypts the plaintext in the data object @var{plain} for the recipients @var{recp} and stores the ciphertext in the data object @var{cipher}. The type of the ciphertext created is determined by the @acronym{ASCII} armor (or, if that is not set, by the encoding specified for @var{cipher}) and the text mode attributes set for the context @var{ctx}.

@var{recp} must be a @code{NULL}-terminated array of keys. The user must keep references for all keys during the whole duration of the call (but see @code{gpgme_op_encrypt_start} for the requirements with the asynchronous variant).

The value in @var{flags} is a bitwise-or combination of one or multiple of the following bit values:

@table @code
@item GPGME_ENCRYPT_ALWAYS_TRUST
The
@code{GPGME_ENCRYPT_ALWAYS_TRUST} symbol specifies that all the recipients in @var{recp} should be trusted, even if the keys do not have a high enough validity in the keyring. This flag should be used with care; in general it is not a good idea to use any untrusted keys.

@item GPGME_ENCRYPT_NO_ENCRYPT_TO
@since{1.2.0}

The @code{GPGME_ENCRYPT_NO_ENCRYPT_TO} symbol specifies that no default or hidden default recipients as configured in the crypto backend should be included. This can be useful for managing different user profiles.

@item GPGME_ENCRYPT_NO_COMPRESS
@since{1.5.0}

The @code{GPGME_ENCRYPT_NO_COMPRESS} symbol specifies that the plaintext shall not be compressed before it is encrypted. This is in some cases useful if the length of the encrypted message may reveal information about the plaintext.

@item GPGME_ENCRYPT_PREPARE
@itemx GPGME_ENCRYPT_EXPECT_SIGN
The @code{GPGME_ENCRYPT_PREPARE} symbol is used with the UI Server protocol to prepare an encryption

(i.e. sending the
@code{PREP_ENCRYPT} command). With the
@code{GPGME_ENCRYPT_EXPECT_SIGN} symbol the UI Server is advised to
also expect a sign command.

@item GPGME_ENCRYPT_SYMMETRIC
@since{1.7.0}

The @code{GPGME_ENCRYPT_SYMMETRIC} symbol specifies that the
output should be additionally encrypted symmetrically even
if recipients are provided. This feature is only supported
for the OpenPGP crypto engine.

@item GPGME_ENCRYPT_THROW_KEYIDS
@since{1.8.0}

The @code{GPGME_ENCRYPT_THROW_KEYIDS} symbols requests that the
identifiers for the decrption keys are not included in the ciphertext.
On the receiving side, the use of this flag may slow down the
decryption process because all available secret keys must be tried.
This flag is only honored for OpenPGP encryption.

@item GPGME_ENCRYPT_WRAP
@since{1.8.0}

The @code{GPGME_ENCRYPT_WRAP} symbol specifies that the input is an
OpenPGP message and not a plain data. This is the counterpart to
@code{GPGME_DECRYPT_UNWRAP}.

@item GPGME_ENCRYPT_WANT_ADDRESS
@since{1.11.0}

The
@code{GPGME_ENCRYPT_WANT_ADDRESS} symbol requests that all
supplied keys or key specifications include a syntactically valid mail
address. If this is not the case the operation is not even tried and
the error code @code{GPG_ERR_INV_USER_ID} is returned. Only the
address part of the key specification is conveyed to the backend. As
of now the key must be specified using the @var{recpstring} argument
of the extended encrypt functions. This feature is currently only
supported for the OpenPGP crypto engine.

@end table

If @code{GPG_ERR_UNUSABLE_PUBKEY} is returned, some recipients in
@var{recp} are invalid, but not all. In this case the plaintext might
be encrypted for all valid recipients and returned in @var{cipher} (if
this happens depends on the crypto engine). More information about

the invalid recipients is available with
@code{gpgme_op_encrypt_result}.

If @var{recp} is @code{NULL}, symmetric rather than public key
encryption is performed.
 Symmetrically encrypted cipher text can be
deciphered with @code{gpgme_op_decrypt}. Note that in this case the
crypto backend needs to retrieve a passphrase from the user.
Symmetric encryption is currently only supported for the OpenPGP
crypto backend.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be created successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{recp}, @var{plain} or @var{cipher} is not a valid
pointer, @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{recp} contains some
invalid recipients, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase
for the symmetric key could not be retrieved, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t
@var{cipher}})
The function @code{gpgme_op_encrypt_start} initiates
 a
@code{gpgme_op_encrypt} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

References to the keys only need to be held for the duration of this
call. The user can release its references to the keys after this
function returns, even if the operation is not yet finished.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid
pointer, and @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{rset} does not
contain any valid recipients.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_ext @
        (@w{gpgme_ctx_t @var{ctx}}, @
         @w{gpgme_key_t @var{recp}[]}, @
         @w{const char *@var{recpstring}}, @
         @w{gpgme_encrypt_flags_t @var{flags}}, @
         @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended
version of @code{gpgme_op_encrypt} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there is no need
to first create key objects. Leading and trailing white space is
remove from each line in @var{recpstring}. The keys are then passed
verbatim to the backend engine.

For the OpenPGP backend several special keywords are supported to
modify the operation. These keywords are given instead of a key
specification. The currently supported keywords are:

@table @code
@item --hidden
@itemx --no-hidden
These keywords toggle between normal and hidden recipients for all
following key specifications. When a hidden recipient is requested
the gpg option @option{-R} (or @option{-F} in file mode) is used
instead of @option{-r} (@option{-f} in file mode).

@item --file
@itemx
--no-file
These keywords toggle between regular and file mode for all following
key specification. In file mode the option @option{-f} or @option{-F}
is passed to gpg. At least GnuPG version 2.1.14 is required to handle
these options. The @code{GPGME_ENCRYPT_WANT_ADDRESS} flag is ignored
in file mode.

@item --
This keyword disables all keyword detection up to the end of the
string. All keywords are treated as verbatim arguments.

@end table

To create a @var{recpstring} it is often useful to employ a strconcat
style function. For example this function creates a string to encrypt
to two keys:

@example
char *
xbuild_recpstring (const char *key1, const char *key2)
@{
char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
if (!result)
  @{ perror ("strconcat failed"); exit (2); @}

```
 return result;
@}
@end example
```

Note the use of the double dash here; unless you want to specify a keyword, it is a good idea to avoid any possible trouble with key specifications starting with a double dash. The used strconcat function is available in Libgpg-error 1.28 and later; Libgpg-error (aka Gpgrt) is a dependency of GPGME. The number of arguments to @code{gpgrt_strconcat} is limited to 47 but that should always be sufficient. In case a larger and non-fixed number of keys are to be supplied the following code can be used:

```
@example
char *
xbuild_long_recpstring (void)
@{
 gpgrt_stream_t memfp;
 const char *s;
 void *result;

 memfp = gpgrt_fopenmem (0, "w+b");
 if (!memfp)
   @{ perror ("fopenmem failed"); exit (2); @}
 gpgrt_fputs ("--", memfp);
 while ((s = get_next_keyspec ()))
   @{
     gpgrt_fputc ('\n', memfp);
     gpgrt_fputs (s, memfp);
   @}
 gpgrt_fputc (0, memfp);
 if (gpgrt_ferror (memfp))
   @{ perror ("writing to memstream failed"); exit (2); @}
 if (gpgrt_fclose_snatch (memfp, &result, NULL))
   @{ perror ("fclose_snatch failed"); exit (2); @}
 return result;
@}
@end example
```

In this example @code{get_next_keyspec} is expected to return the next key to be added to the string. Please take care: Encrypting to a large number of recipients is often questionable due to security reasons and also for the technicality that all keys are currently passed on the command line to @command{gpg} which has as a platform specific length limitation.

```
@end deftypefun
```

@deftypefun gpgme_error_t gpgme_op_encrypt_ext_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_start} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there
is no need
to first create key objects. The keys are passed verbatim to the
backend engine.

@end deftypefun

@deftp {Data type} {gpgme_encrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_encrypt} operation. After successfully encrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_encrypt_result}. The structure contains the following
members:

@table @code
@item gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which
the data could not be encrypted.
@end table
@end deftp

@deftypefun gpgme_encrypt_result_t gpgme_op_encrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_encrypt_result} returns a
@code{gpgme_encrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_encrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_encrypt}, @code{gpgme_op_encrypt_start},
@code{gpgme_op_sign} or
@code{gpgme_op_sign_start} operation. If this
operation failed, this might be a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_sign} does a combined encrypt and sign operation. It is used like @code{gpgme_op_encrypt}, but the ciphertext also contains signatures for the signers listed in @var{ctx}.

The combined encrypt and sign operation is currently only available for the OpenPGP crypto engine.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_sign_start} initiates a @code{gpgme_op_encrypt_sign} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be started successfully, and @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign} with @var{recpstring} as additional parameter. If @var{recp} is NULL and @var{recpstring} is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to @var{recp} the keys are given directly as strings and there is no need to first create the key objects. The keys are passed verbatim to the backend engine.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign_start} with @var{recpstring} as additional parameter. If @var{recp} is NULL and @var{recpstring} is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to @var{recp} the keys are given directly as strings and there is no need to first create the key objects. The keys are passed verbatim to the backend engine.

@end deftypefun

@node Miscellaneous
@section Miscellaneous
operations

Here are some support functions which are sometimes useful.

@menu
* Running other Programs:: Running other Programs
* Using the Assuan protocol:: Using the Assuan protocol
* Checking for updates:: How to check for software updates
@end menu

@node Running other Programs
@subsection Running other Programs

GPGME features an internal subsystem to run the actual backend engines. Along with data abstraction object this subsystem can be used to run arbitrary simple programs which even need not be related to cryptographic features. It may for example be used to run tools which are part of the GnuPG system but are not directly accessible with the GPGME API.

@deftypefun gpgme_error_t gpgme_op_spawn @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
@w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @

@w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
@w{unsigned int @var{flags}})

@since{1.5.0}

The
function @code{gpgme_op_spawn} runs the program @var{file} with
the arguments taken from the NULL terminated array @var{argv}. If no
arguments are required @var{argv} may be given as @code{NULL}. In the
latter case or if @code{argv[0]} is the empty string, GPGME uses the
basename of @var{file} for @code{argv[0]}. The file descriptors
@code{stdin}, @code{stdout}, and @code{stderr} are connected to the
data objects @var{datain}, @var{dataout}, and @var{dataerr}. If NULL
is passed for one of these data objects the corresponding file
descriptor is connected to @file{/dev/null}.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_SPAWN_DETACHED
@since{1.5.0}

Under Windows this flag inhibits the allocation of a new console for
the program. This is useful for a GUI application which needs to call
a command line helper tool.

@item GPGME_SPAWN_ALLOW_SET_FG
@since{1.5.0}

Under Windows
this flag allows the called program to put itself into
the foreground.
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_spawn_start @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
@w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @
@w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
@w{unsigned int @var{flags}})

@since{1.5.0}

This is the asynchronous variant of @code{gpgme_op_spawn}.
@end deftypefun

@node Using the Assuan protocol
@subsection Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers.
By default it is connected to the GnuPG agent, but it may be connected
to arbitrary servers by using @code{gpgme_ctx_set_engine_info},
passing the location of the servers socket as @var{file_name}
argument, and an empty string as @var{home_dir} argument.

The Assuan protocol functions use three kinds of callbacks to transfer
data:

@deftp {Data type}
{gpgme_error_t (*gpgme_assuan_data_cb_t) @
(@w{void *@var{opaque}}, @w{const void *@var{data}}, @
@w{size_t @var{datalen}})}

@since{1.2.0}

This callback receives any data sent by the server. @var{opaque} is
the pointer passed to @code{gpgme_op_assuan_transact_start},
@var{data} of length @var{datalen} refers to the data sent.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_inquire_cb_t) @
(@w{void *@var{opaque}}, @w{const char *@var{name}}, @
@w{const char *@var{args}}, @w{gpgme_data_t *@var{r_data}})}

@since{1.2.0}

This callback is used to provide additional data to the Assuan server.
@var{opaque} is the pointer passed to
@code{gpgme_op_assuan_transact_start}, @var{name} and @var{args}
specify what kind of data the server requested, and @var{r_data} is
used to return the actual data.

Note: Returning data is currently not implemented in @acronym{GPGME}.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_status_cb_t) @

(@w{void *@var{opaque}}, @w{const char *@var{status}}, @
@w{const char *@var{args}})}

@since{1.2.0}

This callback receives any status lines sent by the server.
@var{opaque} is the pointer passed to

@code{gpgme_op_assuan_transact_start}, @var{status} and @var{args}
denote the status update sent.
@end deftp

@deftypefun gpgme_error_t gpgme_op_assuan_transact_start @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
@w{gpgme_assuan_data_cb_t @var{data_cb}}, @
@w{void * @var{data_cb_value}}, @
@w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
@w{void * @var{inquire_cb_value}}, @
@w{gpgme_assuan_status_cb_t @var{status_cb}}, @
@w{void * @var{status_cb_value}})

@since{1.2.0}

Send the Assuan @var{command} and return results via the callbacks.
Any callback may be @code{NULL}. The result of the operation may be
retrieved using @code{gpgme_wait_ext}.

Asynchronous variant.
@end deftypefun

@deftypefun
gpgme_error_t gpgme_op_assuan_transact_ext @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
@w{gpgme_assuan_data_cb_t @var{data_cb}}, @
@w{void * @var{data_cb_value}}, @
@w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
@w{void * @var{inquire_cb_value}}, @
@w{gpgme_assuan_status_cb_t @var{status_cb}}, @
@w{void * @var{status_cb_value}}, @
@w{gpgme_error_t *@var{op_err}})

Send the Assuan @var{command} and return results via the callbacks.
The result of the operation is returned in @var{op_err}.

Synchronous variant.
@end deftypefun

@node Checking for updates
@subsection How to check for software updates

The GnuPG Project operates a server to query the current versions of
software packages related to GnuPG. GPGME can be used to
access this online database and check whether a new version of a
software package is available.

@deftp {Data type} {gpgme_query_swdb_result_t}
@since{1.8.0}

This
is a pointer to a structure used to store the result of a
@code{gpgme_op_query_swdb} operation. After success full call to that
function, you can retrieve the pointer to the result with
@code{gpgme_op_query_swdb_result}. The structure contains the
following member:

@table @code
@item name
This is the name of the package.

@item iversion
The currently installed version or an empty string. This value is
either a copy of the argument given to @code{gpgme_op_query_swdb} or
the version of the installed software as figured out by GPGME or GnuPG.

@item created
This gives the date the file with the list of version numbers has
originally be created by the GnuPG project.

@item retrieved
This gives the date the file was downloaded.

@item warning
If this flag is set either an error has occurred or some of the
information in this structure are not properly set. For example if
the version number of the installed software could not be figured out,
the
@code{update} flag may not reflect a required update status.

@item update
If this flag is set an update of the software is available.

@item urgent
If this flag is set an available update is important.

@item noinfo
If this flag is set, no valid information could be retrieved.

@item unknown
If this flag is set the given @code{name} is not known.

@item tooold
If this flag is set the available information is not fresh enough.

@item error
If this flag is set some other error has occurred.

@item version
The version string of the latest released version.

@item reldate
The release date of the latest released version.

@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_query_swdb @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const char *@var{name}}, @
@w{const char *@var{iversion}}, @
@w{gpgme_data_t @var{reserved}})

@since{1.8.0}

Query the software version database for software package @var{name}
and check against the installed
version given by @var{iversion}. If
@var{iversion} is given as @code{NULL} a check is only done if GPGME
can figure out the version by itself (for example when using
"gpgme" or "gnupg"). If @code{NULL} is used for @var{name} the
current gpgme version is checked. @var{reserved} must be set to 0.

@end deftypefun

@deftypefun gpgme_query_swdb_result_t gpgme_op_query_swdb_result @
(@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_op_query_swdb_result} returns a
@code{gpgme_query_swdb_result_t} pointer to a structure holding the
result of a @code{gpgme_op_query_swdb} operation. The pointer is only
valid if the last operation on the context was a successful call to
@code{gpgme_op_query_swdb}. If that call failed, the result might
be a @code{NULL} pointer. The returned pointer is only valid until
the next operation is started on the context @var{ctx}.
@end deftypefun

@noindent
Here is an example on how to check whether GnuPG is current:

@example

```
#include
 <gpgme.h>

int
main (void)
@{
 gpg_error_t err;
 gpgme_ctx_t ctx;
 gpgme_query_swdb_result_t result;

 gpgme_check_version (NULL);
 err = gpgme_new (&ctx);
 if (err)
  fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
 else
  @{
    gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

    err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
    if (err)
      fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
    else
      @{
        result = gpgme_op_query_swdb_result (ctx);
        if (!result)
          fprintf (stderr, "error querying swdb\n");
        if (!result->warning && !result->update)
          printf ("GnuPG version %s is current\n",
                  result->iversion);
        else if (!result->warning && result->update)
          printf ("GnuPG version %s can be updated to %s\n",
                  result->iversion, result->version);
        else
          fprintf (stderr, "error finding the
 update status\n");
      @}
    gpgme_release (ctx);
  @}
 return 0;
@}
@end example


@node Run Control
@section Run Control
@cindex run control
@cindex cryptographic operation, running
```

@acronym{GPGME} supports running operations synchronously and
asynchronously. You can use asynchronous operation to set up a
context up to initiating the desired operation, but delay performing
it to a later point.

Furthermore, you can use an external event loop to control exactly
when @acronym{GPGME} runs. This ensures that @acronym{GPGME} only
runs when necessary and also prevents it from blocking for a long
time.

@menu
* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.
@end menu

@node Waiting For Completion
@subsection Waiting For Completion
@cindex cryptographic operation, wait for
@cindex wait for completion

@deftypefun
 gpgme_ctx_t gpgme_wait (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_error_t *@var{status}}, @w{int
@var{hang}})
The function @code{gpgme_wait} continues the pending operation within
the context @var{ctx}. In particular, it ensures the data exchange
between @acronym{GPGME} and the crypto backend and watches over the
run time status of the backend process.

If @var{hang} is true, the function does not return until the
operation is completed or cancelled. Otherwise the function will not
block for a long time.

The error status of the finished operation is returned in @var{status}
if @code{gpgme_wait} does not return @code{NULL}.

The @var{ctx} argument can be @code{NULL}. In that case,
@code{gpgme_wait} waits for any context to complete its operation.

@code{gpgme_wait} can be used only in conjunction with any context
that has a pending operation initiated with one of the
@code{gpgme_op_*_start} functions except @code{gpgme_op_keylist_start}
and @code{gpgme_op_trustlist_start} (for
 which you should use the
corresponding @code{gpgme_op_*_next} functions). If @var{ctx} is
@code{NULL}, all of such contexts are waited upon and possibly
returned. Synchronous operations running in parallel, as well as key

and trust item list operations, do not affect @code{gpgme_wait}.

In a multi-threaded environment, only one thread should ever call
@code{gpgme_wait} at any time, regardless of whether @var{ctx} is specified
or not. This means that all calls to this function should be fully
synchronized by locking primitives. It is safe to start asynchronous
operations while a thread is running in @code{gpgme_wait}.

The function returns the @var{ctx} of the context which has finished
the operation. If @var{hang} is false, and the timeout expires,
@code{NULL} is returned and @code{*status} will be set to 0. If an
error occurs, @code{NULL} is returned and the error is returned in
@code{*status}.
@end deftypefun

@node Using External Event Loops
@subsection Using External Event
 Loops
@cindex event loop, external

@acronym{GPGME} hides the complexity of the communication between the
library and the crypto engine. The price of this convenience is that
the calling thread can block arbitrary long waiting for the data
returned by the crypto engine. In single-threaded programs, in
particular if they are interactive, this is an unwanted side-effect.
OTOH, if @code{gpgme_wait} is used without the @var{hang} option being
enabled, it might be called unnecessarily often, wasting CPU time that
could be used otherwise.

The I/O callback interface described in this section lets the user
take control over what happens when. @acronym{GPGME} will provide the
user with the file descriptors that should be monitored, and the
callback functions that should be invoked when a file descriptor is
ready for reading or writing. It is then the user's responsibility to
decide when to check the file descriptors and when to invoke the
callback functions. Usually this is done in an event
 loop, that also
checks for events in other parts of the program. If the callback
functions are only called when the file descriptors are ready,
@acronym{GPGME} will never block. This gives the user more control
over the program flow, and allows to perform other tasks when
@acronym{GPGME} would block otherwise.

By using this advanced mechanism, @acronym{GPGME} can be integrated
smoothly into GUI toolkits like GTK+ even for single-threaded
programs.

@menu
* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use @acronym{GPGME} with GTK+.
* I/O Callback Example GDK:: How to use @acronym{GPGME} with GDK.
* I/O Callback Example Qt:: How to use @acronym{GPGME} with Qt.
@end menu

@node I/O Callback Interface
@subsubsection I/O Callback Interface

@deftp {Data type} {gpgme_error_t
 (*gpgme_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}})}
@tindex gpgme_io_cb_t
The @code{gpgme_io_cb_t} type is the type of functions which
@acronym{GPGME} wants to register as I/O callback handlers using the
@code{gpgme_register_io_cb_t} functions provided by the user.

@var{data} and @var{fd} are provided by @acronym{GPGME} when the I/O
callback handler is registered, and should be passed through to the
handler when it is invoked by the user because it noticed activity on
the file descriptor @var{fd}.

The callback handler always returns @code{0}, but you should consider
the return value to be reserved for later use.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_register_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}},
@w{int @var{dir}}, @w{gpgme_io_cb_t @var{fnc}}, @w{void *@var{fnc_data}}, @w{void **@var{tag}})}
@tindex gpgme_register_io_cb_t
The @code{gpgme_register_io_cb_t} type is the type of functions which can
be called by @acronym{GPGME} to register an I/O callback
 function
@var{fnc} for the file descriptor @var{fd} with the user.
@var{fnc_data} should be passed as the first argument to @var{fnc}
when the handler is invoked (the second argument should be @var{fd}).
If @var{dir} is 0, @var{fnc} should be called by the user when
@var{fd} is ready for writing. If @var{dir} is 1, @var{fnc} should be
called when @var{fd} is ready for reading.

@var{data} was provided by the user when registering the
@code{gpgme_register_io_cb_t} function with @acronym{GPGME} and will always
be passed as the first argument when registering a callback function.
For example, the user can use this to determine the event loop to
which the file descriptor should be added.

@acronym{GPGME} will call this function when a crypto operation is initiated in a context for which the user has registered I/O callback handler functions with @code{gpgme_set_io_cbs}. It can also call this function when it is in an I/O callback handler for a file descriptor associated to this context.

The
user should return a unique handle in @var{tag} identifying this I/O callback registration, which will be passed to the @code{gpgme_register_io_cb_t} function without interpretation when the file descriptor should not be monitored anymore.
@end deftp

@deftp {Data type} {void (*gpgme_remove_io_cb_t) (@w{void *@var{tag}})}
The @code{gpgme_remove_io_cb_t} type is the type of functions which can be called by @acronym{GPGME} to remove an I/O callback handler that was registered before. @var{tag} is the handle that was returned by the @code{gpgme_register_io_cb_t} for this I/O callback.

@acronym{GPGME} can call this function when a crypto operation is in an I/O callback. It will also call this function when the context is destroyed while an operation is pending.
@end deftp

@deftp {Data type} {enum gpgme_event_io_t}
@tindex gpgme_event_io_t
The @code{gpgme_event_io_t} type specifies the type of an event that is reported to the user by @acronym{GPGME} as a consequence of an I/O operation.
The following events are defined:

@table @code
@item GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the registered I/O callback handlers now. Note that registered I/O callback handlers must not be run before this event is signalled. @var{type_data} is @code{NULL} and reserved for later use.

@item GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation was removed. The accompanying @var{type_data} points to a @code{struct gpgme_io_event_done_data} variable that contains the status of the operation that finished. This event is signalled after the last I/O callback has been removed.

@item GPGME_EVENT_NEXT_KEY
In a @code{gpgme_op_keylist_start} operation, the next key was received from the crypto engine. The accompanying @var{type_data} is

a @code{gpgme_key_t} variable that contains the key with one reference
for the user.

@end table
@end deftp

@deftp {Data type} {void (*gpgme_event_io_cb_t) (@w{void *@var{data}},
 @w{gpgme_event_io_t @var{type}}, @w{void *@var{type_data}})}
The @code{gpgme_event_io_cb_t} type is the type of functions which can be
called by @acronym{GPGME} to signal an event for an operation running
in a context which has I/O callback functions registered by the user.

@var{data} was provided by the user when registering the
@code{gpgme_event_io_cb_t} function with @acronym{GPGME} and will always be
passed as the first argument when registering a callback function.
For example, the user can use this to determine the context in which
this event has occurred.

@var{type} will specify the type of event that has occurred.
@var{type_data} specifies the event further, as described in the above
list of possible @code{gpgme_event_io_t} types.

@acronym{GPGME} can call this function in an I/O callback handler.
@end deftp

@node Registering I/O Callbacks
@subsubsection Registering I/O Callbacks

@deftp {Data type} {struct gpgme_io_cbs}
@tindex gpgme_event_io_t
This structure
 is used to store the I/O callback interface functions
described in the previous section. It has the following members:

@table @code
@item gpgme_register_io_cb_t add
This is the function called by @acronym{GPGME} to register an I/O
callback handler. It must be specified.

@item void *add_priv
This is passed as the first argument to the @code{add} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine the event loop to which the file descriptor should be added.

@item gpgme_remove_io_cb_t remove
This is the function called by @acronym{GPGME} to remove an I/O
callback handler. It must be specified.

@item gpgme_event_io_cb_t event
This is the function called by @acronym{GPGME} to signal an event for
an operation. It must be specified, because at least the start event
must be processed.

@item void *event_priv
This is passed as the first argument to the @code{event} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine
 the context in which the event has occurred.
@end table
@end deftp

@deftypefun void gpgme_set_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_set_io_cbs} enables the I/O callback
interface for the context @var{ctx}. The I/O callback functions are
specified by @var{io_cbs}.

If @var{io_cbs}->@code{add} is @code{NULL}, the I/O callback interface
is disabled for the context, and normal operation is restored.
@end deftypefun

@deftypefun void gpgme_get_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_get_io_cbs} returns the I/O callback
functions set with @code{gpgme_set_io_cbs} in @var{io_cbs}.
@end deftypefun

@node I/O Callback Example
@subsubsection I/O Callback Example

To actually use an external event loop, you have to implement the I/O
callback functions that are used by @acronym{GPGME} to register and
unregister file descriptors. Furthermore, you have to actually
monitor these
 file descriptors for activity and call the appropriate
I/O callbacks.

The following example illustrates how to do that. The example uses
locking to show in which way the callbacks and the event loop can
run concurrently. For the event loop, we use a fixed array. For a
real-world implementation, you should use a dynamically sized
structure because the number of file descriptors needed for a crypto
operation in @acronym{GPGME} is not predictable.

@example
#include <assert.h>

```
#include <errno.h>
#include <stdlib.h>
#include <pthread.h>
#include <sys/types.h>
#include <gpgme.h>

/* The following structure holds the result of a crypto operation.  */
struct op_result
@{
 int done;
 gpgme_error_t err;
@};

/* The following structure holds the data associated with one I/O
callback.  */
struct one_fd
@{
 int fd;
 int dir;
 gpgme_io_cb_t fnc;
 void *fnc_data;
 void *loop;
@};

struct event_loop
@{
 pthread_mutex_t lock;
#define MAX_FDS 32
 /* Unused slots are marked with FD being
 -1.  */
 struct one_fd fds[MAX_FDS];
@};
@end example
```

The following functions implement the I/O callback interface.

```
@example
gpgme_error_t
add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
    void **r_tag)
@{
 struct event_loop *loop = data;
 struct one_fd *fds = loop->fds;
 int i;

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS; i++)
   @{
```

```
    if (fds[i].fd == -1)
 @{
   fds[i].fd = fd;
   fds[i].dir = dir;
   fds[i].fnc = fnc;
   fds[i].fnc_data = fnc_data;
   fds[i].loop = loop;
   break;
 @}
   @}
 pthread_mutex_unlock (&loop->lock);
 if (i == MAX_FDS)
   return gpg_error (GPG_ERR_GENERAL);
 *r_tag = &fds[i];
 return 0;
@}

void
remove_io_cb (void *tag)
@{
 struct one_fd *fd = tag;
 struct event_loop *loop = fd->loop;

 pthread_mutex_lock (&loop->lock);
 fd->fd = -1;
 pthread_mutex_unlock (&loop->lock);
@}

void
event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
@{
 struct op_result *result = data;

 /* We
 don't support list operations here.  */
 if (type == GPGME_EVENT_DONE)
   @{
     result->done = 1;
     result->err = *type_data;
   @}
@}
@end example
```

The final missing piece is the event loop, which will be presented
next. We only support waiting for the success of a single operation.

```
@example
int
```

```
do_select (struct event_loop *loop)
@{
 fd_set rfds;
 fd_set wfds;
 int i, n;
 int any = 0;
 struct timeval tv;
 struct one_fd *fdlist = loop->fds;

 pthread_mutex_lock (&loop->lock);
 FD_ZERO (&rfds);
 FD_ZERO (&wfds);
 for (i = 0; i < MAX_FDS; i++)
  if (fdlist[i].fd != -1)
    FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
 pthread_mutex_unlock (&loop->lock);

 tv.tv_sec = 0;
 tv.tv_usec = 1000;

 do
  @{
    n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
  @}
 while (n < 0 && errno == EINTR);

 if (n < 0)
  return n; /* Error or timeout.  */

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS && n; i++)
  @{
    if (fdlist[i].fd
!= -1)
@{
  if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
    @{
      assert (n);
      n--;
      any = 1;
           /* The I/O callback handler can register/remove callbacks,
              so we have to unlock the file descriptor list.  */
           pthread_mutex_unlock (&loop->lock);
      (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
           pthread_mutex_lock (&loop->lock);
    @}
@}
  @}
```

```
 pthread_mutex_unlock (&loop->lock);
 return any;
@}

void
wait_for_op (struct event_loop *loop, struct op_result *result)
@{
 int ret;

 do
   @{
     ret = do_select (loop);
   @}
 while (ret >= 0 && !result->done);
@}
@end example
```

The main function shows how to put it all together.

```
@example
int
main (int argc, char *argv[])
@{
 struct event_loop loop;
 struct op_result result;
 gpgme_ctx_t ctx;
 gpgme_error_t err;
 gpgme_data_t sig, text;
 int i;
 pthread_mutexattr_t attr;
 struct gpgme_io_cbs io_cbs =
 @{
   add_io_cb,
    &loop,
   remove_io_cb,
   event_io_cb,
   &result
 @};

 init_gpgme ();

 /* Initialize the loop structure.  */

 /* The mutex must be recursive, since remove_io_cb (which acquires a
    lock) can be called while holding a lock acquired in do_select.  */
 pthread_mutexattr_init (&attr);
 pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
 pthread_mutex_init (&loop.lock, &attr);
```

```
pthread_mutexattr_destroy (&attr);

for (i = 0; i < MAX_FDS; i++)
  loop.fds[i].fd = -1;

/* Initialize the result structure.  */
result.done = 0;

err = gpgme_data_new_from_file (&sig, "signature", 1);
if (!err)
  err = gpgme_data_new_from_file (&text, "text", 1);
if (!err)
  err = gpgme_new (&ctx);
if (!err)
  @{
     gpgme_set_io_cbs (ctx, &io_cbs);
     err = gpgme_op_verify_start (ctx, sig, text, NULL);
  @}
if (err)
  @{
    fprintf (stderr, "gpgme error: %s: %s\n",
             gpgme_strsource (err), gpgme_strerror (err));
    exit (1);

  @}

wait_for_op (&loop, &result);
if (!result.done)
  @{
    fprintf (stderr, "select error\n");
    exit (1);
  @}
if (!result.err)
  @{
    fprintf (stderr, "verification failed: %s: %s\n",
             gpgme_strsource (result.err), gpgme_strerror (result.err));
    exit (1);
  @}
/* Evaluate verify result.  */
@dots{}
return 0;
@}
@end example


@node I/O Callback Example GTK+
@subsubsection I/O Callback Example GTK+
@cindex GTK+, using @acronym{GPGME} with
```

The I/O callback interface can be used to integrate @acronym{GPGME} with the GTK+ event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GTK+ specific setup.

```
@example
#include <gtk/gtk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 guint input_handler_id
@};

void
my_gpgme_io_cb
 (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gtk_input_remove (data->input_handler_id);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;
 iocb->data = fnc_data;
 iocb->input_handler_id = gtk_input_add_full (fd, dir
                                              ? GDK_INPUT_READ
                                              : GDK_INPUT_WRITE,
                                              my_gpgme_io_callback,
                                              0, iocb, NULL);
 *tag = iocb;
 return 0;
@}
```

@end example

@node I/O Callback Example GDK
@subsubsection I/O Callback Example
 GDK
@cindex GDK, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the GDK event loop. The following code snippets
shows how this can be done using the appropriate register and remove
I/O callback functions. In this example, the private data of the
register I/O callback function is unused. The event notifications is
missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

@example
#include <gdk/gdk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 gint tag;
@};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gdk_input_remove (data->tag);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,

               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;

```
 iocb->data = fnc_data;
 iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                 my_gpgme_io_callback, iocb, NULL);
 *tag = iocb;
 return 0;
@}
@end example
```

```
@node I/O Callback Example Qt
@subsubsection I/O Callback Example Qt
@cindex Qt, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the Qt event loop.  The following code snippets
show how this can be done using the appropriate register and remove
I/O callback functions.  In this example, the private data of the
register I/O callback function is unused.  The event notifications is
missing because it does not require any Qt specific setup.

@example
#include <qsocketnotifier.h>
#include <qapplication.h>

struct IOCB @{
 IOCB( GpgmeIOCb f, void * d, QSocketNotifier * n )
   : func(
 f ), data( d ), notifier( n ) @{@}
 GpgmeIOCb func;
 void * data;
 QSocketNotifier * notifier;
@}

class MyApp : public QApplication @{

 // ...

 static void registerGpgmeIOCallback( void * data, int fd, int dir,
                                      GpgmeIOCb func, void * func_data,
                                      void ** tag ) @{
   QSocketNotifier * n =
     new QSocketNotifier( fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write );
   connect( n, SIGNAL(activated(int)),
            qApp, SLOT(slotGpgmeIOCallback(int)) );
   qApp->mIOCBs.push_back( IOCB( func, func_data, n ) );
   *tag = (void*)n;
 @}
```

```
 static void removeGpgmeIOCallback( void * tag ) @{
   if ( !tag ) return;
   QSocketNotifier * n = static_cast<QSocketNotifier*>( tag );
   for ( QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
         it != qApp->mIOCBs.end() ; ++it )
     if ( it->notifier == n ) @{
       delete it->notifier;
       qApp->mIOCBs.erase(
 it );
       return;
     @}
 @}

public slots:
 void slotGpgmeIOCallback( int fd ) @{
   for ( QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
         it != mIOCBs.end() ; ++it )
     if ( it->notifier && it->notifier->socket() == fd )
       (*(it->func)) ( it->func_data, fd );
 @}

 // ...

private:
 QValueList<IOCB> mIOCBs;
 // ...
@};
@end example


@node Cancellation
@subsection Cancellation
@cindex cryptographic operation, aborting
@cindex cryptographic operation, cancelling
@cindex aborting operations
@cindex cancelling operations

Sometimes you do not want to wait for an operation to finish.
@acronym{GPGME} provides two different functions to achieve that.  The
function @code{gpgme_cancel} takes effect immediately.  When it
returns, the operation is effectively canceled.  However, it has some
limitations and can not be used with synchronous operations.  In
contrast, the function @code{gpgme_cancel_async} can be used with any
context and from
 any thread, but it is not guaranteed to take effect
immediately.  Instead, cancellation occurs at the next possible time
(typically the next time I/O occurs in the target context).
```

@deftypefun gpgme_ctx_t gpgme_cancel (@w{gpgme_ctx_t @var{ctx}})
@since{0.4.5}

The function @code{gpgme_cancel} attempts to cancel a pending
operation in the context @var{ctx}. This only works if you use the
global event loop or your own event loop.

If you use the global event loop, you must not call @code{gpgme_wait}
during cancellation. After successful
cancellation, you can call @code{gpgme_wait} (optionally waiting on
@var{ctx}), and the context @var{ctx} will appear as if it had
finished with the error code @code{GPG_ERR_CANCEL}.

If you use an external event loop, you must ensure that no I/O
callbacks are invoked for this context (for example by halting the
event loop). On successful cancellation, all registered I/O callbacks
for this context will be unregistered, and a @code{GPGME_EVENT_DONE}
event
 with the error code @code{GPG_ERR_CANCEL} will be signalled.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@deftypefun gpgme_ctx_t gpgme_cancel_async (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.7}

The function @code{gpgme_cancel_async} attempts to cancel a pending
operation in the context @var{ctx}. This can be called by any thread
at any time after starting an operation on the context, but will not
take effect immediately. The actual cancellation happens at the next
time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@c **
@c ******************** Appendices **************************
@c **

@include uiserver.texi

@node Debugging
@appendix How to solve problems
@cindex

debug
@cindex GPGME_DEBUG

Everyone knows that software often does not do what it should do and thus
there is a need to track down problems. This is in particular true
for applications using a complex library like @acronym{GPGME} and of
course also for the library itself. Here we give a few hints on how
to solve such problems.

First of all you should make sure that the keys you want to use are
installed in the GnuPG engine and are usable. Thus the first test is
to run the desired operation using @command{gpg} or @command{gpgsm} on
the command line. If you can't figure out why things don't work, you
may use @acronym{GPGME}'s built in trace feature. This feature is
either enabled using the environment variable @code{GPGME_DEBUG} or,
if this is not possible, by calling the function
@code{gpgme_set_global_flag}. The value is the trace level and
an optional file name. If no file name is given the trace output is
printed to @code{stderr}.

@noindent
For example
@smallexample
GPGME_DEBUG=9:/home/user/mygpgme.log
@end
smallexample
@noindent
(Note that under Windows you use a semicolon in place of the colon to
separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start
off with a lower level. The exact definition of the trace levels and
the output format may change with any release; you need to check the
source code for details. In any case the trace log should be helpful
to understand what is going going on. Warning: The trace log may
reveal sensitive details like passphrases or other data you use in
your application. If you are asked to send a log file, make sure that
you run your tests only with play data.

@node Deprecated Functions
@appendix Deprecated Functions
@cindex deprecated

For backward compatibility @acronym{GPGME} has a number of functions,
data types and constants which are deprecated and should not be used
anymore. We document here those which are really old to help
understanding old code and to allow migration

to their modern
counterparts.

@strong{Warning:} These interfaces will be removed in a future version
of @acronym{GPGME}.

@deftypefun void gpgme_key_release (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_release} is equivalent to
@code{gpgme_key_unref}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_ext (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}}, @w{int *@var{nr}})
@since{0.3.9}

The function @code{gpgme_op_import_ext} is equivalent to:

@example
 gpgme_error_t err = gpgme_op_import (ctx, keydata);
 if (!err)
   @{
     gpgme_import_result_t result = gpgme_op_import_result (ctx);
     *nr = result->considered;
   @}
@end example
@end deftypefun

@deftp {Data type} {gpgme_error_t (*gpgme_edit_cb_t) @
  (@w{void *@var{handle}}, @
   @w{gpgme_status_code_t @var{status}}, @
   @w{const char *@var{args}}, @
   @w{int @var{fd}})}
@tindex gpgme_edit_cb_t
The @code{gpgme_edit_cb_t} type is the type of functions which
@acronym{GPGME} calls
 if it a key edit operation is on-going. The
status code @var{status} and the argument line @var{args} are passed
through by @acronym{GPGME} from the crypto engine. The file
descriptor @var{fd} is -1 for normal status messages. If @var{status}
indicates a command rather than a status message, the response to the
command should be written to @var{fd}. The @var{handle} is provided
by the user at start of operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact} instead.

The function @code{gpgme_op_edit} processes the key @var{KEY}
interactively, using the edit callback function @var{FNC} with the
handle @var{HANDLE}. The callback
is invoked for every status and
command request from the crypto engine. The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
edit operation completes successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer, and any error returned
by the crypto engine or the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})

@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact_start} instead.

The function @code{gpgme_op_edit_start} initiates a
@code{gpgme_op_edit} operation.
It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated, please use @code{gpgme_op_interact}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit} is analogous to
@code{gpgme_op_edit}, but should be used to process the smart card corresponding to the key @var{key}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated,
please use @code{gpgme_op_interact_start}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit_start} initiates a
@code{gpgme_op_card_edit} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_with_read_cb (@w{gpgme_data_t *@var{dh}}, @w{int (*@var{readfunc})} (@w{void *@var{hook}}, @w{char *@var{buffer}}, @w{size_t @var{count}}, @w{size_t *@var{nread}}), @w{void *@var{hook_value}})
The function @code{gpgme_data_new_with_read_cb} creates a new
@code{gpgme_data_t} object and uses the callback function @var{readfunc}
to retrieve the data on demand. As the callback function can supply
the data in any way it wants, this is the most flexible data type
@acronym{GPGME}
provides. However, it can not be used to write data.

The callback function receives @var{hook_value} as its first argument
whenever it is invoked. It should return up to @var{count} bytes in
@var{buffer}, and return the number of bytes actually read in
@var{nread}. It may return @code{0} in @var{nread} if no data is
currently available. To indicate @code{EOF} the function should
return with an error code of @code{-1} and set @var{nread} to
@code{0}. The callback function may support to reset its internal
read pointer if it is invoked with @var{buffer} and @var{nread} being
@code{NULL} and @var{count} being @code{0}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{readfunc} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_rewind (@w{gpgme_data_t @var{dh}})

The function @code{gpgme_data_rewind}
is equivalent to:

@example
return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
  ? gpgme_error_from_errno (errno) : 0;
@end example
@end deftypefun

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key or trust item
attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of a sub key. It is representable as a string.

@item GPGME_ATTR_FPR
This is the fingerprint of a sub key. It is representable as a
string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm for which the sub key can be used. It
is representable as a string and as a number. The numbers correspond
to the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a
number.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is
representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration time of
a sub key. It is representable as a
number.

@item GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a
@var{gpgme_key_t} object. The first one (with index 0) is the primary
user ID. The user ID is representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable
as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a
string.

@item GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a
string and as a number. See below for a list of available validities.

@item GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a
number, and is @code{1} if the user ID is revoked, and @code{0}
otherwise.

@item GPGME_ATTR_UID_INVALID
This specifies if a user ID is invalid. It is representable as a
number,
 and is @code{1} if the user ID is invalid, and @code{0}
otherwise.

@item GPGME_ATTR_TYPE
This returns information about the type of key. For the string function
this will eother be "PGP" or "X.509". The integer function returns 0
for PGP and 1 for X.509.

@item GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable as a
number, and is @code{1} if the key is invalid, and @code{0} otherwise.

@item GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable as a
number, and is @code{1} if the key is expired, and @code{0} otherwise.

@item GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled.
 It is representable as a
number, and is @code{1} if the key is disabled, and @code{0} otherwise.

@item GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is representable as a string. The string contains the letter ``e'' if the key can be used for encryption, ``s'' if the key can be used for signatures, and ``c'' if the key can be used for certifications.

@item GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is representable as a number, and is @code{1} if the sub key can be used for encryption, and @code{0} otherwise.

@item GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data signatures. It is representable as a number, and is @code{1} if the sub key can be used for signatures, and @code{0} otherwise.

@item GPGME_ATTR_CAN_CERTIFY
This specifies if a sub key can be used to create key certificates. It is representable as a number, and is @code{1} if the sub key can be used for certifications,
and @code{0} otherwise.

@item GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is representable as a string.

@item GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is representable as a string.

@item GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification chain. It is representable as a string.
@end table
@end deftp

@deftypefun {const char *} gpgme_key_get_string_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_string_attr} returns the value of the string-representable attribute @var{what} of key @var{key}. If the attribute is an attribute of a sub key or an user ID, @var{idx} specifies the sub key or user ID of which the attribute value is returned. The argument @var{reserved} is reserved for later use and should be @code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0}
if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{idx} out of range,
or @var{reserved} not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_ulong_attr} returns the value of the number-representable attribute @var{what} of key @var{key}. If the attribute is an attribute of a sub key or an user ID, @var{idx} specifies the sub key or user ID of which the attribute value is returned. The argument @var{reserved} is reserved for later use and should be @code{NULL}.

The function returns @code{0} if the attribute can't be returned as a number, @var{key} is not a valid pointer, @var{idx} out of range, or @var{reserved} not @code{NULL}.
@end deftypefun

@c
@c Key Signatures
@c
The signatures on a key are only available if the key was retrieved via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS} mode enabled, because it is expensive to retrieve all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a key, you have to make sure that the key was listed with signatures enabled. One convenient, but blocking, way to do this is to use the function @code{gpgme_get_key}.

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key signature attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of the key which was used for the signature. It is representable as a string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It is representable as a string and as a number. The numbers correspond to the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It is
representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration
 time of the signature. It is representable as
a number.

@item GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is
representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable
as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a
string.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature. It is
representable as a number, and is @code{1} if the key is revoked, and
@code{0} otherwise.

@c @item GPGME_ATTR_KEY_EXPIRED
@c This specifies if a key signature is expired. It is representable as
@c a number, and is @code{1} if the key is revoked, and @code{0}
@c otherwise.
@c
@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific
 to the crypto
engine.

@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific to the crypto
engine.

@item GPGME_ATTR_SIG_STATUS
This is the same value as returned by @code{gpgme_get_sig_status}.
@end table

@end deftp

@deftypefun {const char *} gpgme_key_sig_get_string_attr (@w{gpgme_key_t @var{key}}, @w{int @var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_string_attr} returns the value of the string-representable attribute @var{what} of the signature @var{idx} on the user ID @var{uid_idx} in the key @var{key}. The argument @var{reserved} is reserved for later use and should be @code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0} if an attribute can't be returned as a string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx} out of range, or @var{reserved} not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_sig_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{int @var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_ulong_attr} returns the value of the number-representable attribute @var{what} of the signature @var{idx} on the user ID @var{uid_idx} in the key @var{key}. The argument @var{reserved} is reserved for later use and should be @code{NULL}.

The function returns @code{0} if an attribute can't be returned as a string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx} out of range, or @var{reserved} not @code{NULL}.
@end deftypefun

@deftp {Data type} {enum gpgme_sig_stat_t}
@tindex gpgme_sig_stat_t
The @code{gpgme_sig_stat_t} type holds the result of a signature check, or the combined result of all signatures. The following results are possible:

@table @code
@item GPGME_SIG_STAT_NONE
This status should not occur in normal operation.

@item GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined result this status means that all signatures are valid.

@item GPGME_SIG_STAT_GOOD_EXP

This status indicates that the signature is valid but expired. For
the combined result this status means that all signatures are valid
and expired.

@item GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to
verify the signature has expired. For the combined result this status
means that all signatures are valid and all keys are expired.

@item GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined
result this status means that all signatures are invalid.

@item GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to
a missing key. For the combined result this status means that all
signatures could not be checked due to missing keys.

@item GPGME_SIG_STAT_NOSIG
This
 status indicates that the signature data provided was not a real
signature.

@item GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented
the signature verification.

@item GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures
have a different status. You can get each key's status with
@code{gpgme_get_sig_status}.
@end table
@end deftp

@deftypefun {const char *} gpgme_get_sig_status (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_sig_stat_t *@var{r_stat}}, @w{time_t *@var{r_created}})
The function @code{gpgme_get_sig_status} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
     sig = sig->next;

```
    idx--;
  @}
 if (!sig || idx)
  return NULL;

 if (r_stat)
  @{
    switch (gpg_err_code (sig->status))
 @{
 case GPG_ERR_NO_ERROR:
  *r_stat = GPGME_SIG_STAT_GOOD;

  break;

 case GPG_ERR_BAD_SIGNATURE:
  *r_stat = GPGME_SIG_STAT_BAD;
  break;

 case GPG_ERR_NO_PUBKEY:
  *r_stat = GPGME_SIG_STAT_NOKEY;
  break;

 case GPG_ERR_NO_DATA:
  *r_stat = GPGME_SIG_STAT_NOSIG;
  break;

 case GPG_ERR_SIG_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXP;
  break;

 case GPG_ERR_KEY_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
  break;

 default:
  *r_stat = GPGME_SIG_STAT_ERROR;
  break;
 @}
  @}
 if (r_created)
  *r_created = sig->timestamp;
 return sig->fpr;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_string_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_string_attr} is equivalent to:
```

```
@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
     sig = sig->next;
     idx--;
   @}
 if (!sig || idx)
   return
 NULL;

 switch (what)
   @{
   case GPGME_ATTR_FPR:
     return sig->fpr;

   case GPGME_ATTR_ERRTOK:
     if (whatidx == 1)
       return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
     else
 return "";
   default:
     break;
   @}

 return NULL;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_ulong_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_ulong_attr} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
```

```
    sig = sig->next;
    idx--;
  @}
if (!sig || idx)
  return 0;

switch (what)
  @{
  case GPGME_ATTR_CREATED:
    return sig->timestamp;

  case GPGME_ATTR_EXPIRE:
    return sig->exp_timestamp;

  case GPGME_ATTR_VALIDITY:
    return (unsigned long) sig->validity;

  case GPGME_ATTR_SIG_STATUS:
     switch (sig->status)
@{
case GPG_ERR_NO_ERROR:
  return GPGME_SIG_STAT_GOOD;

case GPG_ERR_BAD_SIGNATURE:
  return GPGME_SIG_STAT_BAD;

case GPG_ERR_NO_PUBKEY:
  return GPGME_SIG_STAT_NOKEY;

case GPG_ERR_NO_DATA:
  return GPGME_SIG_STAT_NOSIG;

case GPG_ERR_SIG_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXP;

case GPG_ERR_KEY_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXPKEY;

default:
  return GPGME_SIG_STAT_ERROR;
@}

  case GPGME_ATTR_SIG_SUMMARY:
    return sig->summary;

  default:
    break;
  @}
```

```
 return 0;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_key (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_key_t *@var{r_key}})
The function @code{gpgme_get_sig_key} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
     sig = sig->next;
     idx--;
   @}
 if (!sig || idx)
   return gpg_error
 (GPG_ERR_EOF);

 return gpgme_get_key (ctx, sig->fpr, r_key, 0);
@end example
@end deftypefun




@include lesser.texi

@include gpl.texi

@node Concept Index
@unnumbered Concept Index

@printindex cp

@node Function and Data Index
@unnumbered Function and Data Index

@printindex fn


@bye
```

(21:protected-private-key(3:elg(1:p193:5*n^f"Q'R0_6<ymec \=c7S8u[5
ZF'xf5yi9F@T=KhZdU0(k5nZEI/ R]njVITPU$W<xs-Yx)(1:g1:)(1:y192:O9GNR{?]Y_W[FD*zuRmk%'R\'>>e9pe
eU)uS%VJ!5F)yH*O
]l'7{@wJmQP^jurx'V2H2j[G{q_"8()(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:o"%7:5242880)16:Hs*}u
)256:Gzk3%\Kb2=oOO@,}eBBI3F|OQP3eD%n,;~L-6UH^=64i);l
e+sG"(mlH_2sn_BBO7hRcZUt(p6,{5|37C3m8EY9=gQ)(12:protected-at15:20101008T070148)))
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFsMHecBCACqdJgqa+CeNYwPCK+MpOwAV6uFVjDyO2LmOs6+XfDWRBU/Zjtz
8zdYNKSbLjkWN4ujV5aiyA7MtEofszzYLEoKUt1wiDScHMpW8qmEFDvl9g26MeAV
rTno9D5KodHvEIs8wnrqBs8ix0WLbh6J1Dtt8HQgIbN+v3gaRQrgBFe6z2ZYpHHx
ZfOu3iFKlm2WE/NekRkvvFIo3ApGvRhGIYw6JMmugBlo7s5xosJK0I9dkPGlEEtt
aF1RkcMj8sWG9vHAXcjlGgFfXSN9YLppydXpkuZGm4+gjLB2a3rbQCZVFnxCyG4O
ybjkP8Jw6Udm89bK2ucYFfjdrmYn/nJqRxeNABEBAAG0I1Rlc3QgTm9Qcml2S2V5
IDxub2JvZHlAZXhhbXBsZS5vcmc+iQFOBBMBCAA4FiEE4Fmh4IZtMa4TEXCITZou
EzBBU9EFAlsMHecCGwMFCwkIBwIGFQoJCAsCBBYCAwECHgECF4AACgkQTZouEzBB
U9F+qwf/SHj4uRnTWgyJ71FBxQDYCBq3jbi6e7hMkRPbJyJdnPIMAb2p0PJjBgjW
0pp4+kDPZans3UDHbma1u/SFI4/y6isJiK94Bk5xp5YliLGnUceTjgDFe6lBhfQ1
zVWZC/NF3tPgbziIxXQTNt34nS+9dbV/QFDLW0POcN7C0jR/hgkBjMEH2PezWhSj
mL/yLfLfUYAoxVpXjfC5aPJKqw0tR7m5ibznjCphE+FUMRg8EOmJcg6soeJ5QspU
k2dPN3+Y0zCTNRgAHEI+yIQbM6pio6v2c+UCtT1QhW4xSI38/kcEG8QiM55r1TUy
FcWAY5n5t1nNZtMxxse3LqEon3rKiLkBDQRbDB3nAQgAqfAjSjcngERtM+ZYOwN0
QF2v2FuEuMe8mhju7Met7SN2zGv1LnjhTNshEa9IABEfjZirE2Tqx4xCWDwDedK4
u1ToFvcnuAMnq2O47Sh+eTypsf6WPFtPBWf6ctKY31hFXjgoyDBULBvl43XU/D9C
Mt7nsKDPYHVrrnge/qWPYVcb+cO0sSwNImMcwQSdTQ3VBq7MeNS9ZeBcXi+XCjhN
kjNum2AQqpkHHDQV7871yQ8RIILvZSSfkLb0/SNDU+bGaw2G3lcyKdIfZi2EWWZT
oCbH38I/+LV7nAEe4zFpHwW8X0Dkx2aLgxe6UszDH9L3eGhTLpJhOSiaanG+zZKm
+QARAQABiQE2BBgBCAAgFiEE4Fmh4IZtMa4TEXCITZouEzBBU9EFAlsMHecCGwwA
CgkQTZouEzBBU9H5TQgAolWvIsez/WW8N2tmZEnX0LOFNB+1S4L4X983njwNdoVI
w19pbj+8RIHF/H9kcPGi7jK96gvlykQn3uez/95D2AiRFW5KYdOouFisKgHpv8Ay
BrhclHv11yK+X/0iTD0scYaG7np5162xLkaxSO9hsz2fGv20RKaXCWkI69fWw0BR
XlI5pZh2YFei2ZhH/tIMIW65h3w0gtgaZBBdpZTOOW4zvghyN+0MSObqkI1BvUJu
caDFI4d6ZTmp5SY+pZyktZ4bg/vMH5VFxdIKgbLx9uVeTvOupvbAW0TNulYGUBQE
nm+S0zr3W18t64e4sS3oHse8zCqo1iiImpba6F1Oaw==
=y6DD
-----END
 PGP PUBLIC KEY BLOCK-----
;;;; gpgme.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;

```
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; TODO

;;; Set up the library.

(in-package :gpgme)

(deftype byte-array ()
 '(simple-array (unsigned-byte 8) (*)))

(deftype character-array ()
 '(simple-array character (*)))

;;;
 Debugging.

(defvar *debug* nil "If debugging output should be given or not.")

;;; Load the foreign library.

(define-foreign-library libgpgme
 (:unix "libgpgme.so")
 (t (:default "libgpgme")))

(use-foreign-library libgpgme)

;;; System dependencies.

; Access to ERRNO.
(defcfun ("strerror" c-strerror) :string
 (err :int))

(defun get-errno ()
 *errno*)

(defun set-errno (errno)
 (setf *errno* errno))

(define-condition system-error (error)
 ((errno :initarg :errno :reader system-error-errno))
```

```
 (:report (lambda (c stream)
     (format stream "System error: ~A: ~A"
      (system-error-errno c)
      (c-strerror (system-error-errno c)))))
 (:documentation "Signalled when an errno is encountered."))

; Needed to write passphrases.
(defcfun ("write" c-write) ssize-t
 (fd :int)
 (buffer :string) ; Actually :pointer, but we only need string.
 (size size-t))

(defun system-write (fd buffer size)
 (let ((res (c-write fd buffer size)))
  (when (< res 0) (error 'system-error
 :errno (get-errno)))
  res))

;;;
;;; C Interface Definitions
;;;

;;; Data Type Interface

;;; Some new data types used for easier translation.

;;; The number of include certs.  Translates to NIL for default.
(defctype cert-int-t
  (:wrapper :int
   :from-c translate-cert-int-t-from-foreign
   :to-c translate-cert-int-t-to-foreign))

;;; A string that may be NIL to indicate a null pointer.
(defctype string-or-nil-t
  (:wrapper :string
   :to-c translate-string-or-nil-t-to-foreign))

;;; Some opaque data types used by GPGME.

(defctype gpgme-ctx-t
  (:wrapper :pointer
   :to-c translate-gpgme-ctx-t-to-foreign)
 "The GPGME context type.")

(defctype gpgme-data-t
  (:wrapper :pointer
   :to-c translate-gpgme-data-t-to-foreign)
 "The GPGME data object type.")
```

```
;;; Wrappers for the libgpg-error library.

(defctype gpgme-error-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-t-from-foreign
   :to-c translate-gpgme-error-t-to-foreign)
 "The
 GPGME error type.")

(defctype gpgme-error-no-signal-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-no-signal-t-from-foreign)
 "The GPGME error type (this version does not signal conditions in translation.")

(defctype gpgme-err-code-t gpg-error::gpg-err-code-t
 "The GPGME error code type.")

(defctype gpgme-err-source-t gpg-error::gpg-err-source-t
 "The GPGME error source type.")

(defun gpgme-err-make (source code)
 "Construct an error value from an error code and source."
 (gpg-err-make source code))

(defun gpgme-error (code)
 "Construct an error value from an error code."
 (gpgme-err-make :gpg-err-source-gpgme code))

(defun gpgme-err-code (err)
 "Retrieve an error code from the error value ERR."
 (gpg-err-code err))

(defun gpgme-err-source (err)
 "Retrieve an error source from the error value ERR."
 (gpg-err-source err))

(defun gpgme-strerror (err)
 "Return a string containing a description of the error code."
 (gpg-strerror err))

(defun
 gpgme-strsource (err)
 "Return a string containing a description of the error source."
 (gpg-strsource err))

(defun gpgme-err-code-from-errno (err)
 "Retrieve the error code for the system error.  If the system error
```

```
  is not mapped, :gpg-err-unknown-errno is returned."
 (gpg-err-code-from-errno err))

(defun gpgme-err-code-to-errno (code)
 "Retrieve the system error for the error code.  If this is not a
  system error, 0 is returned."
 (gpg-err-code-to-errno code))

(defun gpgme-err-make-from-errno (source err)
 (gpg-err-make-from-errno source err))

(defun gpgme-error-from-errno (err)
 (gpg-error-from-errno err))

;;;

(defcenum gpgme-data-encoding-t
 "The possible encoding mode of gpgme-data-t objects."
 (:none 0)
 (:binary 1)
 (:base64 2)
 (:armor 3)
 (:url 4)
 (:urlesc 5)
 (:url0 6)
 (:mime 7))

;;;

(defcenum gpgme-pubkey-algo-t
 "Public key algorithms from libgcrypt."
 (:rsa 1)
 (:rsa-e 2)
 (:rsa-s 3)
 (:elg-e 16)
 (:dsa 17)
 (:ecc 18)
 (:elg 20)
  (:ecdsa 301)
 (:ecdh 302)
 (:eddsa 303))

(defcenum gpgme-hash-algo-t
 "Hash algorithms from libgcrypt."
 (:none 0)
 (:md5 1)
 (:sha1 2)
 (:rmd160 3)
```

```
 (:md2 5)
 (:tiger 6)
 (:haval 7)
 (:sha256 8)
 (:sha384 9)
 (:sha512 10)
 (:sha224 11)
 (:md4 301)
 (:crc32 302)
 (:crc32-rfc1510 303)
 (:crc24-rfc2440 304))

;;;

(defcenum gpgme-sig-mode-t
 "The available signature modes."
 (:none 0)
 (:detach 1)
 (:clear 2))

;;;

(defcenum gpgme-validity-t
 "The available validities for a trust item or key."
 (:unknown 0)
 (:undefined 1)
 (:never 2)
 (:marginal 3)
 (:full 4)
 (:ultimate 5))

;;;

(defcenum gpgme-protocol-t
 "The available protocols."
 (:openpgp 0)
 (:cms 1)
 (:gpgconf 2)
 (:assuan 3)
 (:g13 4)
 (:uiserver 5)
 (:spawn 6)
 (:default 254)
 (:unknown 255))

;;;

(defbitfield (gpgme-keylist-mode-t :unsigned-int)
```

```
 "The available keylist mode flags."
 (:local 1)
 (:extern 2)
 (:sigs 4)
 (:sig-notations)
 (:with-secret 16)
 (:with-tofu 32)
 (:ephemeral
 128)
 (:validate 256))

;;;

(defbitfield (gpgme-sig-notation-flags-t :unsigned-int)
 "The available signature notation flags."
 (:human-readable 1)
 (:critical 2))

(defctype gpgme-sig-notation-t
   (:wrapper :pointer
    :from-c translate-gpgme-sig-notation-t-from-foreign)
 "Signature notation pointer type.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-sig-notation-bitfield :unsigned-int)
 (:human-readable 1)
 (:critical 2))

(defcstruct gpgme-sig-notation
 "Signature notations."
 (next gpgme-sig-notation-t)
 (name :pointer)
 (value :pointer)
 (name-len :int)
 (value-len :int)
 (flags gpgme-sig-notation-flags-t)
 (bitfield gpgme-sig-notation-bitfield))

;;;

(defcenum gpgme-status-code-t
 "The possible status codes for the edit operation."
 (:eof 0)
 (:enter 1)
 (:leave 2)
 (:abort 3)
 (:goodsig 4)
 (:badsig 5)
```

(:errsig 6)
(:badarmor 7)
(:rsa-or-idea 8)
(:keyexpired 9)
(:keyrevoked 10)
(:trust-undefined 11)
(:trust-never
12)
(:trust-marginal 13)
(:trust-fully 14)
(:trust-ultimate 15)
(:shm-info 16)
(:shm-get 17)
(:shm-get-bool 18)
(:shm-get-hidden 19)
(:need-passphrase 20)
(:validsig 21)
(:sig-id 22)
(:enc-to 23)
(:nodata 24)
(:bad-passphrase 25)
(:no-pubkey 26)
(:no-seckey 27)
(:need-passphrase-sym 28)
(:decryption-failed 29)
(:decryption-okay 30)
(:missing-passphrase 31)
(:good-passphrase 32)
(:goodmdc 33)
(:badmdc 34)
(:errmdc 35)
(:imported 36)
(:import-ok 37)
(:import-problem 38)
(:import-res 39)
(:file-start 40)
(:file-done 41)
(:file-error 42)
(:begin-decryption 43)
(:end-decryption 44)
(:begin-encryption 45)
(:end-encryption 46)
(:delete-problem 47)
(:get-bool 48)
(:get-line 49)
(:get-hidden 50)
(:got-it 51)
(:progress 52)

(:sig-created 53)
(:session-key 54)
(:notation-name 55)
(:notation-data 56)
(:policy-url 57)
(:begin-stream 58)
(:end-stream 59)
(:key-created 60)
(:userid-hint 61)
(:unexpected
62)
(:inv-recp 63)
(:no-recp 64)
(:already-signed 65)
(:sigexpired 66)
(:expsig 67)
(:expkeysig 68)
(:truncated 69)
(:error 70)
(:newsig 71)
(:revkeysig 72)
(:sig-subpacket 73)
(:need-passphrase-pin 74)
(:sc-op-failure 75)
(:sc-op-success 76)
(:cardctrl 77)
(:backup-key-created 78)
(:pka-trust-bad 79)
(:pka-trust-good 80)
(:plaintext 81)
(:inv-sgnr 82)
(:no-sgnr 83)
(:success 84)
(:decryption-info 85)
(:plaintext-length 86)
(:mountpoint 87)
(:pinentry-launched 88)
(:attribute 89)
(:begin-signing 90)
(:key-not-created 91)
(:inquire-maxlen 92)
(:failure 93)
(:key-considered 94)
(:tofu-user 95)
(:tofu-stats 96)
(:tofu-stats-long 97)
(:notation-flags 98)
(:decryption-compliance-mode 99)

```
 (:verification-compliance-mode 100))

;;;

(defctype gpgme-engine-info-t
   (:wrapper :pointer
    :from-c translate-gpgme-engine-info-t-to-foreign)
 "The engine information structure pointer type.")

(defcstruct gpgme-engine-info
  "Engine information."
 (next gpgme-engine-info-t)
 (protocol gpgme-protocol-t)
 (file-name :string)
 (version :string)
 (req-version :string)
 (home-dir :string))

;;;

(defctype gpgme-subkey-t
   (:wrapper :pointer
    :from-c translate-gpgme-subkey-t-from-foreign)
 "A subkey from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-subkey-bitfield :unsigned-int)
 "The subkey bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512)
 (:is-cardkey 1024)
 (:is-de-vs 2048))

(defcstruct gpgme-subkey
 "Subkey from a key."
 (next gpgme-subkey-t)
 (bitfield gpgme-subkey-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (length :unsigned-int)
 (keyid :string)
```

```
 (-keyid :char :count 17)
 (fpr :string)
 (timestamp :long)
 (expires :long))


(defctype gpgme-key-sig-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-sig-t-from-foreign)
  "A signature on a user ID.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-sig-bitfield :unsigned-int)
 "The key signature bitfield."
 (:revoked 1)
 (:expired 2)
 (:invalid 4)
 (:exportable 16))

(defcstruct gpgme-key-sig
 "A signature on a user ID."
 (next gpgme-key-sig-t)
 (bitfield gpgme-key-sig-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (keyid :string)
 (-keyid :char :count 17)
 (timestamp :long)
 (expires :long)
 (status gpgme-error-no-signal-t)
 (-class :unsigned-int)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (sig-class :unsigned-int))


(defctype gpgme-user-id-t
   (:wrapper :pointer
    :from-c translate-gpgme-user-id-t-from-foreign)
 "A user ID from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-user-id-bitfield :unsigned-int)
 "The user ID bitfield."
 (:revoked 1)
 (:invalid 2))
```

```
(defcstruct gpgme-user-id
 "A user ID from a key."
 (next
 gpgme-user-id-t)
 (bitfield gpgme-user-id-bitfield)
 (validity gpgme-validity-t)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (signatures gpgme-key-sig-t)
 (-last-keysig gpgme-key-sig-t))


(defctype gpgme-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-t-from-foreign
    :to-c translate-gpgme-key-t-to-foreign)
 "A key from the keyring.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-bitfield :unsigned-int)
 "The key bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512))

(defcstruct gpgme-key
 "A signature on a user ID."
 (-refs :unsigned-int)
 (bitfield gpgme-key-bitfield)
 (protocol gpgme-protocol-t)
 (issuer-serial :string)
 (issuer-name :string)
 (chain-id :string)
 (owner-trust gpgme-validity-t)
 (subkeys gpgme-subkey-t)
 (uids gpgme-user-id-t)
 (-last-subkey gpgme-subkey-t)
  (-last-uid gpgme-user-id-t)
 (keylist-mode gpgme-keylist-mode-t))
```

```
;;;

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-passphrase-cb-t :pointer)

(defctype gpgme-progress-cb-t :pointer)

(defctype gpgme-edit-cb-t :pointer)


;;;
;;; Function Interface
;;;

;;; Context management functions.

(defcfun ("gpgme_new" c-gpgme-new) gpgme-error-t
 (ctx :pointer))

(defcfun ("gpgme_release" c-gpgme-release) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_protocol" c-gpgme-set-protocol) gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t))

(defcfun ("gpgme_get_protocol" c-gpgme-get-protocol) gpgme-protocol-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_get_protocol_name" c-gpgme-get-protocol-name) :string
 (proto gpgme-protocol-t))

(defcfun ("gpgme_set_armor" c-gpgme-set-armor) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_armor" c-gpgme-get-armor) :boolean
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_textmode" c-gpgme-set-textmode) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_textmode" c-gpgme-get-textmode) :boolean
 (ctx gpgme-ctx-t))
```

```
(defconstant +include-certs-default+ -256)

(defcfun ("gpgme_set_include_certs" c-gpgme-set-include-certs) :void
 (ctx gpgme-ctx-t)
 (nr-of-certs cert-int-t))

(defcfun ("gpgme_get_include_certs" c-gpgme-get-include-certs) cert-int-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_keylist_mode" c-gpgme-set-keylist-mode) gpgme-error-t
 (ctx gpgme-ctx-t)
 (mode gpgme-keylist-mode-t))

(defcfun ("gpgme_get_keylist_mode" c-gpgme-get-keylist-mode)
   gpgme-keylist-mode-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_passphrase_cb" c-gpgme-set-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-passphrase-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_passphrase_cb" c-gpgme-get-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_progress_cb"
 c-gpgme-set-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-progress-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_progress_cb" c-gpgme-get-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_locale" c-gpgme-set-locale) gpgme-error-t
 (ctx gpgme-ctx-t)
 (category :int)
 (value string-or-nil-t))

(defcfun ("gpgme_ctx_get_engine_info" c-gpgme-ctx-get-engine-info)
   gpgme-engine-info-t
 (ctx gpgme-ctx-t))
```

```
(defcfun ("gpgme_ctx_set_engine_info" c-gpgme-ctx-set-engine-info)
  gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir string-or-nil-t))

;;;

(defcfun ("gpgme_pubkey_algo_name" c-gpgme-pubkey-algo-name) :string
 (algo gpgme-pubkey-algo-t))

(defcfun ("gpgme_hash_algo_name" c-gpgme-hash-algo-name) :string
 (algo gpgme-hash-algo-t))

;;;

(defcfun ("gpgme_signers_clear" c-gpgme-signers-clear) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_signers_add" c-gpgme-signers-add)
 gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t))

(defcfun ("gpgme_signers_enum" c-gpgme-signers-enum) gpgme-key-t
 (ctx gpgme-ctx-t)
 (seq :int))

;;;

(defcfun ("gpgme_sig_notation_clear" c-gpgme-sig-notation-clear) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_sig_notation_add" c-gpgme-sig-notation-add) gpgme-error-t
 (ctx gpgme-ctx-t)
 (name :string)
 (value string-or-nil-t)
 (flags gpgme-sig-notation-flags-t))

(defcfun ("gpgme_sig_notation_get" c-gpgme-sig-notation-get)
  gpgme-sig-notation-t
 (ctx gpgme-ctx-t))

;;; Run Control.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.
```

```
(defctype gpgme-io-cb-t :pointer)

(defctype gpgme-register-io-cb-t :pointer)

(defctype gpgme-remove-io-cb-t :pointer)

(defcenum gpgme-event-io-t
 "The possible events on I/O event callbacks."
 (:start 0)
 (:done 1)
 (:next-key 2)
 (:next-trustitem 3))

(defctype gpgme-event-io-cb-t :pointer)

(defcstruct
 gpgme-io-cbs
 "I/O callbacks."
 (add gpgme-register-io-cb-t)
 (add-priv :pointer)
 (remove gpgme-remove-io-cb-t)
 (event gpgme-event-io-cb-t)
 (event-priv :pointer))

(defctype gpgme-io-cbs-t :pointer)

(defcfun ("gpgme_set_io_cbs" c-gpgme-set-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_get_io_cbs" c-gpgme-get-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_wait" c-gpgme-wait) gpgme-ctx-t
 (ctx gpgme-ctx-t)
 (status-p :pointer)
 (hang :int))

;;; Functions to handle data objects.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-data-read-cb-t :pointer)
(defctype gpgme-data-write-cb-t :pointer)
(defctype gpgme-data-seek-cb-t :pointer)
```

```
(defctype gpgme-data-release-cb-t :pointer)

(defcstruct gpgme-data-cbs
 "Data callbacks."
 (read gpgme-data-read-cb-t)
 (write gpgme-data-write-cb-t)
 (seek gpgme-data-seek-cb-t)
  (release gpgme-data-release-cb-t))

(defctype gpgme-data-cbs-t :pointer
 "Data callbacks pointer.")

(defcfun ("gpgme_data_read" c-gpgme-data-read) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))

(defcfun ("gpgme_data_write" c-gpgme-data-write) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))

(defcfun ("gpgme_data_seek" c-gpgme-data-seek) off-t
 (dh gpgme-data-t)
 (offset off-t)
 (whence :int))

(defcfun ("gpgme_data_new" c-gpgme-data-new) gpgme-error-t
 (dh-p :pointer))

(defcfun ("gpgme_data_release" c-gpgme-data-release) :void
 (dh gpgme-data-t))

(defcfun ("gpgme_data_new_from_mem" c-gpgme-data-new-from-mem) gpgme-error-t
 (dh-p :pointer)
 (buffer :pointer)
 (size size-t)
 (copy :int))

(defcfun ("gpgme_data_release_and_get_mem" c-gpgme-data-release-and-get-mem)
   :pointer
 (dh gpgme-data-t)
 (len-p :pointer))

(defcfun ("gpgme_data_new_from_cbs" c-gpgme-data-new-from-cbs) gpgme-error-t
 (dh-p :pointer)
 (cbs gpgme-data-cbs-t)
```

```
  (handle :pointer))

(defcfun ("gpgme_data_new_from_fd" c-gpgme-data-new-from-fd) gpgme-error-t
 (dh-p :pointer)
 (fd :int))

(defcfun ("gpgme_data_new_from_stream" c-gpgme-data-new-from-stream)
   gpgme-error-t
 (dh-p :pointer)
 (stream :pointer))

(defcfun ("gpgme_data_get_encoding" c-gpgme-data-get-encoding)
   gpgme-data-encoding-t
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_encoding" c-gpgme-data-set-encoding)
   gpgme-error-t
 (dh gpgme-data-t)
 (enc gpgme-data-encoding-t))

(defcfun ("gpgme_data_get_file_name" c-gpgme-data-get-file-name) :string
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_file_name" c-gpgme-data-set-file-name) gpgme-error-t
 (dh gpgme-data-t)
 (file-name string-or-nil-t))

(defcfun ("gpgme_data_new_from_file" c-gpgme-data-new-from-file) gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (copy :int))

(defcfun ("gpgme_data_new_from_filepart" c-gpgme-data-new-from-filepart)
   gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (fp
 :pointer)
 (offset off-t)
 (length size-t))

;;; Key and trust functions.

(defcfun ("gpgme_get_key" c-gpgme-get-key) gpgme-error-t
 (ctx gpgme-ctx-t)
 (fpr :string)
 (key-p :pointer)
 (secret :boolean))
```

```
(defcfun ("gpgme_key_ref" c-gpgme-key-ref) :void
 (key gpgme-key-t))

(defcfun ("gpgme_key_unref" c-gpgme-key-unref) :void
 (key gpgme-key-t))

;;; Crypto operations.

(defcfun ("gpgme_cancel" c-gpgme-cancel) gpgme-error-t
 (ctx gpgme-ctx-t))

;;;

(defctype gpgme-invalid-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-invalid-key-t-from-foreign)
 "An invalid key structure.")

(defcstruct gpgme-invalid-key
 "An invalid key structure."
 (next gpgme-invalid-key-t)
 (fpr :string)
 (reason gpgme-error-no-signal-t))

;;; Encryption.

(defcstruct gpgme-op-encrypt-result
 "Encryption result structure."
 (invalid-recipients gpgme-invalid-key-t))

(defctype gpgme-op-encrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-encrypt-result-t-from-foreign)
  "An encryption result structure.")

(defcfun ("gpgme_op_encrypt_result" c-gpgme-op-encrypt-result)
   gpgme-op-encrypt-result-t
 (ctx gpgme-ctx-t))

(defbitfield gpgme-encrypt-flags-t
 (:always-trust 1)
 (:no-encrypt-to 2)
 (:prepare 4)
 (:expect-sign 8)
 (:no-compress 16)
 (:symmetric 32)
 (:throw-keyids 64)
```

```
 (:wrap 128)
 (:want-address 256))

(defcfun ("gpgme_op_encrypt_start" c-gpgme-op-encrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt" c-gpgme-op-encrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign_start" c-gpgme-op-encrypt-sign-start)
   gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign"
 c-gpgme-op-encrypt-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

;;; Decryption.

(defctype gpgme-recipient-t
   (:wrapper :pointer
    :from-c translate-gpgme-recipient-t-from-foreign)
 "A recipient structure.")

(defcstruct gpgme-recipient
 "Recipient structure."
 (next gpgme-recipient-t)
 (keyid :string)
 (-keyid :char :count 17)
 (pubkey-algo gpgme-pubkey-algo-t)
 (status gpgme-error-no-signal-t))
```

```
(defbitfield gpgme-op-decrypt-result-bitfield
 "Decryption result structure bitfield."
 (:wrong-key-usage 1)
 (:is-de-vs 2)
 (:is-mine 4))

(defcstruct gpgme-op-decrypt-result
 "Decryption result structure."
 (unsupported-algorithm :string)
 (bitfield gpgme-op-decrypt-result-bitfield)
 (recipients gpgme-recipient-t)
 (file-name :string))

(defctype gpgme-op-decrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-decrypt-result-t-from-foreign)
  "A decryption result structure.")

(defcfun ("gpgme_op_decrypt_result" c-gpgme-op-decrypt-result)
   gpgme-op-decrypt-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_decrypt_start" c-gpgme-op-decrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt" c-gpgme-op-decrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify_start" c-gpgme-op-decrypt-verify-start)
   gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify" c-gpgme-op-decrypt-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

;;; Signing.

(defctype gpgme-new-signature-t
   (:wrapper :pointer
    :from-c translate-gpgme-new-signature-t-from-foreign)
```

```
 "A new signature structure.")

(defcstruct gpgme-new-signature
 "New signature structure."
 (next gpgme-new-signature-t)
  (type gpgme-sig-mode-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t)
 (-obsolete-class :unsigned-long)
 (timestamp :long)
 (fpr :string)
 (-obsolete-class-2 :unsigned-int)
 (sig-class :unsigned-int))

(defcstruct gpgme-op-sign-result
 "Signing result structure."
 (invalid-signers gpgme-invalid-key-t)
 (signatures gpgme-new-signature-t))

(defctype gpgme-op-sign-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-sign-result-t-from-foreign)
 "A signing result structure.")

(defcfun ("gpgme_op_sign_result" c-gpgme-op-sign-result)
   gpgme-op-sign-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_sign_start" c-gpgme-op-sign-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

(defcfun ("gpgme_op_sign" c-gpgme-op-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

;;; Verify.

(defbitfield (gpgme-sigsum-t :unsigned-int)
 "Flags
 used for the summary field in a gpgme-signature-t."
 (:valid #x0001)
 (:green #x0002)
 (:red #x0004)
```

```
 (:key-revoked #x0010)
 (:key-expired #x0020)
 (:sig-expired #x0040)
 (:key-missing #x0080)
 (:crl-missing #x0100)
 (:crl-too-old #x0200)
 (:bad-policy #x0400)
 (:sys-error #x0800)
 (:tofu-conflict #x1000))

(defctype gpgme-signature-t
   (:wrapper :pointer
    :from-c translate-gpgme-signature-t-from-foreign)
 "A signature structure.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-signature-bitfield :unsigned-int)
 "The signature bitfield."
 (:wrong-key-usage 1)
 (:pka-trust 2)
 (:chain-model 4)
 (:is-de-vs 8))

(defcstruct gpgme-signature
 "Signature structure."
 (next gpgme-signature-t)
 (summary gpgme-sigsum-t)
 (fpr :string)
 (status gpgme-error-no-signal-t)
 (notations gpgme-sig-notation-t)
 (timestamp :unsigned-long)
 (exp-timestamp :unsigned-long)
 (bitfield gpgme-signature-bitfield)
 (validity gpgme-validity-t)
 (validity-reason
 gpgme-error-no-signal-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t))

(defcstruct gpgme-op-verify-result
 "Verify result structure."
 (signatures gpgme-signature-t)
 (file-name :string))

(defctype gpgme-op-verify-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-verify-result-t-from-foreign)
 "A verify result structure.")
```

```
(defcfun ("gpgme_op_verify_result" c-gpgme-op-verify-result)
   gpgme-op-verify-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_verify_start" c-gpgme-op-verify-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

(defcfun ("gpgme_op_verify" c-gpgme-op-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

;;; Import.

(defbitfield (gpgme-import-flags-t :unsigned-int)
 "Flags used for the import status field."
 (:new #x0001)
 (:uid #x0002)
 (:sig #x0004)
 (:subkey #x0008)
 (:secret
 #x0010))

(defctype gpgme-import-status-t
   (:wrapper :pointer
    :from-c translate-gpgme-import-status-t-from-foreign)
 "An import status structure.")

(defcstruct gpgme-import-status
 "New import status structure."
 (next gpgme-import-status-t)
 (fpr :string)
 (result gpgme-error-no-signal-t)
 (status :unsigned-int))

(defcstruct gpgme-op-import-result
 "Import result structure."
 (considered :int)
 (no-user-id :int)
 (imported :int)
 (imported-rsa :int)
 (unchanged :int)
 (new-user-ids :int)
```

```
 (new-sub-keys :int)
 (new-signatures :int)
 (new-revocations :int)
 (secret-read :int)
 (secret-imported :int)
 (secret-unchanged :int)
 (skipped-new-keys :int)
 (not-imported :int)
 (imports gpgme-import-status-t))

(defctype gpgme-op-import-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-import-result-t-from-foreign)
 "An import status result structure.")

(defcfun ("gpgme_op_import_result" c-gpgme-op-import-result)
   gpgme-op-import-result-t
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_import_start" c-gpgme-op-import-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_import" c-gpgme-op-import) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

;;; Export.

(defcfun ("gpgme_op_export_start" c-gpgme-op-export-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_export" c-gpgme-op-export) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

;;; FIXME: Extended export interfaces require array handling.

;;; Key generation.

(defbitfield (gpgme-genkey-flags-t :unsigned-int)
 "Flags used for the key generation result bitfield."
 (:primary #x0001)
```

```
 (:sub #x0002)
 (:uid #x0004))

(defcstruct gpgme-op-genkey-result
 "Key generation result structure."
 (bitfield gpgme-genkey-flags-t)
 (fpr :string))

(defctype gpgme-op-genkey-result-t :pointer
 "A
 key generation result structure.")

(defcfun ("gpgme_op_genkey_result" c-gpgme-op-genkey-result)
   gpgme-op-genkey-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_genkey_start" c-gpgme-op-genkey-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

(defcfun ("gpgme_op_genkey" c-gpgme-op-genkey) gpgme-error-t
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

;;; Key deletion.

(defcfun ("gpgme_op_delete_start" c-gpgme-op-delete-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

(defcfun ("gpgme_op_delete" c-gpgme-op-delete) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

;;; FIXME: Add edit interfaces.

;;; Keylist interface.

(defbitfield (gpgme-keylist-flags-t :unsigned-int)
 "Flags used for the key listing result bitfield."
 (:truncated #x0001))
```

```
(defcstruct gpgme-op-keylist-result
 "Key listing result structure."
 (bitfield
 gpgme-keylist-flags-t))

(defctype gpgme-op-keylist-result-t :pointer
 "A key listing result structure.")

(defcfun ("gpgme_op_keylist_result" c-gpgme-op-keylist-result)
   gpgme-op-keylist-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_keylist_start" c-gpgme-op-keylist-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (secret_only :boolean))

;;; FIXME: Extended keylisting requires array handling.

(defcfun ("gpgme_op_keylist_next" c-gpgme-op-keylist-next) gpgme-error-t
 (ctx gpgme-ctx-t)
 (r-key :pointer))

(defcfun ("gpgme_op_keylist_end" c-gpgme-op-keylist-end) gpgme-error-t
 (ctx gpgme-ctx-t))

;;; Various functions.

(defcfun ("gpgme_check_version" c-gpgme-check-version) :string
 (req-version string-or-nil-t))

(defcfun ("gpgme_get_engine_info" c-gpgme-get-engine-info) gpgme-error-t
 (engine-info-p :pointer))

(defcfun ("gpgme_set_engine_info" c-gpgme-set-engine-info) gpgme-error-t
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir
 string-or-nil-t))

(defcfun ("gpgme_engine_check_version" c-gpgme-engine-check-verson)
   gpgme-error-t
 (proto gpgme-protocol-t))

;;;
;;; L I S P   I N T E R F A C E
;;;
```

```
;;;
;;; Lisp type translators.
;;;

;;; Both directions.

;;; cert-int-t is a helper type that takes care of representing the
;;; default number of certs as NIL.

(defun translate-cert-int-t-from-foreign (value)
 (cond
   ((eql value +include-certs-default+) nil)
   (t value)))

(defun translate-cert-int-t-to-foreign (value)
 (cond
   (value value)
   (t +include-certs-default+)))

;;; string-or-nil-t translates a null pointer to NIL and vice versa.
;;; Translation from foreign null pointer already works as expected.

(defun translate-string-or-nil-t-to-foreign (value)
 (cond
   (value value)
   (t (null-pointer))))

;;; Output only.

;;; These type translators only convert from foreign type, because we
;;; never use these types in the other direction.

;;; Convert gpgme-engine-info-t linked lists into a
 list of property
;;; lists.  Note that this converter will automatically be invoked
;;; recursively.
;;;
;;; FIXME: Should we use a hash table (or struct, or clos) instead of
;;; property list, as recommended by the Lisp FAQ?

(defun translate-gpgme-engine-info-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next protocol file-name version req-version home-dir)
     value (:struct gpgme-engine-info))
  (append (list protocol (list
        :file-name file-name
```

```
      :version version
      :req-version req-version
      :home-dir home-dir))
  next)))))

(defun translate-gpgme-invalid-key-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next fpr reason)
    value (:struct gpgme-invalid-key))
  (append (list (list :fpr fpr
      :reason reason))
  next)))))

(defun translate-gpgme-op-encrypt-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots

  ((invalid-recipients)
    value (:struct gpgme-op-encrypt-result))
  (list :encrypt
      (list :invalid-recipients invalid-recipients))))))

(defun translate-gpgme-recipient-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next keyid pubkey-algo status)
    value (:struct gpgme-recipient))
  (append (list (list :keyid keyid
      :pubkey-algo pubkey-algo
      :status status))
  next)))))

(defun translate-gpgme-op-decrypt-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((unsupported-algorithm bitfield recipients file-name)
    value (:struct gpgme-op-decrypt-result))
  (list :decrypt (list :unsupported-algorithm unsupported-algorithm
       :bitfield bitfield
       :recipients recipients
       :file-name file-name))))))

(defun translate-gpgme-new-signature-t-from-foreign (value)
```

```
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next
 type pubkey-algo hash-algo timestamp fpr sig-class)
      value (:struct gpgme-new-signature))
  (append (list (list :type type
         :pubkey-algo pubkey-algo
         :hash-algo hash-algo
         :timestamp timestamp
         :fpr fpr
         :sig-class sig-class))
   next)))))

(defun translate-gpgme-op-sign-result-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((invalid-signers signatures)
      value (:struct gpgme-op-sign-result))
  (list :sign (list :invalid-signers invalid-signers
       :signatures signatures))))))

(defun translate-gpgme-signature-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next summary fpr status notations timestamp
    exp-timestamp bitfield validity validity-reason
    pubkey-algo hash-algo)
      value (:struct gpgme-signature))
  (append (list (list :summary summary
         :fpr fpr
         :status status
         :notations notations
         :timestamp timestamp

      :exp-timestamp exp-timestamp
         :bitfield bitfield
         :validity validity
         :validity-reason validity-reason
         :pubkey-algo pubkey-algo))
   next)))))

(defun translate-gpgme-op-verify-result-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
```

```
    ((signatures file-name)
     value (:struct gpgme-op-verify-result))
  (list :verify (list :signatures signatures
        :file-name file-name))))))

(defun translate-gpgme-import-status-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next fpr result status)
    value (:struct gpgme-import-status))
  (append (list (list :fpr fpr
        :result result
        :status status))
  next)))))

(defun translate-gpgme-op-import-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((considered no-user-id imported imported-rsa unchanged
  new-user-ids new-sub-keys new-signatures
  new-revocations
 secret-read secret-imported
  secret-unchanged skipped-new-keys not-imported
  imports)
    value (:struct gpgme-op-import-result))
  (list :verify (list :considered considered
        :no-user-id no-user-id
        :imported imported
        :imported-rsa imported-rsa
        :unchanged unchanged
        :new-user-ids new-user-ids
        :new-sub-keys new-sub-keys
        :new-signatures new-signatures
        :new-revocations new-revocations
        :secret-read secret-read
        :secret-imported secret-imported
        :secret-unchanged secret-unchanged
        :skipped-new-keys skipped-new-keys
        :not-imported not-imported
        :imports imports))))))

;;; Error handling.

;;; Use gpgme-error-no-signal-t to suppress automatic error handling
;;; at translation time.
;;;
```

```
;;; FIXME: Part of this probably should be in gpg-error!

(define-condition gpgme-error (error)
 ((value :initarg :gpgme-error :reader gpgme-error-value))
 (:report (lambda (c stream)

    (format stream "GPGME returned error: ~A (~A)"
      (gpgme-strerror (gpgme-error-value c))
      (gpgme-strsource (gpgme-error-value c)))))
 (:documentation "Signalled when a GPGME function returns an error."))

(defun translate-gpgme-error-t-from-foreign (value)
 "Raise a GPGME-ERROR if VALUE is non-zero."
 (when (not (eql (gpgme-err-code value) :gpg-err-no-error))
  (error 'gpgme-error :gpgme-error value))
 (gpg-err-canonicalize value))

(defun translate-gpgme-error-t-to-foreign (value)
 "Canonicalize the error value."
 (if (eql (gpgme-err-code value) :gpg-err-no-error)
    0
    (gpg-err-as-value value)))

(defun translate-gpgme-error-no-signal-t-from-foreign (value)
 "Canonicalize the error value."
 (gpg-err-canonicalize value))


;;; *INTERNAL* Lispy Function Interface that is still close to the C
;;; interface.

;;; Passphrase callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar
 *passphrase-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  passphrase callback object as value.")

(defcallback passphrase-cb gpgme-error-t ((handle :pointer)
      (uid-hint :string)
      (passphrase-info :string)
      (prev-was-bad :boolean)
      (fd :int))
 (handler-case
    (let* ((passphrase-cb
```

```
      (gethash (pointer-address handle) *passphrase-handles*))
     (passphrase
      (cond
 ((functionp passphrase-cb)
  (concatenate 'string
       (funcall passphrase-cb uid-hint passphrase-info
         prev-was-bad)
       '(#\Newline)))
 (t (concatenate 'string passphrase-cb '(#\Newline)))))
     (passphrase-len (length passphrase))
     ;; FIXME: Could be more robust.
     (res (system-write fd passphrase passphrase-len)))
(cond
  ((< res passphrase-len) ; FIXME: Blech.  A weak attempt to be robust.
   (gpgme-error :gpg-err-inval))
  (t (gpgme-error :gpg-err-no-error))))
  (gpgme-error (err)
(gpgme-error-value err))
  (system-error (err) (gpgme-error-from-errno (system-error-errno err)))
  ;; FIXME: The original error gets lost here.
  (condition (err) (progn
       (when *debug*
   (format t "DEBUG: passphrase-cb: Unexpressable: ~A~%"
    err))
       (gpgme-error :gpg-err-general)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-passphrase-cb (ctx cb)
 "Set the passphrase callback for CTX."
 (let ((handle (pointer-address ctx)))
  (cond
    (cb (setf (gethash handle *passphrase-handles*) cb)
  (c-gpgme-set-passphrase-cb ctx (callback passphrase-cb) ctx))
    (t (c-gpgme-set-passphrase-cb ctx (null-pointer) (null-pointer))
  (remhash handle *passphrase-handles*)))))

;;; Progress callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar *progress-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  progress callback
 object as value.")

(defcallback progress-cb :void ((handle :pointer)
   (what :string)
```

```
   (type :int)
   (current :int)
   (total :int))
 (handler-case
    (let* ((progress-cb
      (gethash (pointer-address handle) *progress-handles*)))
 (funcall progress-cb what type current total))
  ;; FIXME: The original error gets lost here.
  (condition (err) (when *debug*
       (format t "DEBUG: progress-cb: Unexpressable: ~A~%"
        err)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-progress-cb (ctx cb)
 "Set the progress callback for CTX."
 (let ((handle (pointer-address ctx)))
   (cond
    (cb (setf (gethash handle *progress-handles*) cb)
   (c-gpgme-set-progress-cb ctx (callback progress-cb) ctx))
    (t (c-gpgme-set-progress-cb ctx (null-pointer) (null-pointer))
  (remhash handle *progress-handles*)))))

;;; Context management.

(defun gpgme-new (&key (protocol :openpgp) armor textmode include-certs
    keylist-mode passphrase progress file-name
 home-dir)
 "Allocate a new GPGME context."
 (with-foreign-object (ctx-p 'gpgme-ctx-t)
   (c-gpgme-new ctx-p)
   (let ((ctx (mem-ref ctx-p 'gpgme-ctx-t)))
     ;;; Set locale?
     (gpgme-set-protocol ctx protocol)
     (gpgme-set-armor ctx armor)
     (gpgme-set-textmode ctx textmode)
     (when include-certs (gpgme-set-include-certs ctx include-certs))
     (when keylist-mode (gpgme-set-keylist-mode ctx keylist-mode))
     (gpgme-set-passphrase-cb ctx passphrase)
     (gpgme-set-progress-cb ctx progress)
     (gpgme-set-engine-info ctx protocol
       :file-name file-name :home-dir home-dir)
     (when *debug* (format t "DEBUG: gpgme-new: ~A~%" ctx))
     ctx)))

(defun gpgme-release (ctx)
 "Release a GPGME context."
 (when *debug* (format t "DEBUG: gpgme-release: ~A~%" ctx))
 (c-gpgme-release ctx))
```

```
(defun gpgme-set-protocol (ctx proto)
 "Set the protocol to be used by CTX to PROTO."
 (c-gpgme-set-protocol ctx proto))

(defun gpgme-get-protocol (ctx)
 "Get
 the protocol used with CTX."
 (c-gpgme-get-protocol ctx))

;;; FIXME: How to do pretty printing?
;;;
;;; gpgme-get-protocol-name

(defun gpgme-set-armor (ctx armor)
 "If ARMOR is true, enable armor mode in CTX, disable it otherwise."
(c-gpgme-set-armor ctx armor))

(defun gpgme-armor-p (ctx)
 "Return true if armor mode is set for CTX."
 (c-gpgme-get-armor ctx))

(defun gpgme-set-textmode (ctx textmode)
 "If TEXTMODE is true, enable text mode mode in CTX, disable it otherwise."
(c-gpgme-set-textmode ctx textmode))

(defun gpgme-textmode-p (ctx)
 "Return true if text mode mode is set for CTX."
 (c-gpgme-get-textmode ctx))

(defun gpgme-set-include-certs (ctx &optional certs)
 "Include up to CERTS certificates in an S/MIME message."
 (c-gpgme-set-include-certs ctx certs))

(defun gpgme-get-include-certs (ctx)
 "Return the number of certs to include in an S/MIME message,
  or NIL if the default is used."
 (c-gpgme-get-include-certs ctx))

(defun gpgme-get-keylist-mode (ctx)
  "Get the keylist mode in CTX."
 (c-gpgme-get-keylist-mode ctx))

(defun gpgme-set-keylist-mode (ctx mode)
 "Set the keylist mode in CTX."
 (c-gpgme-set-keylist-mode ctx mode))
```

```
;;; FIXME: How to handle locale?  cffi-grovel?

(defun gpgme-get-engine-info (&optional ctx)
 "Retrieve the engine info for CTX, or the default if CTX is omitted."
 (cond
   (ctx (c-gpgme-ctx-get-engine-info ctx))
   (t (with-foreign-object (info-p 'gpgme-engine-info-t)
  (c-gpgme-get-engine-info info-p)
  (mem-ref info-p 'gpgme-engine-info-t)))))

(defun gpgme-set-engine-info (ctx proto &key file-name home-dir)
 "Set the engine info for CTX, or the default if CTX is NIL."
 (cond
   (ctx (c-gpgme-ctx-set-engine-info ctx proto file-name home-dir))
   (t (c-gpgme-set-engine-info proto file-name home-dir))))

;;; FIXME: How to do pretty printing?
;;;
;;; gpgme_pubkey_algo_name, gpgme_hash_algo_name

(defun gpgme-set-signers (ctx keys)
 "Set the signers for the context CTX."
 (c-gpgme-signers-clear ctx)
  (dolist (key keys) (c-gpgme-signers-add ctx key)))

;;;

(defun gpgme-set-sig-notation (ctx notations)
 "Set the sig notation for the context CTX."
 (c-gpgme-sig-notation-clear ctx)
 (dolist (notation notations)
   (c-gpgme-sig-notation-add
    ctx (first notation) (second notation) (third notation))))

(defun gpgme-get-sig-notation (ctx)
 "Get the signature notation data for the context CTX."
 (c-gpgme-sig-notation-get ctx))

;;; FIXME: Add I/O callback interface, for integration with clg.

;;; FIXME: Add gpgme_wait?

;;; Streams
;;; -------
;;;
;;; GPGME uses standard streams.  You can define your own streams, or
;;; use the existing file or string streams.
;;;
```

```
;;; A stream-spec is either a stream, or a list with a stream as its
;;; first argument followed by keyword parameters: encoding,
;;; file-name.
;;;
;;; FIXME: Eventually, we should provide a class that can be mixed
;;; into stream classes and which provides accessors for encoding and
;;; file-names.  This interface
 should be provided in addition to the
;;; above sleazy interface, because the sleazy interface is easier to
;;; use (less typing), and is quite sufficient in a number of cases.
;;;
;;; For best results, streams with element type (unsigned-byte 8)
;;; should be used.  Character streams may work if armor mode is used.

;;; Do we need to provide access to GPGME data objects through streams
;;; as well?  It seems to me that specific optimizations, like
;;; directly writing to file descriptors, is better done by extending
;;; the sleazy syntax (stream-spec) instead of customized streams.
;;; Customized streams do buffering, and this may mess up things.  Mmh.

(defvar *data-handles* (make-hash-table)
 "Hash table with GPGME data user callback handle address as key
  and the corresponding stream as value.")

;;; The release callback removes the stream from the *data-handles*
;;; hash and releases the CBS structure that is used as the key in
;;; that hash.  It is implicitly invoked (through
 GPGME) by
;;; gpgme-data-release.
(defcallback data-release-cb :void ((handle :pointer))
 (unwind-protect (remhash (pointer-address handle) *data-handles*)
   (when (not (null-pointer-p handle)) (foreign-free handle))))

(defcallback data-read-cb ssize-t ((handle :pointer) (buffer :pointer)
                                   (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-read-cb: want ~A~%" size))
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type))
             (read (read-sequence seq stream)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char i)
                   (aref (the byte-array seq) i))))
          ((eql stream-type 'character)
```

```
          (dotimes (i read)
            (setf (mem-aref buffer :unsigned-char
i)
                  (char-code (aref (the character-array seq) i)))))
         (t
          (dotimes (i read)
            (setf (mem-aref buffer :unsigned-char i)
                  (coerce (aref seq i) '(unsigned-byte 8))))))
       (when *debug* (format t "DEBUG: gpgme-data-read-cb: read ~A~%" read))
       read))
     (t
      (set-errno +ebadf+)
      -1))))

(defcallback data-write-cb ssize-t ((handle :pointer) (buffer :pointer)
                                    (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-write-cb: want ~A~%" size))
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i size)
             (setf (aref (the byte-array seq) i)
                   (mem-aref buffer :unsigned-char i))))
          ((eql stream-type 'character)
           (dotimes (i size)
             (setf (aref (the character-array seq) i)
                   (code-char (mem-aref buffer :unsigned-char i)))))
          (t
           (dotimes (i size)
             (setf (aref seq i)
                   (coerce (mem-aref buffer :unsigned-char i) stream-type)))))
        (write-sequence seq stream)
        size))
     (t
      (set-errno +ebadf+)
      -1))))

;;; This little helper macro allows us to swallow the cbs structure by
;;; simply setting it to a null pointer, but still protect against
;;; conditions.
(defmacro with-cbs-swallowed ((cbs) &body body)
  `(let ((,cbs (foreign-alloc '(:struct gpgme-data-cbs))))
     (unwind-protect (progn ,@body)
       (when (not (null-pointer-p ,cbs)) (foreign-free ,cbs)))))
```

```
(defun gpgme-data-new (stream &key encoding file-name)
 "Allocate a new GPGME data object for STREAM."
 (with-foreign-object (dh-p 'gpgme-data-t)
   ;;; We allocate one CBS structure
 for each stream we wrap in a
   ;;; data object.  Although we could also share all these
   ;;; structures, as they contain the very same callbacks, we need a
   ;;; unique C pointer as handle anyway to look up the stream in the
   ;;; callback.  This is a convenient one to use.
   (with-cbs-swallowed (cbs)
     (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'read)
           (callback data-read-cb))
     (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'write)
           (callback data-write-cb))
     (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'seek)
           (null-pointer))
     (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'release)
           (callback data-release-cb))
     (c-gpgme-data-new-from-cbs dh-p cbs cbs)
     (let ((dh (mem-ref dh-p 'gpgme-data-t)))
 (when encoding (gpgme-data-set-encoding dh encoding))
 (when file-name (gpgme-data-set-file-name dh file-name))
 ;;; Install the stream into the hash table and
 swallow the cbs
       ;;; structure while protecting against any errors.
 (unwind-protect
      (progn
       (setf (gethash (pointer-address cbs) *data-handles*) stream)
       (setf cbs (null-pointer)))
   (when (not (null-pointer-p cbs)) (c-gpgme-data-release dh)))
 (when *debug* (format t "DEBUG: gpgme-data-new: ~A~%" dh))
 dh))))

;;; This function releases a GPGME data object.  It implicitly
;;; invokes the data-release-cb function to clean up associated junk.
(defun gpgme-data-release (dh)
 "Release a GPGME data object."
 (when *debug* (format t "DEBUG: gpgme-data-release: ~A~%" dh))
 (c-gpgme-data-release dh))

(defclass data ()
 (c-data)  ; The C data object pointer
 (:documentation "The GPGME data type."))

(defmethod initialize-instance :after ((data data) &key streamspec
                                       &allow-other-keys)
 (let ((c-data (if (listp streamspec)
```

```
                (apply #'gpgme-data-new streamspec)
                (gpgme-data-new streamspec)))
        (cleanup t))
    (unwind-protect
        (progn
          (setf (slot-value data 'c-data) c-data)
          (finalize data (lambda () (gpgme-data-release c-data)))
          (setf cleanup nil))
      (if cleanup (gpgme-data-release c-data)))))

(defun translate-gpgme-data-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (cond
   ((null value) (null-pointer))
   ((pointerp value) value)
   (t (slot-value value 'c-data))))

(defmacro with-gpgme-data ((dh streamspec) &body body)
 `(let ((,dh (make-instance 'data :streamspec ,streamspec)))
    ,@body))

(defun gpgme-data-get-encoding (dh)
 "Get the encoding associated with the data object DH."
 (c-gpgme-data-get-encoding dh))

(defun gpgme-data-set-encoding (dh encoding)
 "Set the encoding associated with the data object DH to ENCODING."
 (c-gpgme-data-set-encoding dh encoding))

(defun gpgme-data-get-file-name (dh)
 "Get the file name associated with the data object
 DH."
 (c-gpgme-data-get-file-name dh))

(defun gpgme-data-set-file-name (dh file-name)
 "Set the file name associated with the data object DH to FILE-NAME."
 (c-gpgme-data-set-file-name dh file-name))

;;; FIXME: Add key accessor interfaces.

(defun gpgme-get-key (ctx fpr &optional secret)
 "Get the key with the fingerprint FPR from the context CTX."
 (with-foreign-object (key-p 'gpgme-key-t)
   (c-gpgme-get-key ctx fpr key-p secret)
   (mem-ref key-p 'gpgme-key-t)))

(defun gpgme-key-ref (key)
 "Acquire an additional reference to the key KEY."
```

```
 (when *debug* (format t "DEBUG: gpgme-key-ref: ~A~%" key))
 (c-gpgme-key-ref key))

(defun gpgme-key-unref (key)
 "Release a reference to the key KEY."
 (when *debug* (format t "DEBUG: gpgme-key-unref: ~A~%" key))
 (c-gpgme-key-unref key))

;;; FIXME: We REALLY need pretty printing for keys and all the other
;;; big structs.

;;; Various interfaces.

(defun gpgme-check-version (&optional req-version)
 (c-gpgme-check-version req-version))

;;;
;;;
 The *EXPORTED* CLOS interface.
;;;

;;; The context type.

;;; We wrap the C context pointer into a class object to be able to
;;; stick a finalizer on it.

(defclass context ()
 (c-ctx  ; The C context object pointer.
  signers ; The list of signers.
  sig-notation) ; The list of signers.
 (:documentation "The GPGME context type."))

(defmethod initialize-instance :after ((ctx context) &rest rest
         &key &allow-other-keys)
 (let ((c-ctx (apply #'gpgme-new rest))
 (cleanup t))
   (unwind-protect
  (progn (setf (slot-value ctx 'c-ctx) c-ctx)
  (finalize ctx (lambda () (gpgme-release c-ctx)))
  (setf cleanup nil))
    (if cleanup (gpgme-release c-ctx)))))

(defun translate-gpgme-ctx-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-ctx)))

(defmacro context (&rest rest)
 "Create a new GPGME context."
```

```
 `(make-instance 'context ,@rest))

;;; The context type: Accessor
 functions.

;;; The context type: Accessor functions: Protocol.

(defgeneric protocol (ctx)
 (:documentation "Get the protocol of CONTEXT."))

(defmethod protocol ((ctx context))
 (gpgme-get-protocol ctx))

(defgeneric (setf protocol) (protocol ctx)
 (:documentation "Set the protocol of CONTEXT to PROTOCOL."))

;;; FIXME: Adjust translator to reject invalid protocols.  Currently,
;;; specifying an invalid protocol throws a "NIL is not 32 signed int"
;;; error.  This is suboptimal.
(defmethod (setf protocol) (protocol (ctx context))
 (gpgme-set-protocol ctx protocol))

;;; The context type: Accessor functions: Armor.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric armorp (ctx)
 (:documentation "Get the armor flag of CONTEXT."))

(defmethod armorp ((ctx context))
 (gpgme-armor-p ctx))

(defgeneric (setf armorp) (armor ctx)
 (:documentation "Set the armor flag of CONTEXT to ARMOR."))

(defmethod (setf armorp) (armor (ctx
 context))
 (gpgme-set-armor ctx armor))

;;; The context type: Accessor functions: Textmode.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric textmodep (ctx)
 (:documentation "Get the text mode flag of CONTEXT."))

(defmethod textmodep ((ctx context))
 (gpgme-textmode-p ctx))
```

```
(defgeneric (setf textmodep) (textmode ctx)
 (:documentation "Set the text mode flag of CONTEXT to TEXTMODE."))

(defmethod (setf textmodep) (textmode (ctx context))
 (gpgme-set-textmode ctx textmode))

;;; The context type: Accessor functions: Include Certs.

(defgeneric include-certs (ctx)
 (:documentation "Get the number of included certificates in an
            S/MIME message, or NIL if the default is used."))

(defmethod include-certs ((ctx context))
 (gpgme-get-include-certs ctx))

(defgeneric (setf include-certs) (certs ctx)
 (:documentation "Return the number of certificates to include in an
            S/MIME message, or
 NIL if the default is used."))

(defmethod (setf include-certs) (certs (ctx context))
 (gpgme-set-include-certs ctx certs))

;;; The context type: Accessor functions: Engine info.

(defgeneric engine-info (ctx)
 (:documentation "Retrieve the engine info for CTX."))

(defmethod engine-info ((ctx context))
 (gpgme-get-engine-info ctx))

(defgeneric (setf engine-info) (info ctx)
 (:documentation "Set the engine info for CTX."))

(defmethod (setf engine-info) (info (ctx context))
 (dolist (proto '(:openpgp :cms))
  (let ((pinfo (getf info proto)))
    (when pinfo
 (gpgme-set-engine-info ctx proto :file-name (getf pinfo :file-name)
        :home-dir (getf pinfo :home-dir))))))

;;; The context type: Accessor functions: Keylist mode.

(defgeneric keylist-mode (ctx)
 (:documentation "Get the keylist mode of CTX."))

(defmethod keylist-mode ((ctx context))
```

```
 (gpgme-get-keylist-mode ctx))

(defgeneric (setf keylist-mode) (mode ctx)
 (:documentation "Set the keylist mode of CTX to MODE."))

(defmethod
 (setf keylist-mode) (mode (ctx context))
 (gpgme-set-keylist-mode ctx mode))

;;; The context type: Accessor functions: Signers.

(defgeneric signers (ctx)
 (:documentation "Get the signers of CTX."))

(defmethod signers ((ctx context))
 (slot-value ctx 'signers))

(defgeneric (setf signers) (signers ctx)
 (:documentation "Set the signers of CTX to SIGNERS."))

(defmethod (setf keylist-mode) (signers (ctx context))
 (gpgme-set-signers ctx signers)
 (setf (slot-value ctx 'signers) signers))

;;; The context type: Accessor functions: Sig notations.

(defgeneric sig-notations (ctx)
 (:documentation "Get the signature notations of CTX."))

(defmethod sig-notations ((ctx context))
 (slot-value ctx 'signers))

(defgeneric (setf sig-notations) (notations ctx)
 (:documentation "Set the signatire notations of CTX to NOTATIONS."))

(defmethod (setf sig-notations) (notations (ctx context))
 (gpgme-set-signers ctx notations)
 (setf (slot-value ctx 'notations) notations))

;;;
 The context type: Support macros.

(defmacro with-context ((ctx &rest rest) &body body)
 `(let ((,ctx (make-instance 'context ,@rest)))
   ,@body))

;;; The key type.
```

```
(defclass key ()
 (c-key)  ; The C key object pointer.
 (:documentation "The GPGME key type."))

;;; In the initializer, we swallow the c-key argument.
(defmethod initialize-instance :after ((key key) &key c-key
         &allow-other-keys)
 (setf (slot-value key 'c-key) c-key)
 (finalize key (lambda () (gpgme-key-unref c-key))))

(defun translate-gpgme-key-t-from-foreign (value)
 (when *debug* (format t "DEBUG: import key: ~A~%" value))
 (make-instance 'key :c-key value))

(defun translate-gpgme-key-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-key)))

(defmethod print-object ((key key) stream)
 (print-unreadable-object (key stream :type t :identity t)
   (format stream "~s" (fpr key))))

;;; The key type:
 Accessor functions.

;;; FIXME: The bitfield and flags contain redundant information at
;;; this point.  FIXME: Deal nicer with zero-length name (policy url)
;;; and zero length value (omit?) and human-readable (convert to string).
;;; FIXME: Turn binary data into sequence or vector or what it should be.
;;; FIXME: Turn the whole thing into a hash?
(defun translate-gpgme-sig-notation-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next name value name-len value-len flags bitfield)
     value (:struct gpgme-sig-notation))
  (append (list (list
   :name name
   :value value
   :name-len name-len
   :value-len value-len
   :flags flags
   :bitfield bitfield))
   next)))))

;;; FIXME: Deal nicer with timestamps.  bitfield field name?
(defun translate-gpgme-subkey-t-from-foreign (value)
 (cond
```

```
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield pubkey-algo length keyid fpr timestamp expires)
    value (:struct gpgme-subkey))

 (append (list (list
  :bitfield bitfield
  :pubkey-algo pubkey-algo
  :length length
  :keyid keyid
  :fpr fpr
  :timestamp timestamp
  :expires expires))
  next)))))

(defun translate-gpgme-key-sig-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield pubkey-algo keyid timestamp expires status
   uid name email comment sig-class)
    value (:struct gpgme-key-sig))
  (append (list (list
  :bitfield bitfield
  :pubkey-algo pubkey-algo
  :keyid keyid
  :timestamp timestamp
  :expires expires
  :status status
  :uid uid
  :name name
  :email email
  :comment comment
  :sig-class sig-class))
  next)))))

(defun translate-gpgme-user-id-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield validity uid name email comment signatures)
    value (:struct gpgme-user-id))
  (append (list (list
  :bitfield bitfield
  :validity validity
  :uid uid
  :name
```

```
 name
   :email email
   :comment comment
   :signatures signatures))
   next)))))

(defun key-data (key)
 (with-slots (c-key) key
   (with-foreign-slots
 ((bitfield protocol issuer-serial issuer-name chain-id
     owner-trust subkeys uids keylist-mode)
  c-key (:struct gpgme-key))
     (list
      :bitfield bitfield
      :protocol protocol
      :issuer-serial issuer-serial
      :issuer-name issuer-name
      :chain-id chain-id
      :owner-trust owner-trust
      :subkeys subkeys
      :uids uids
      :keylist-mode keylist-mode))
   ))


(defgeneric fpr (key)
 (:documentation "Get the primary fingerprint of the key."))

(defmethod fpr ((key key))
 (getf (car (getf (key-data key) :subkeys)) :fpr))


;;; The context type: Crypto-Operations.

(defgeneric get-key (ctx fpr &optional secret)
 (:documentation "Get the (secret) key FPR from CTX."))

(defmethod get-key ((ctx context) fpr &optional secret)
 (gpgme-get-key ctx fpr secret))

;;; Encrypt.

(defgeneric
 op-encrypt (ctx recp plain cipher &key always-trust sign)
 (:documentation "Encrypt."))

(defmethod op-encrypt ((ctx context) recp plain cipher
        &key always-trust sign)
```

```
 (with-foreign-object (c-recp :pointer (+ 1 (length recp)))
   (dotimes (i (length recp))
     (setf (mem-aref c-recp 'gpgme-key-t i) (elt recp i)))
   (setf (mem-aref c-recp :pointer (length recp)) (null-pointer))
   (with-gpgme-data (in plain)
     (with-gpgme-data (out cipher)
 (let ((flags))
   (if always-trust (push :always-trust flags))
   (cond
     (sign
      (c-gpgme-op-encrypt-sign ctx c-recp flags in out)
      (append (c-gpgme-op-encrypt-result ctx)
       (c-gpgme-op-sign-result ctx)))
     (t
      (c-gpgme-op-encrypt ctx c-recp flags in out)
      (c-gpgme-op-encrypt-result ctx))))))))

;;; Decrypt.

(defgeneric op-decrypt (ctx cipher plain &key verify)
 (:documentation "Decrypt."))

(defmethod op-decrypt ((ctx context) cipher plain &key verify)
 (with-gpgme-data (in cipher)
   (with-gpgme-data
 (out plain)
     (cond
 (verify
  (c-gpgme-op-decrypt-verify ctx in out)
  (append (c-gpgme-op-decrypt-result ctx)
   (c-gpgme-op-verify-result ctx)))
 (t
  (c-gpgme-op-decrypt ctx in out)
  (c-gpgme-op-decrypt-result ctx))))))

;;; Signing.

(defgeneric op-sign (ctx plain sig &optional mode)
 (:documentation "Sign."))

(defmethod op-sign ((ctx context) plain sig &optional (mode :none))
 (with-gpgme-data (in plain)
   (with-gpgme-data (out sig)
     (c-gpgme-op-sign ctx in out mode)
     (c-gpgme-op-sign-result ctx))))

;;; Verify.
```

```
(defgeneric op-verify (ctx sig text &key detached)
 (:documentation "Verify."))

(defmethod op-verify ((ctx context) sig text &key detached)
 (with-gpgme-data (in sig)
   (with-gpgme-data (on text)
     (c-gpgme-op-verify ctx in (if detached on nil)
    (if detached nil on))
     (c-gpgme-op-verify-result ctx))))

;;; Import.

(defgeneric op-import (ctx keydata)
 (:documentation "Import."))

(defmethod op-import ((ctx context) keydata)
  (with-gpgme-data (in keydata)
   (c-gpgme-op-import ctx in)
   (c-gpgme-op-import-result ctx)))

;;; Export.

(defgeneric op-export (ctx pattern keydata)
 (:documentation "Export public key data matching PATTERN to the
                 stream KEYDATA."))

(defmethod op-export ((ctx context) pattern keydata)
 (with-gpgme-data (dh keydata)
   (c-gpgme-op-export ctx pattern 0 dh)))

;;; Key generation.



;;;
;;; Initialization
;;;

(defun check-version (&optional req-version)
 "Check that the GPGME version requirement is satisfied."
 (gpgme-check-version req-version))

(defparameter *version* (check-version)
 "The version number of GPGME used.")
# -*- mode: org -*-
#+TITLE: A Short History of the GPGME bindings for Python
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
```

#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}

* Overview
 :PROPERTIES:
 :CUSTOM_ID: overview
 :END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

The GPGME Python bindings passed through many hands and numerous
phases before, after a fifteen year journey, coming full circle to
return to the source. This is a short explanation of that journey.

** In the beginning
  :PROPERTIES:
  :CUSTOM_ID: in-the-begining
   :END:

  In 2002 John Goerzen released PyME; Python bindings for the GPGME
  module which utilised the current release of Python of the time and
  SWIG.[fn:1] Shortly after creating it and ensuring it worked he stopped
  supporting it, though he left his work available on his Gopher
  site.

** Keeping the flame alive
  :PROPERTIES:
  :CUSTOM_ID: keeping-the-flame-alive
  :END:

  A couple of years later the project was picked up by Igor Belyi and
  actively developed and maintained by him from 2004 to 2008. Igor's
  whereabouts at the time of this document's creation are unknown,
  but the current authors do hope he is well. We're assuming (or
  hoping) that life did what life does and made continuing untenable.

** Passing the torch
  :PROPERTIES:
  :CUSTOM_ID: passing-the-torch
  :END:

In 2014 Martin Albrecht wanted to patch a bug in the PyME code and discovered the absence of Igor. Following a discussion on the PyME mailing list he became the new maintainer for PyME, releasing version 0.9.0 in May of that year. He remains the maintainer of the original PyME release in Python 2.6 and 2.7 (available via PyPI).

** Coming full circle
:PROPERTIES:
:CUSTOM_ID: ouroboros
:END:

In 2015 Ben McGinnes approached Martin about a Python 3 version, while investigating how complex a task this would be the task ended up being completed. A subsequent discussion with Werner Koch led to the decision to fold the Python 3 port back into the original GPGME release in the languages subdirectory for non-C bindings under the module name of =pyme3=.

In 2016 this PyME module was integrated back into the GPGME project by Justus Winter. During the course of this work Justus adjusted the port to restore limited support for Python 2, but not as many minor point releases as the original PyME package supports. During the course of this integration the package was renamed to more accurately reflect its status as a component of GPGME. The =pyme3= module was renamed to =gpg= and adopted by the upstream GnuPG team.

In 2017 Justus departed G10code and the GnuPG team. Following this Ben returned to maintain of gpgme Python bindings and continue building them from that point.

* Relics of the past
:PROPERTIES:
:CUSTOM_ID: relics-past
:END:

There are a few things, in addition to code specific factors, such as SWIG itself, which are worth noting here.

** The Annoyances of Git
:PROPERTIES:
:CUSTOM_ID: the-annoyances-of-git
:END:

As anyone who has ever worked with git knows, submodules are horrible way to deal with pretty much anything. In the interests of avoiding migraines, that was skipped with addition of the PyME code to GPGME.

Instead the files were added to a subdirectory of the =lang/= directory, along with a copy of the entire git log up to that point as a separate file within the =lang/python/docs/= directory.[fn:2] As the log for PyME is nearly 100KB and the log for GPGME is approximately 1MB, this would cause considerable bloat, as well as some confusion, should the two be merged.

Hence the unfortunate, but necessary, step to simply move the files. A regular repository version has been maintained should it be possible to implement this better in the future.

** The Perils of PyPI
:PROPERTIES:
:CUSTOM_ID: the-perils-of-pypi
:END:

The early port of the Python 2 =pyme= module as =pyme3= was never added to PyPI while the focus remained on development and testing during 2015 and early 2016. Later in 2016, however, when Justus completed his major integration work and subsequently renamed the module from =pyme3= to =gpg=, some prior releases were also provided through PyPI.

Since these bindings require a matching release of the GPGME libraries in order to function, it was determined that there was little benefit in also providing a copy
through PyPI since anyone
obtaining the GPGME source code would obtain the Python bindings source code at the same time. Whereas there was the potential to sew confusion amongst Python users installing the module from PyPI, only to discover that without the relevant C files, header files or SWIG compiled binaries, the Python module did them little good.

There are only two files on PyPI which might turn up in a search for this module or a sample of its content:

1. gpg (1.8.0) - Python bindings for GPGME GnuPG cryptography library
2. pyme (0.9.0) - Python support for GPGME GnuPG cryptography library

*** GPG 180 - Python bindings for GPGME GnuPG cryptography library
:PROPERTIES:

:CUSTOM_ID: pypi-gpgme-180
:END:

This is the most recent version to reach PyPI and is the version of the official Pyhon bindings which shipped with GPGME 1.8.0. If you have GPGME 1.8.0 installed and /only/ 1.8.0 installed, then it is probably safe to use
this copy from PyPI.

As there have been a lot of changes since the release of GPGME 1.8.0, the GnuPG Project recommends not using this version of the module and instead installing the current version of GPGME along with the Python bindings included with that package.

*** PyME 090 - Python support for GPGME GnuPG cryptography library
:PROPERTIES:
:CUSTOM_ID: pypi-gpgme-90
:END:

This is the last release of the PyME bindings maintained by Martin Albrecht and is only compatible with Python 2, it will not work with Python 3. This is the version of the software from which the port from Python 2 to Python 3 code was made in 2015.

Users of the more recent Python bindings will recognise numerous points of similarity, but also significant differences. It is likely that the more recent official bindings will feel "more pythonic."

For those using Python 2, there is essentially no harm in using this module, but it may lack
a number of more recent features
added to GPGME.

* Footnotes

[fn:1] In all likelihood this would have been Python 2.2 or possibly Python 2.3.

[fn:2] The entire PyME git log and other preceding VCS logs are located in the =gpgme/lang/python/docs/old-commits.log= file.
HACKING -*- org -*-
#+TITLE: Hacking notes for GPGME
#+STARTUP: showall

* How to contribute

** No more ChangeLog files

Do not modify any of the ChangeLog files in GPGME. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist" time. As such, there are strict requirements on the
form of the commit log messages. The old ChangeLog files have all
be renamed to ChangeLog-2011

** Commit log requirements

Your commit log should always start with a one-line summary, the
second line should be blank, and the remaining lines are usually
ChangeLog-style entries for all affected files. However, it's fine
-- even recommended -- to write a few lines of prose describing the
change, when the summary and ChangeLog entries don't give enough of
the big picture. Omit the leading TABs that you're used to seeing
in a "real" ChangeLog
file, but keep the maximum line length at 72
or smaller, so that the generated ChangeLog lines, each with its
leading TAB, will not exceed 80 columns. If you want to add text
which shall not be copied to the ChangeLog, separate it by a line
consisting of two dashes at the begin of a line.

Note that ./autogen.sh installs a git hook to do some basic syntax
checking on the commit log message.

Typo fixes and documentation updates don't need a ChangeLog entry;
thus you would use a commit message like

#+begin_example
Fix typo in a comment

--
#+end_example

The marker line here is important; without it the first line would
appear in the ChangeLog.

If you exceptionally need to have longer lines in a commit log you may
do this after this scissor line:
#+begin_example
------------------------ >8 ------------------------
#+end_example
(hash, blank, 24 dashes, blank, scissor, blank, 24 dashes).
Note that such a comment will be removed if the

git commit option
=--cleanup-scissor= is used.

** License policy

GPGME is currently licensed under the LGPLv2.1+ with tools and the
manual being under the GPLv3+. We may eventually update to a newer
version of the licenses or a combination of them. It is thus
important, that all contributed code allows for an update of the
license; for example we can't accept code under the LGPLv2(only).

If you want to contribute code or documentation to GPGME you are
asked to assert that the contribution is in accordance to the "GPGME
Developer's Certificate of Origin" as found in the file "DCO".
Except for a slight wording change, this DCO is identical to the one
used by the Linux kernel. Please take these simple steps:

- Decide which mail address you want to use. Please have your real
  name in the address and not a pseudonym. Anonymous contributions
  can only be done if you find a proxy who certifies for you.

- If your employer or school might claim ownership
of code written
  by you; you need to talk to them to make sure that you have the
  right to contribute under the DCO.

- Send an OpenPGP signed mail to the gnupg-devel@gnupg.org public
  mailing list from your mail address. Include a copy of the DCO as
  found in the official master branch. Insert your name and email
  address into the DCO in the same way you want to use it later.
  Example:

    Signed-off-by: Joe R. Hacker <joe@example.org>

  If you need it, you may perform simple transformations on the mail
  address: Replacing "@" by " at " or "." by " dot ".)

- That's it. From now on you only need to add a "Signed-off-by:"
  line with your name and mail address to the GIT commit message.
  It is recommended to send the patches using a PGP/MIME signed
  mail.

** Coding standards

Please follow the GNU coding standards. If you are in doubt consult
the existing code as an example. Do no re-indent code without a
need. If you really need to

do it, use a separate commit for such a
change.

- C99 syntax should not be used; stick to C90.
- Please do not use C++ =//= style comments.
- Try to fit lines into 80 columns.
- Ignore signed/unsigned pointer mismatches
- No arithmetic on void pointers; cast to char* first.

** Commit log keywords

- GnuPG-bug-id :: Values are comma or space delimited bug numbers
  from bug.gnupg.org pertaining to this commit.
- Debian-bug-id :: Same as above but from the Debian bug tracker.
- CVE-id :: CVE id number pertaining to this commit.
- Regression-due-to :: Commit id of the regression fixed by this commit.
- Fixes-commit :: Commit id this commit fixes.
- Reported-by :: Value is a name or mail address of a bug reporte.
- Suggested-by :: Value is a name or mail address of someone how
  suggested this change.
- Co-authored-by :: Name or mail address of a co-author
- Some-comments-by :: Name or mail address of the author of

  additional comments (commit log or code).
- Proofread-by :: Sometimes used by translation commits.
- Signed-off-by :: Name or mail address of the developer

* Debug hints

- Use gpgme-tool for manual tests.
- The envvar GPGME_DEBUG enables debugging; see debug.[ch] for
  details.

Configuration files may go here. Note that config.h.in is
auto-generated so that this file is not in git.

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-04-06 Werner Koch <wk@g10code.com>

* gpg-error.m4: Update from current libgpg-error repo.

2010-05-07 Werner Koch <wk@g10code.com>

* libassuan.m4: Update from libassuan svn.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

 * libassuan.m4: Fix LIBASSUAN_VERSION.

2006-06-08 Marcus Brinkmann <marcus@g10code.de>

 * pth.m4: Add --all to pth-config invocation.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

 * pth.m4: Fix code generation (required for Max OS X).
 Submitted by Emanuele Giaquinta <exg@gentoo.org>.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

 * glib-2.0.m4: New file.

2004-12-28 Werner Koch <wk@g10code.com>

 * pth.m4: Changed quoting for use with automake 1.9.

2004-09-14
  Marcus Brinkmann <marcus@g10code.de>

 * pth.m4: Disable _ac_pth_line, and don't fail if Pth is not
 found.

 * glibc21.m4: New file.
 * gpg-error.m4: New file.
 * pth.m4: New file.

Copyright (C) 2004, 2005, 2009, 2010, 2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
1.15.1
GPGME Developer's Certificate of Origin. Version 1.0
==========

By making a contribution to the GPGME project, I certify that:

(a) The contribution was created in whole or in part by me and I
have the right to submit it under the free software license
indicated in the file; or

(b) The contribution is based upon previous work that, to the
best of my knowledge, is covered under an appropriate free
software license and I have the right under that license to
submit that work with modifications, whether created in whole
or in part by me, under the same free software license
(unless I am permitted to submit under a different license),
as indicated in the file; or

(c) The contribution was provided directly to me by some other
person who certified (a), (b) or (c) and I have not modified
it.

(d) I understand and agree that this project and the contribution
are public and that a record of the contribution
(including
all personal information I submit with it, including my
sign-off) is maintained indefinitely and may be redistributed
consistent with this project or the free software license(s)
involved.

Signed-off-by: [Your name and mail address]
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2008-11-08 Moritz <moritz@gnu.org>

* gpgme.lisp (size-t): Wrong call to defctype: function accepts
optional, not keyword argument.
(ssize-t): Likewise.
(off-t): Likewise.
(gpgme-data-t, gpgme-ctx-t): Likewise.
(gpgme-error-t): Likewise.
(gpgme-error-no-signal-t): Likewise.
(gpgme-err-code-t): Likewise.
(gpgme-err-source-t): Likewise.
(gpgme-sig-notation-t, gpgme-engine-info-t): Likewise.
(gpgme-subkey-t): Likewise.
(gpgme-key-sig-t): Likewise.
(gpgme-user-id-t): Likewise.
(gpgme-key-t): Likewise.

(gpgme-data-cbs-t): Likewise.
(gpgme-invalid-key-t): Likewise.
(gpgme-op-encrypt-result-t): Likewise.
(gpgme-recipient-t): Likewise.
(gpgme-op-decrypt-result-t): Likewise.
(gpgme-new-signature-t):
Likewise.
(gpgme-op-sign-result-t): Likewise.
(gpgme-signature-t): Likewise.
(gpgme-op-verify-result-t): Likewise.
(gpgme-import-status-t): Likewise.
(gpgme-op-import-result-t): Likewise.
(gpgme-op-genkey-result-t): Likewise.
(gpgme-op-keylist-result-t): Likewise.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

* Initial release.

Copyright (C) 2006, 2008 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
000
*H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
certify@pca.dfn.de0
981029180310Z
011231180310Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
certify@pca.dfn.de0"0
*H
0
nskvS2r#iA4H|*/
:Sd;v
tD}L+~IWWD|eP&qH)
!1\p%,1.tIsmnQ,g-W)@\(t<kvm5j(d)9M_KGQJ0:qTE 00 `HB0) `HBhttps://mystic.pca.dfn.de/0A
`HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html08 `HB
+)The DFN Top Level Certification Authority0! `HBcgi/check-rev.cgi?0 `HB
dfnpca.crl0U00U0
*H
`^[:8\e7*%QC?:/JVgwPUB

OgGqjGVxl50%<`Pb18 z;t~r0U<A%3#l'8b"<iX"V!k"*Q8&hAPI"3 00KUb&Qq'46_{D[JZ!i<=T
/OF
-*- mode: org -*-
#+TITLE: What Was New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* What Was New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

The following are all the past /What's New/ sections for the Python
Bindings HOWTO and other documentation.

** What Was New in GPGME 1120
  :PROPERTIES:

 :CUSTOM_ID: gpgme-1-12-0
  :END:

The most obviously new point for those reading this guide is this
section on other new things, but thats hardly important. Not given
all the other things which spurred the need for adding this section
and its subsections.

*** New in GPGME 1120
   :PROPERTIES:
   :CUSTOM_ID: new-stuff-1-12-0
   :END:

There have been quite a number of additions to GPGME and the Python

bindings to it since the last release of GPGME with versions 1.11.0
and 1.11.1 in April, 2018.

The bullet points of new additiions are:

- an expanded section on [[file:gpgme-python-howto#installation][installing]] and [[file:gpgme-python-howto#snafu][troubleshooting]] the Python
 bindings.
- The release of Python 3.7.0; which appears to be working just fine
 with our bindings, in spite of intermittent reports of problems for
 many other Python projects with that new release.
- Python 3.7 has been moved to the head of the specified python
 versions list in the build process.
- In
 order to fix some other issues, there are certain underlying
 functions which are more exposed through the [[file:gpgme-python-howto#howto-get-context][gpg.Context()]], but
 ongoing documentation ought to clarify that or otherwise provide the
 best means of using the bindings. Some additions to =gpg.core= and
 the =Context()=, however, were intended (see below).
- Continuing work in identifying and confirming the cause of
 oft-reported [[file:gpgme-python-howto#snafu-runtime-not-funtime][problems installing the Python bindings on Windows]].
- GSOC: Google's Surreptitiously Ordered Conscription ... erm ... oh,
 right; Google's Summer of Code. Though there were two hopeful
 candidates this year; only one ended up involved with the GnuPG
 Project directly, the other concentrated on an unrelated third party
 project with closer ties to one of the GNU/Linux distributions than
 to the GnuPG Project. Thus the Python bindings benefited from GSOC
 participant Jacob Adams, who added
 the key_import function; building
 on prior work by Tobias Mueller.
- Several new methods functions were added to the gpg.Context(),
 including: [[file:gpgme-python-howto#howto-import-key][key_import]], [[file:gpgme-python-howto#howto-export-key][key_export]], [[file:gpgme-python-howto#howto-export-public-key][key_export_minimal]] and
 [[file:gpgme-python-howto#howto-export-secret-key][key_export_secret]].
- Importing and exporting examples include versions integrated with
 Marcel Fest's recently released [[https://github.com/Selfnet/hkp4py][HKP for Python]] module. Some
 [[file:gpgme-python-howto#hkp4py][additional notes on this module]] are included at the end of the HOWTO.
- Instructions for dealing with semi-walled garden implementations
 like ProtonMail are also included. This is intended to make things
 a little easier when communicating with users of ProtonMail's
 services and should not be construed as an endorsement of said
 service. The GnuPG Project neither favours,
 nor disfavours
 ProtonMail and the majority of this deals with interacting with the
 ProtonMail keyserver.
- Semi-formalised the location where [[file:gpgme-python-howto#draft-editions][draft versions]] of this HOWTO may

periodically be accessible. This is both for the reference of
others and testing the publishing of the document itself. Renamed
this file at around the same time.
- The Texinfo documentation build configuration has been replicated
from the parent project in order to make to maintain consistency
with that project (and actually ship with each release).
- a reStructuredText (=.rst=) version is also generated for Python
developers more used to and comfortable with that format as it is
the standard Python documentation format and Python developers may
wish to use it with Sphinx. Please note that there has been no
testing of the reStructuredText version with Sphinx at all. The
reST file was generated by the simple expedient of using [[https://pandoc.org/][Pandoc]].
-
Added a new section for [[file:gpgme-python-howto#advanced-use][advanced or experimental use]].
- Began the advanced use cases with [[file:gpgme-python-howto#cython][a section]] on using the module with
[[https://cython.org/][Cython]].
- Added a number of new scripts to the =example/howto/= directory;
some of which may be in advance of their planned sections of the
HOWTO (and some are just there because it seemed like a good idea at
the time).
- Cleaned up a lot of things under the hood.
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: UI Server Decrypt, Next: UI Server Verify, Prev: UI Server Sign, Up: UI Server Protocol

A.3 UI Server: Decrypt a Message
==========

Decryption may include the verification of OpenPGP messages. This is
due to the often used combined signing/encryption modus of OpenPGP. The
client may pass an option
to the server to inhibit the signature
verification. The following two commands are required to set the input
and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be decrypted to N. The
message send to the server is either binary encoded or in the
case of OpenPGP ASCII armored. For details on the file
descriptor, see the description of INPUT in the ENCRYPT
section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is
binary encoded. For details on the file descriptor, see the
description of INPUT in the ENCRYPT section.

The decryption is started with the command:

-- Command: DECRYPT --protocol=NAME [--no-verify]
[--export-session-key]
NAME is the encryption protocol used for the message. For a
description of the allowed protocols see the ENCRYPT command.
This argument is mandatory. If the option --no-verify is given,
the server
should not try to verify a signature, in case the input
data is an OpenPGP combined message. If the option
--export-session-key is given and the underlying engine knows how
to export the session key, it will appear on a status line

File: gpgme.info, Node: UI Server Verify, Next: UI Server Set Input Files, Prev: UI Server Decrypt, Up: UI Server Protocol

A.4 UI Server: Verify a Message

The server needs to support the verification of opaque signatures as well as detached signatures. The kind of input sources controls what kind message is to be verified.

-- Command: MESSAGE FD=N
This command is used with detached signatures to set the file descriptor for the signed data to N. The data is binary encoded (used verbatim). For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: INPUT FD=N
Set the file descriptor for the opaque message or the signature part
of a detached signature to N. The message send to the server is either binary encoded or in the case of OpenPGP ASCII armored. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is binary encoded and only used for opaque signatures. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

The verification is then started using:

-- Command: VERIFY --protocol=NAME [--silent]
NAME is the signing protocol used for the message. For a description of the allowed protocols see the ENCRYPT command. This argument is mandatory. Depending on the combination of MESSAGE INPUT and OUTPUT commands, the server needs to select the appropriate verification mode:

MESSAGE and INPUT
This indicates a detached signature. Output data is not applicable.

INPUT
This indicates an opaque signature. As no output command has been given, the server is only required to check the

signature.

INPUT and OUTPUT

This indicates an opaque signature. The server shall write the signed data to the file descriptor set by the output command. This data shall even be written if the signatures cant be verified.

With --silent the server shall not display any dialog; this is for example used by the client to get the content of opaque signed messages. The client expects the server to send at least this status information before the final OK response:

-- Status line: SIGSTATUS FLAG DISPLAYSTRING

Returns the status for the signature and a short string explaining the status. Valid values for FLAG are:

none

The message has a signature but it could not not be verified due to a missing key.

green

The signature is fully valid.

yellow

The signature is valid but additional information was shown regarding the validity of the key.

red

The signature is not valid.

DISPLAYSTRING is a percent-and-plus-encoded string with a short human readable description of the status. For example

S SIGSTATUS green Good+signature+from+Keith+Moon+<keith@example.net>

Note that this string needs to fit into an Assuan line and should be short enough to be displayed as short one-liner on the clients window. As usual the encoding of this string is UTF-8 and it should be send in its translated form.

The server shall send one status line for every signature found on the message.

File: gpgme.info, Node: UI Server Set Input Files, Next: UI Server Sign/Encrypt Files, Prev: UI Server Verify, Up: UI Server Protocol

A.5 UI Server: Specifying the input files to operate on.
==========

All file related UI
server commands operate on a number of input files
or directories, specified by one or more FILE commands:

-- Command: FILE [--clear] NAME
Add the file or directory NAME to the list of pathnames to be processed by the server. The parameter NAME must be an absolute path name (including the drive letter) and is percent espaced (in particular, the characters %, = and white space characters are always escaped). If the option --clear is given, the list of files is cleared before adding NAME.

Historical note: The original spec did not define --clear but the keyword --continued after the file name to indicate that more files are to be expected. However, this has never been used and thus removed from the specs.

File: gpgme.info, Node: UI Server Sign/Encrypt Files, Next: UI Server Verify/Decrypt Files, Prev: UI Server Set Input Files, Up: UI Server Protocol

A.6 UI Server: Encrypting and signing files.
==========

First,
the input files need to be specified by one or more FILE commands. Afterwards, the actual operation is requested:

-- Command: ENCRYPT_FILES --nohup
-- Command: SIGN_FILES --nohup
-- Command: ENCRYPT_SIGN_FILES --nohup
Request that the files specified by FILE are encrypted and/or signed. The command selects the default action. The UI server may allow the user to change this default afterwards interactively, and even abort the operation or complete it only on some of the selected files and directories.

What it means to encrypt or sign a file or directory is specific to the preferences of the user, the functionality the UI server provides, and the selected protocol. Typically, for each input file a new file is created under the original filename plus a protocol specific extension (like .gpg or .sig), which contain the encrypted/signed file or a detached signature. For directories, the server may offer
multiple options to the user (for
example ignore or process recursively).

The ENCRYPT_SIGN_FILES command requests a combined sign and

encrypt operation. It may not be available for all protocols (for example, it is available for OpenPGP but not for CMS).

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: UI Server Verify/Decrypt Files, Next: UI Server Import/Export Keys, Prev: UI Server Sign/Encrypt Files, Up: UI Server Protocol

A.7 UI Server: Decrypting and verifying files.
==========

First, the input files need to be specified by one or more FILE commands. Afterwards, the actual operation is requested:

-- Command: DECRYPT_FILES --nohup
-- Command: VERIFY_FILES --nohup
-- Command: DECRYPT_VERIFY_FILES
--nohup
Request that the files specified by FILE are decrypted and/or verified. The command selects the default action. The UI server may allow the user to change this default afterwards interactively, and even abort the operation or complete it only on some of the selected files and directories.

What it means to decrypt or verify a file or directory is specific to the preferences of the user, the functionality the UI server provides, and the selected protocol. Typically, for decryption, a new file is created for each input file under the original filename minus a protocol specific extension (like .gpg) which contains the original plaintext. For verification a status is displayed for each signed input file, indicating if it is signed, and if yes, if the signature is valid. For files that are signed and encrypted, the VERIFY command transiently decrypts the file to verify the enclosed signature. For directories,
the server may offer multiple
options to the user (for example ignore or process recursively).

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: UI Server Import/Export Keys, Next: UI Server Checksum Files, Prev: UI Server

Verify/Decrypt Files, Up: UI Server Protocol

A.8 UI Server: Managing certificates.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: IMPORT_FILES --nohup
   Request that the certificates contained in the files specified by
   FILE are imported into the local certificate databases.

   For directories, the server may offer multiple options to the user
   (for example ignore or process recursively).

   The
option --nohup is mandatory. It is currently unspecified
   what should happen if --nohup is not present. Because --nohup
   is present, the server always returns OK promptly, and completes
   the operation asynchronously.

  FIXME: It may be nice to support an EXPORT command as well, which
is enabled by the context menu of the background of a directory.

File: gpgme.info, Node: UI Server Checksum Files, Next: Miscellaneous UI Server Commands, Prev: UI Server Import/Export Keys, Up: UI Server Protocol

A.9 UI Server: Create and verify checksums for files.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: CHECKSUM_CREATE_FILES --nohup
   Request that checksums are created for the files specified by
   FILE. The choice of checksum algorithm and the destination
   storage and format for the created checksums depend on the

preferences of the user and the functionality provided by the UI
   server. For directories, the server may offer multiple options to
   the user (for example ignore or process recursively).

   The option --nohup is mandatory. It is currently unspecified
   what should happen if --nohup is not present. Because --nohup
   is present, the server always returns OK promptly, and completes
   the operation asynchronously.

-- Command: CHECKSUM_VERIFY_FILES --nohup
Request that checksums are created for the files specified by FILE and verified against previously created and stored checksums. The choice of checksum algorithm and the source storage and format for previously created checksums depend on the preferences of the user and the functionality provided by the UI server. For directories, the server may offer multiple options to the user (for example ignore or process recursively).

If the source storage of previously created checksums is available to the user through the Windows shell, this command may also accept such checksum files as FILE arguments. In this case, the UI server should instead verify the checksum of the referenced files as if they were given as INPUT files.

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: Miscellaneous UI Server Commands, Prev: UI Server Checksum Files, Up: UI Server Protocol

A.10 Miscellaneous UI Server Commands

The server needs to implement the following commands which are not related to a specific command:

-- Command: GETINFO WHAT
This is a multi purpose command, commonly used to return a variety of information. The required subcommands as described by the WHAT parameter are:

pid
Return the process id of the server in decimal notation using an Assuan data line.

To allow the server to pop up the windows in the correct relation to the client, the client is advised to tell the server by sending the option:

-- Command option: window-id NUMBER
The NUMBER represents the native window ID of the clients current window. On Windows systems this is a windows handle (HWND) and on X11 systems it is the X Window ID. The number needs to be given as a hexadecimal value so that it is easier to convey pointer

values (e.g. HWND).

A client may want to fire up the certificate manager of the server. To do this it uses the Assuan command:

-- Command: START_KEYMANAGER
The server shall pop up the main window of the key manager (aka certificate manager). The client expects that the key manager is brought into the foregound and that this command immediately returns (does not wait until the key manager has been fully brought up).

A client may want to fire up the configuration dialog of the server. To do this it uses the Assuan command:

-- Command: START_CONFDIALOG
The server shall pop up its configuration dialog. The client expects that this dialog is brought into the foregound and that this command immediately returns (i.e. it does not wait until the dialog has been fully brought up).

When doing an operation on a mail, it is useful to let the server know the address of the sender:

-- Command: SENDER [--info] [--protocol=NAME] EMAIL
EMAIL is the plain ASCII encoded address ("addr-spec" as per RFC-2822) enclosed in angle brackets. The address set with this command is valid until a successful completion of the operation or until a RESET command. A second command overrides the effect of the first one; if EMAIL is not given and --info is not used, the server shall use the default signing key.

If option --info is not given, the server shall also suggest a protocol to use for signing. The client may use this suggested protocol on its own discretion. The same status line as with PREP_ENCRYPT is used for this.

The option --protocol may be used to give the server a hint on which signing protocol should be preferred.

To allow the UI-server to visually identify a running operation or to associate operations the server MAY support the command:

-- Command: SESSION NUMBER [STRING]
The NUMBER is an arbitrary value, a server may use to associate simultaneous running sessions. It is a 32 bit unsigned integer

with 0 as a special value indicating that no session association shall be done.

If STRING is given, the server may use this as the title of a window or, in the case of an email operation, to extract the senders address. The string may contain spaces; thus no plus-escaping is used.

This command may be used at any time and overrides the effect of the last command. A RESET undoes the effect of this command.

Appendix B How to solve problems

Everyone knows that software often does not do what it should do and thus there is a need to track down problems. This is in particular true for applications using a complex library like GPGME and of course also for the library itself. Here we give a few hints on how to solve such problems.

First of all you should make sure that the keys you want to use are installed in the GnuPG engine and are usable. Thus the first test is to run the desired operation using gpg or gpgsm on the command line. If you cant figure out why things dont work, you may use GPGMEs built in trace feature. This feature is either enabled using the environment variable GPGME_DEBUG or, if this is not possible, by calling the function gpgme_set_global_flag. The value is the trace level and an optional file name. If no file name is given the trace output is printed to stderr.

For example

```
GPGME_DEBUG=9:/home/user/mygpgme.log
```

(Note that under Windows you use a semicolon in place of the colon to separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start off with a lower level. The exact definition of the trace levels and the output format may change with any release; you need to check the source code for details. In any case the trace log should be helpful to understand what is going going on. Warning: The trace log may reveal sensitive details like passphrases or other data you use in your application. If you are asked to send a log file, make sure that you run your tests only with play data.

File: gpgme.info, Node: Deprecated Functions, Next: Library Copying, Prev: Debugging, Up: Top

Appendix C Deprecated Functions
****

For backward compatibility GPGME has a number
 of functions, data types
and constants which are deprecated and should not be used anymore. We
document here those which are really old to help understanding old code
and to allow migration to their modern counterparts.

  Warning: These interfaces will be removed in a future version of
GPGME.

-- Function: void gpgme_key_release (gpgme_key_t KEY)
   The function gpgme_key_release is equivalent to
   gpgme_key_unref.

-- Function: gpgme_error_t gpgme_op_import_ext (gpgme_ctx_t CTX,
        gpgme_data_t KEYDATA, int *NR)
   SINCE: 0.3.9

   The function gpgme_op_import_ext is equivalent to:

```
gpgme_error_t err = gpgme_op_import (ctx, keydata);
if (!err)
  {
    gpgme_import_result_t result = gpgme_op_import_result (ctx);
    *nr = result->considered;
  }
```

-- Data type: gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE,
        gpgme_status_code_t STATUS, const char *ARGS, int FD)
   The gpgme_edit_cb_t
 type is the type of functions which GPGME
   calls if it a key edit operation is on-going. The status code
   STATUS and the argument line ARGS are passed through by GPGME from
   the crypto engine. The file descriptor FD is -1 for normal status
   messages. If STATUS indicates a command rather than a status
   message, the response to the command should be written to FD. The
   HANDLE is provided by the user at start of operation.

   The function should return GPG_ERR_FALSE if it did not handle the
   status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_edit (gpgme_ctx_t CTX,

gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
SINCE: 0.3.9

Note: This function is deprecated, please use gpgme_op_interact instead.

The function gpgme_op_edit processes the key KEY interactively, using the edit callback function FNC with the handle HANDLE. The callback is
invoked for every status and command request from the crypto engine. The output of the crypto engine is written to the data object OUT.

Note that the protocol between the callback function and the crypto engine is specific to the crypto engine and no further support in implementing this protocol correctly is provided by GPGME.

The function returns the error code GPG_ERR_NO_ERROR if the edit operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, and any error returned by the crypto engine or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_edit_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)

SINCE: 0.3.9

Note: This function is deprecated, please use gpgme_op_interact_start instead.

The function gpgme_op_edit_start initiates a gpgme_op_edit operation. It can be completed by calling gpgme_wait on
the
context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_card_edit (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
Note: This function is deprecated, please use gpgme_op_interact with the flag GPGME_INTERACT_CARD instead.

The function gpgme_op_card_edit is analogous to gpgme_op_edit,

but should be used to process the smart card corresponding to the key KEY.

-- Function: gpgme_error_t gpgme_op_card_edit_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE, gpgme_data_t OUT)
Note: This function is deprecated, please use gpgme_op_interact_start with the flag GPGME_INTERACT_CARD instead.

The function gpgme_op_card_edit_start initiates a

gpgme_op_card_edit operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_data_new_with_read_cb (gpgme_data_t *DH, int (*READFUNC) (void *HOOK, char *BUFFER, size_t COUNT, size_t *NREAD), void *HOOK_VALUE)
The function gpgme_data_new_with_read_cb creates a new gpgme_data_t object and uses the callback function READFUNC to retrieve the data on demand. As the callback function can supply the data in any way it wants, this is the most flexible data type GPGME provides. However, it can not be used to write data.

The callback function receives HOOK_VALUE as its first argument whenever it is invoked. It should return up to COUNT bytes in BUFFER, and return the number of bytes
actually read in NREAD. It
may return 0 in NREAD if no data is currently available. To indicate EOF the function should return with an error code of -1 and set NREAD to 0. The callback function may support to reset its internal read pointer if it is invoked with BUFFER and NREAD being NULL and COUNT being 0.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, GPG_ERR_INV_VALUE if DH or READFUNC is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_rewind (gpgme_data_t DH)
The function gpgme_data_rewind is equivalent to:

```
return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
  ? gpgme_error_from_errno (errno) : 0;
```

-- Data type: gpgme_attr_t
The gpgme_attr_t type is used to specify a key or trust item attribute. The following attributes are defined:

GPGME_ATTR_KEYID
This is the key ID of a sub key. It is representable as a string.

GPGME_ATTR_FPR
This is the fingerprint of a sub key. It is representable as a string.

GPGME_ATTR_ALGO
This is the crypto algorithm for which the sub key can be used. It is representable as a string and as a number. The numbers correspond to the enum gcry_pk_algos values in the gcrypt library.

GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a number.

GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time of a sub key. It is representable as a number.

GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a GPGME_KEY_T object. The first one (with index 0) is the primary user ID. The user ID is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is

representable as a string.

GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a string and as a number. See below for a list of available validities.

GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a number, and is 1 if the user ID is revoked, and 0 otherwise.

GPGME_ATTR_UID_INVALID
This specifies if a user ID is invalid. It is representable as a number, and is 1 if the user ID is invalid, and 0 otherwise.

GPGME_ATTR_TYPE
This
returns information about the type of key. For the
string function this will eother be "PGP" or "X.509". The integer function returns 0 for PGP and 1 for X.509.

GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is representable as a number, and is 1 if the key is revoked, and 0 otherwise.

GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable as a number, and is 1 if the key is revoked, and 0 otherwise.

GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable as a number, and is 1 if the key is invalid, and 0 otherwise.

GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable as a number, and is 1 if the key is expired, and 0 otherwise.

GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled. It is
representable
as a number, and is 1 if the key is disabled, and 0 otherwise.

GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is representable as a string. The string contains the letter e if the key can be used for encryption, s if the key can be used for signatures, and c if the key can be used for certifications.

GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is representable as a number, and is 1 if the sub key can be used for encryption, and 0 otherwise.

GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data signatures. It is representable as a number, and is 1 if the sub key can be used for signatures, and 0 otherwise.

GPGME_ATTR_CAN_CERTIFY
This specifies if a sub key can be used to create key certificates. It is representable as a number, and is 1 if the sub key can be used for certifications, and 0 otherwise.

GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is representable as a string.

GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is representable as a string.

GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification chain. It is representable as a string.

-- Function: const char * gpgme_key_get_string_attr (gpgme_key_t KEY, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_string_attr returns the value of the string-representable attribute WHAT of key KEY. If the attribute is an attribute of a sub key or an user ID, IDX specifies the sub key or user ID of which the attribute value is returned. The argument RESERVED is reserved for later use and should be NULL.

The string returned is only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a

string, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

-- Function: unsigned long gpgme_key_get_ulong_attr (gpgme_key_t KEY,
gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_ulong_attr returns the value of the
number-representable attribute WHAT of key KEY. If the attribute
is an attribute of a sub key or an user ID, IDX specifies the sub
key or user ID of which the attribute value is returned. The
argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if the attribute cant be returned as a
number, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

The signatures on a key are only available if the key was retrieved
via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled,
because it is expensive to retrieve
all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a
key, you have to make sure that the key was listed with signatures
enabled. One convenient, but blocking, way to do this is to use the
function gpgme_get_key.

-- Data type: gpgme_attr_t
The gpgme_attr_t type is used to specify a key signature
attribute. The following attributes are defined:

GPGME_ATTR_KEYID
This is the key ID of the key which was used for the
signature. It is representable as a string.

GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It
is representable as a string and as a number. The numbers
correspond to the enum gcry_pk_algos values in the gcrypt
library.

GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It
is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time
of the signature. It is
representable as a number.

GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature. It is representable as a number, and is 1 if the key is revoked, and 0 otherwise.

GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_CLASS
This
specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_STATUS
This is the same value as returned by gpgme_get_sig_status.

-- Function: const char * gpgme_key_sig_get_string_attr (gpgme_key_t KEY, int UID_IDX, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_sig_get_string_attr returns the value of the string-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The string returned is only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Function: unsigned long gpgme_key_sig_get_ulong_attr
(gpgme_key_t KEY, int UID_IDX, gpgme_attr_t
WHAT,
const void *RESERVED, int IDX)
The function gpgme_key_sig_get_ulong_attr returns the value of the number-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Data type: enum gpgme_sig_stat_t
The gpgme_sig_stat_t type holds the result of a signature check, or the combined result of all signatures. The following results are possible:

GPGME_SIG_STAT_NONE
This status should not occur in normal operation.

GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined result this status means that all signatures are valid.

GPGME_SIG_STAT_GOOD_EXP
This status indicates that
the signature is valid but expired.
For the combined result this status means that all signatures are valid and expired.

GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be checked due to missing

keys.

GPGME_SIG_STAT_NOSIG
This status indicates that the signature data provided was not a real signature.

GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented the signature verification.

GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures have a different status. You can get each keys status with gpgme_get_sig_status.

-- Function: const char * gpgme_get_sig_status (gpgme_ctx_t CTX, int IDX, gpgme_sig_stat_t *R_STAT, time_t *R_CREATED)
The function gpgme_get_sig_status is equivalent to:

```
gpgme_verify_result_t result;
gpgme_signature_t sig;

result = gpgme_op_verify_result (ctx);
sig = result->signatures;

while (sig && idx)
  {
    sig = sig->next;
    idx--;
  }
if (!sig || idx)
  return NULL;

if (r_stat)
  {
    switch (gpg_err_code (sig->status))
{
case GPG_ERR_NO_ERROR:
  *r_stat = GPGME_SIG_STAT_GOOD;
 break;

case GPG_ERR_BAD_SIGNATURE:
  *r_stat = GPGME_SIG_STAT_BAD;
  break;

case GPG_ERR_NO_PUBKEY:
  *r_stat = GPGME_SIG_STAT_NOKEY;
  break;
```

```
          case GPG_ERR_NO_DATA:
            *r_stat = GPGME_SIG_STAT_NOSIG;
            break;

          case GPG_ERR_SIG_EXPIRED:
            *r_stat = GPGME_SIG_STAT_GOOD_EXP;
            break;

          case GPG_ERR_KEY_EXPIRED:
            *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
            break;

          default:
            *r_stat = GPGME_SIG_STAT_ERROR;
            break;
          }
            }
          if (r_created)
            *r_created = sig->timestamp;
          return sig->fpr;
```

-- Function: const char * gpgme_get_sig_string_attr (gpgme_ctx_t CTX,
int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_string_attr is equivalent to:

```
          gpgme_verify_result_t result;
          gpgme_signature_t sig;

          result = gpgme_op_verify_result (ctx);
          sig = result->signatures;

          while (sig && idx)
            {
              sig = sig->next;
              idx--;
            }
          if (!sig || idx)
            return NULL;

          switch (what)
            {
            case GPGME_ATTR_FPR:
              return sig->fpr;

            case GPGME_ATTR_ERRTOK:
              if (whatidx == 1)
```

```
            return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
          else
        return "";
          default:
           break;
          }

        return NULL;
```

-- Function: const char * gpgme_get_sig_ulong_attr (gpgme_ctx_t CTX,
int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_ulong_attr is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;


  result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return 0;

        switch (what)
          {
          case GPGME_ATTR_CREATED:
            return sig->timestamp;

          case GPGME_ATTR_EXPIRE:
            return sig->exp_timestamp;

          case GPGME_ATTR_VALIDITY:
            return (unsigned long) sig->validity;

          case GPGME_ATTR_SIG_STATUS:
            switch (sig->status)
        {
        case GPG_ERR_NO_ERROR:
          return GPGME_SIG_STAT_GOOD;

        case GPG_ERR_BAD_SIGNATURE:
          return GPGME_SIG_STAT_BAD;
```

```
        case GPG_ERR_NO_PUBKEY:
          return GPGME_SIG_STAT_NOKEY;

        case GPG_ERR_NO_DATA:
          return GPGME_SIG_STAT_NOSIG;

        case GPG_ERR_SIG_EXPIRED:

    return GPGME_SIG_STAT_GOOD_EXP;

        case GPG_ERR_KEY_EXPIRED:
          return GPGME_SIG_STAT_GOOD_EXPKEY;

        default:
          return GPGME_SIG_STAT_ERROR;
        }

          case GPGME_ATTR_SIG_SUMMARY:
            return sig->summary;

          default:
            break;
          }
        return 0;
```

-- Function: const char * gpgme_get_sig_key (gpgme_ctx_t CTX, int IDX, gpgme_key_t *R_KEY)

The function gpgme_get_sig_key is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;

        result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return gpg_error (GPG_ERR_EOF);

        return gpgme_get_key (ctx, sig->fpr, r_key, 0);
```

File: gpgme.info, Node: Library Copying, Next: Copying,

GNU Lesser General Public License
****

Version 2.1, February 1999

Copyright 1991, 1999 Free Software Foundation, Inc.
59 Temple Place Suite 330, Boston, MA 02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]

Preamble
========

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free softwareto make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated softwaretypically librariesof the
Free Software
Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example,

if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there
is no warranty for the free library. Also, if the library is modified
by someone else and passed on, the recipients should know that what they
have is not the original version, so that the original authors
reputation will not be affected by problems that
might be introduced by
others.

Finally, software patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that any
patent license obtained for a version of the library must be consistent
with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and is
quite different from the ordinary General Public License. We use this
license for certain libraries in order to permit linking those libraries
into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library.
The ordinary
General Public License therefore permits such linking only if the entire
combination fits its criteria of freedom. The Lesser General Public
License permits more lax criteria for linking other code with the
library.

We call this license the Lesser General Public License because it
does _Less_ to protect the users freedom than the ordinary General
Public License. It also provides other free software developers Less of
an advantage over competing non-free programs. These disadvantages are
the reason we use the ordinary General Public License for many

libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a work based on the library and a work that uses the library. The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called this License). Each licensee is addressed as you.

A library means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The Library, below, refers to any such software library or work which has been distributed under these terms. A work based on the Library means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a

portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term modification.)

Source code for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does
and what the program that uses the
Library does.

1. You may copy and distribute verbatim copies of the Librarys complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a. The modified work must itself be a software library.

b. You
must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c. You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d. If a facility in the modified Library refers to a function or

a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied
function or table used by this function
must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is
to exercise the right to control the distribution of
derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so

the ordinary GNU General Public License applies to
all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the
Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative
of it, under Section 2) in object code or executable form under the
terms of Sections 1 and 2 above provided that you accompany it with
the complete corresponding machine-readable source code, which must
be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy
the source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled
or linked with it, is called a work that uses the Library. Such
a work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a work that uses the Library with the Library
creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a work that uses
the library. The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a work that uses the Library uses material from a header
file that is part of the Library, the object code for the work may
be a derivative work of the Library even though the source code is
not. Whether this is true is especially significant if the work
can be linked without the
Library, or if the work is itself a
library. The threshold for this to be true is not precisely
defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a
derivative work. (Executables containing this object code plus
portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may

distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a work that uses the Library with the Library to produce a work containing portions of the Library,
and distribute that work under
terms of your choice, provided that the terms permit modification of the work for the customers own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable work that uses the Library, as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the users computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the work that uses the Library must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed
under the terms of the
Sections above.

b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full

compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or
other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a

licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and any later version, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts
of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE

RISK AS TO THE QUALITY AND
PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries
==========

If
you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the copyright line and a pointer to where the full notice is found.

ONE LINE TO GIVE THE LIBRARY'S NAME AND AN IDEA OF WHAT IT DOES.
Copyright (C) YEAR NAME OF AUTHOR

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library
is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307,
USA.

Also add information on how to contact you by electronic and paper
mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a copyright disclaimer for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

SIGNATURE OF TY COON, 1 April 1990
Ty Coon, President of Vice

Thats all there is to it!

File:
gpgme.info, Node: Copying, Next: Concept Index, Prev: Library Copying, Up: Top

GNU General Public License
****

Version 3, 29 June 2007

Copyright 2007 Free Software Foundation, Inc. <https://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

Preamble
========

The GNU General Public License is a free, copyleft license for software
and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a programto make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can

apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know
their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers and authors protection, the GPL clearly explains that there is no warranty for this free software. For both users and authors sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit
the practice for those
products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could

make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

This License refers to version 3 of the GNU General Public License.

Copyright also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

The Program refers to any copyrightable work licensed under this License. Each licensee is addressed as you. Licensees and recipients may be individuals or organizations.

To modify a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a modified version of the earlier work or a work based on the earlier work.

A covered work means either the unmodified Program or a work based on the Program.

To propagate a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To convey a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays Appropriate Legal Notices to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey

the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The source code for a work means the preferred form of the work for making modifications to it. Object code means any non-source form of a work.

A Standard Interface means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The System Libraries of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A Major Component, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The Corresponding Source for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the works System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding
Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this
License in conveying all
material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures
to the extent such
circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the works users, your or third parties legal

rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Programs source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a. The work must carry prominent notices stating that you modified it, and giving a relevant date.

b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to keep intact all notices.

c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered

work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an aggregate if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilations users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License
to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for
all the
software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy
the Corresponding Source along with the object code.
If the place to copy the object code is a network server, the

Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A User Product is either (1) a consumer product, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, normally used refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

Installation Information for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party

retains
the ability to install modified object code on the User
Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

Additional
permissions are terms that supplement the terms of
this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a. Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b. Requiring preservation of specified reasonable legal notices

or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c. Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d. Limiting the use for publicity purposes of names of licensors or authors of the material; or

e. Declining to grant rights under trademark law for use of some trade names,
trademarks, or service marks; or

f. Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered further restrictions within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or
conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly
and
finally terminates your license, and (b) permanently, if the
copyright holder fails to notify you of the violation by some
reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from
that copyright holder, and you cure the violation prior to 30 days
after your receipt of the notice.

Termination of your rights under this section does not terminate
the licenses of parties who have received copies or rights from you
under this License. If your rights have been terminated and not
permanently reinstated, you do not qualify to receive new licenses
for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to
accept this License in order to receive or
run a copy of the Program. Ancillary propagation of a covered work
occurring solely as a consequence of using peer-to-peer
transmission to receive a copy likewise does not require
acceptance. However, nothing other than this License grants you
permission to propagate or modify any covered work. These actions
infringe copyright if you do not accept this License. Therefore,
by modifying or propagating a covered work, you indicate your
acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically
receives a license from the original licensors, to run, modify and
propagate that work, subject to this License. You are not
responsible for enforcing compliance by third parties with this
License.

An entity transaction is a transaction transferring control of an
organization, or substantially
all assets of one, or subdividing an
organization, or merging organizations. If propagation of a
covered work results from an entity transaction, each party to that
transaction who receives a copy of the work also receives whatever

licenses to the work the partys predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering
for sale, or importing the Program or any portion
of it.

11. Patents.

A contributor is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributors contributor version.

A contributors essential patent claims are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, control includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributors
essential
patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a patent license is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To grant such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent

license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself
of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. Knowingly relying means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipients use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is discriminatory if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March
2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others Freedom.

If conditions are imposed on you (whether by court order, agreement

or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU

General Public License or any later version applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxys public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES
SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs
==========

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these
terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively

state the exclusion of warranty; and each file should have at least the
copyright line and a pointer to where the full notice is found.

    ONE LINE TO GIVE THE PROGRAM'S NAME AND A BRIEF IDEA OF WHAT IT DOES.
    Copyright (C) YEAR NAME OF AUTHOR

    This program is free software: you can redistribute it and/or modify
    it under the terms of the GNU General Public License as published by
    the Free Software Foundation, either version 3 of the License, or (at
    your option) any later version.

    This program is distributed in the hope that it will be useful, but
    WITHOUT ANY WARRANTY; without even the implied warranty of
    MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
    General Public License for more details.

    You should have received a copy of the GNU General Public License

    along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice
like this when it starts in an interactive mode:

    PROGRAM Copyright (C) YEAR NAME OF AUTHOR
    This program comes with ABSOLUTELY NO WARRANTY; for details
    type show w. This is free software, and you are
    welcome to redistribute it under certain conditions;
    type show c for details.

  The hypothetical commands show w and show c should show the
appropriate parts of the General Public License. Of course, your
programs commands might be different; for a GUI interface, you would
use an about box.

  You should also get your employer (if you work as a programmer) or
school, if any, to sign a copyright disclaimer for the program, if
necessary. For more information on this, and how to apply and follow
the GNU GPL, see <https://www.gnu.org/licenses/>.

   The GNU General Public License does not permit incorporating your
program into proprietary programs. If your program is a subroutine
library, you may consider it more useful to permit linking proprietary
applications with the library. If this is what you want to do, use the
GNU Lesser General Public License instead of this License. But first,
please read <https://www.gnu.org/philosophy/why-not-lgpl.html>.

Concept Index
****

[index]
* Menu:

* aborting operations: Cancellation. (line 6)
* algorithms: Algorithms. (line 6)
* algorithms, hash: Hash Algorithms. (line 6)
* algorithms, message digest: Hash Algorithms. (line 6)
* algorithms, public key: Public Key Algorithms. (line 6)
* armor mode: ASCII Armor. (line 6)
*
ASCII armor: ASCII Armor. (line 6)
* ASSUAN: Assuan. (line 6)
* attributes, of a key: Information About Keys.
(line 6)
* auditlog: Additional Logs. (line 6)
* auditlog, of the engine: Additional Logs. (line 6)
* autoconf: Using Automake. (line 6)
* automake: Using Automake. (line 6)
* backend: Protocols and Engines. (line 6)
* callback, passphrase: Passphrase Callback. (line 6)
* callback, progress meter: Progress Meter Callback.
(line 6)
* callback, status message: Status Message Callback.
(line 6)
*
cancelling operations: Cancellation. (line 6)
* canonical text mode: Text Mode. (line 6)
* certificates, included: Included Certificates. (line 6)
* CMS: Cryptographic Message Syntax.
(line 6)
* compiler flags: Building the Source. (line 6)
* compiler options: Building the Source. (line 6)
* configuration of crypto backend: Engine Configuration. (line 6)
* context: Contexts. (line 6)
* context, armor mode: ASCII Armor. (line 6)
* context, attributes: Context Attributes. (line 6)
* context, configuring engine: Crypto Engine. (line 6)
* context, creation: Creating Contexts. (line 6)
* context, destruction: Destroying Contexts.
(line 6)
* context, offline mode: Offline Mode. (line 6)
* context, pinentry mode: Pinentry Mode. (line 6)

* context, result of operation: Result Management. (line 6)
* context, selecting protocol: Protocol Selection. (line 6)
* context, sender: Setting the Sender. (line 6)
* context, text mode: Text Mode. (line 6)
* crypto backend: Protocols and Engines. (line 6)
* crypto engine: Protocols and Engines. (line 6)
* cryptographic message syntax: Cryptographic Message Syntax.
(line 6)
* cryptographic operation: Crypto Operations. (line 6)
* cryptographic operation, aborting: Cancellation. (line 6)
* cryptographic operation, cancelling: Cancellation. (line 6)
* cryptographic operation, decryption:
Decrypt. (line 6)
* cryptographic operation, decryption and verification: Decrypt and Verify.
(line 6)
* cryptographic operation, encryption: Encrypt. (line 6)
* cryptographic operation, running: Run Control. (line 6)
* cryptographic operation, signature check: Verify. (line 6)
* cryptographic operation, signing: Sign. (line 6)
* cryptographic operation, verification: Verify. (line 6)
* cryptographic operation, wait for: Waiting For Completion.
(line 6)
* data buffer, convenience: Data Buffer Convenience.
(line 6)
* data buffer, creation: Creating Data Buffers. (line 6)
* data buffer, destruction: Destroying Data Buffers.

(line 6)
* data buffer, encoding: Data Buffer Meta-Data. (line 6)
* data buffer, file name: Data Buffer Meta-Data. (line 6)
* data buffer, I/O operations: Data Buffer I/O Operations.
(line 6)
* data buffer, manipulation: Manipulating Data Buffers.
(line 6)
* data buffer, meta-data: Data Buffer Meta-Data. (line 6)
* data buffer, read: Data Buffer I/O Operations.
(line 6)
* data buffer, seek: Data Buffer I/O Operations.
(line 6)
* data buffer, write: Data Buffer I/O Operations.
(line 6)
* data, exchanging:
Exchanging Data. (line 6)
* debug: Debugging. (line 6)
* decryption: Decrypt. (line 6)
* decryption and verification: Decrypt and Verify. (line 6)
* deprecated: Deprecated Functions. (line 6)
* encryption: Encrypt. (line 6)

* engine: Protocols and Engines. (line 6)
* engine, ASSUAN: Assuan. (line 6)
* engine, configuration of: Engine Configuration. (line 6)
* engine, configuration per context: Crypto Engine. (line 6)
* engine, GnuPG: OpenPGP. (line 6)
* engine, GpgSM: Cryptographic Message Syntax.
(line 6)
* engine, information about: Engine Information. (line 6)
* error codes:
Error Values. (line 6)
* error codes, list of: Error Sources. (line 6)
* error codes, list of <1>: Error Codes. (line 6)
* error codes, printing of: Error Strings. (line 6)
* error handling: Error Handling. (line 6)
* error sources: Error Values. (line 6)
* error sources, printing of: Error Strings. (line 6)
* error strings: Error Strings. (line 6)
* error values: Error Values. (line 6)
* error values, printing of: Error Strings. (line 6)
* event loop, external: Using External Event Loops.
(line 6)
* flags, of a context: Context Flags. (line 6)
* From:: Setting the Sender.
(line 6)
* GDK, using GPGME with: I/O Callback Example GDK.
(line 6)
* GnuPG: OpenPGP. (line 6)
* GPGME_DEBUG: Debugging. (line 6)
* GpgSM: Cryptographic Message Syntax.
(line 6)
* GTK+, using GPGME with: I/O Callback Example GTK+.
(line 6)
* hash algorithms: Hash Algorithms. (line 6)
* header file: Header. (line 6)
* identify: Data Buffer Convenience.
(line 6)
* include file: Header. (line 6)
* key listing: Listing Keys.
(line 6)
* key listing mode: Key Listing Mode. (line 6)
* key listing, mode of: Key Listing Mode. (line 6)
* key listing, start: Listing Keys. (line 6)
* key management: Key Management. (line 6)
* key ring, add: Generating Keys. (line 6)
* key ring, delete from: Deleting Keys. (line 6)
* key ring, export from: Exporting Keys. (line 6)
* key ring, import to: Importing Keys. (line 6)
* key ring, list: Listing Keys. (line 6)

* key ring, search: Listing Keys. (line 6)
* key, attributes: Information About Keys.
(line 6)
* key, creation: Generating Keys. (line 6)
* key, delete: Deleting
Keys. (line 6)
* key, edit: Advanced Key Editing. (line 6)
* key, export: Exporting Keys. (line 6)
* key, import: Importing Keys. (line 6)
* key, information about: Information About Keys.
(line 6)
* key, manipulation: Manipulating Keys. (line 6)
* key, signing: Signing Keys. (line 6)
* largefile support: Largefile Support (LFS).
(line 6)
* LFS: Largefile Support (LFS).
(line 6)
* LGPL, GNU Lesser General Public License: Library Copying. (line 6)
* libtool: Using Libtool. (line 6)
* listing keys: Listing
Keys. (line 6)
* locale, default: Locale. (line 6)
* locale, of a context: Locale. (line 6)
* message digest algorithms: Hash Algorithms. (line 6)
* multi-threading: Multi-Threading. (line 6)
* notation data: Verify. (line 6)
* notation data <1>: Signature Notation Data.
(line 6)
* offline mode: Offline Mode. (line 6)
* OpenPGP: OpenPGP. (line 6)
* passphrase callback: Passphrase Callback. (line 6)
* passphrase, change: Changing Passphrases. (line 6)
* pinentry mode: Pinentry Mode. (line 6)
* policy URL: Signature Notation Data.

(line 6)
* progress meter callback: Progress Meter Callback.
(line 6)
* protocol: Protocols and Engines. (line 6)
* protocol, ASSUAN: Assuan. (line 6)
* protocol, CMS: Cryptographic Message Syntax.
(line 6)
* protocol, GnuPG: OpenPGP. (line 6)
* protocol, S/MIME: Cryptographic Message Syntax.
(line 6)
* protocol, selecting: Protocol Selection. (line 6)
* public key algorithms: Public Key Algorithms. (line 6)
* Qt, using GPGME with: I/O Callback Example Qt.

(line 6)
* run control:
Run Control. (line 6)
* S/MIME: Cryptographic Message Syntax.
(line 6)
* sender: Setting the Sender. (line 6)
* sign: Sign. (line 6)
* signal handling: Signal Handling. (line 6)
* signals: Signal Handling. (line 6)
* signature check: Decrypt and Verify. (line 6)
* signature notation data: Verify. (line 6)
* signature notation data <1>: Signature Notation Data.
(line 6)
* signature, creation: Sign. (line 6)
* signature, selecting signers: Selecting Signers. (line 6)
* signature, verification: Verify. (line 6)
* signers, selecting:
Selecting Signers. (line 6)
* status message callback: Status Message Callback.
(line 6)
* text mode: Text Mode. (line 6)
* thread-safeness: Multi-Threading. (line 6)
* type of data: Data Buffer Convenience.
(line 6)
* UI server: UI Server Protocol. (line 6)
* user interface server: UI Server Protocol. (line 6)
* validity, TOFU: Changing TOFU Data. (line 6)
* verification: Verify. (line 6)
* verification and decryption: Decrypt and Verify. (line 6)
* version check, of the engines: Engine Version Check. (line 6)
* version check, of the library: Library Version Check. (line 6)
* wait for completion:
Waiting For Completion.
(line 6)

File: gpgme.info, Node: Function and Data Index, Prev: Concept Index, Up: Top

Function and Data Index
****

[index]
* Menu:

* AM_PATH_GPGME: Using Automake. (line 11)
* AM_PATH_GPGME_PTH: Using Automake. (line 13)
* AM_PATH_GPGME_PTHREAD: Using Automake. (line 15)
* CHECKSUM_CREATE_FILES: UI Server Checksum Files.

(line 9)
* CHECKSUM_VERIFY_FILES: UI Server Checksum Files.
(line 22)
* DECRYPT: UI Server Decrypt. (line 26)
* DECRYPT_FILES: UI Server Verify/Decrypt Files.
(line 9)
* DECRYPT_VERIFY_FILES:
UI Server Verify/Decrypt Files.
(line 11)
* ENCRYPT: UI Server Encrypt. (line 47)
* ENCRYPT_FILES: UI Server Sign/Encrypt Files.
(line 9)
* ENCRYPT_SIGN_FILES: UI Server Sign/Encrypt Files.
(line 11)
* enum gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 31)
* enum gpgme_data_type_t: Data Buffer Convenience.
(line 6)
* enum gpgme_event_io_t: I/O Callback Interface.
(line 58)
* enum gpgme_hash_algo_t: Hash Algorithms. (line 9)
* enum gpgme_pinentry_mode_t:
Pinentry Mode. (line 25)
* enum gpgme_protocol_t: Protocols and Engines.
(line 16)
* enum gpgme_pubkey_algo_t: Public Key Algorithms.
(line 9)
* enum gpgme_sig_mode_t: Creating a Signature.
(line 6)
* enum gpgme_sig_stat_t: Deprecated Functions.
(line 387)
* enum gpgme_tofu_policy_t: Changing TOFU Data. (line 10)
* FILE: UI Server Set Input Files.
(line 9)
* GETINFO: Miscellaneous UI Server Commands.
(line 9)
* gpgme_addrspec_from_uid:
Decrypt and Verify. (line 48)
* gpgme_attr_t: Deprecated Functions.
(line 140)
* gpgme_attr_t <1>: Deprecated Functions.
(line 301)
* gpgme_cancel: Cancellation. (line 16)
* gpgme_cancel_async: Cancellation. (line 38)
* gpgme_check_version: Library Version Check.
(line 6)
* gpgme_ctx_get_engine_info: Crypto Engine. (line 12)
* gpgme_ctx_set_engine_info: Crypto Engine. (line 26)

* gpgme_ctx_t: Contexts. (line 11)
* gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 32)
* gpgme_data_get_encoding: Data Buffer
Meta-Data.
(line 81)
* gpgme_data_get_file_name: Data Buffer Meta-Data.
(line 6)
* gpgme_data_identify: Data Buffer Convenience.
(line 46)
* gpgme_data_new: Memory Based Data Buffers.
(line 12)
* gpgme_data_new_from_cbs: Callback Based Data Buffers.
(line 80)
* gpgme_data_new_from_estream: File Based Data Buffers.
(line 49)
* gpgme_data_new_from_fd: File Based Data Buffers.
(line 10)
* gpgme_data_new_from_file: Memory Based Data Buffers.
(line 37)
* gpgme_data_new_from_filepart: Memory Based Data Buffers.
(line 54)
* gpgme_data_new_from_mem: Memory Based Data Buffers.
(line 22)
* gpgme_data_new_from_stream: File Based Data Buffers.
(line 29)
* gpgme_data_new_with_read_cb: Deprecated Functions.
(line 110)
* gpgme_data_read: Data Buffer I/O Operations.
(line 6)
* gpgme_data_read_cb_t: Callback Based Data Buffers.
(line 13)
* gpgme_data_release: Destroying Data Buffers.
(line 6)
* gpgme_data_release_and_get_mem: Destroying Data Buffers.
(line 11)
* gpgme_data_release_cb_t: Callback Based Data Buffers.
(line 55)
* gpgme_data_rewind: Deprecated Functions.
(line 134)
* gpgme_data_seek: Data Buffer I/O Operations.
(line 26)
* gpgme_data_seek_cb_t: Callback Based Data Buffers.
(line 46)
* gpgme_data_set_encoding: Data Buffer Meta-Data.
(line 87)

* gpgme_data_set_file_name: Data Buffer Meta-Data.

(line 18)
* gpgme_data_set_flag: Data Buffer Meta-Data.
(line 92)
* gpgme_data_t: Exchanging Data. (line 13)
* gpgme_data_type_t: Data Buffer Convenience.
(line 7)
* gpgme_data_write: Data Buffer I/O Operations.
(line 16)
* gpgme_data_write_cb_t: Callback Based Data Buffers.
(line 29)
* gpgme_decrypt_result_t: Decrypt. (line 101)
* gpgme_edit_cb_t: Deprecated Functions.
(line 33)
* gpgme_encrypt_result_t: Encrypting a Plaintext.
(line
241)
* gpgme_engine_check_version: Engine Version Check.
(line 67)
* gpgme_engine_info_t: Engine Information. (line 6)
* gpgme_error: Error Values. (line 65)
* gpgme_error_from_errno: Error Values. (line 89)
* gpgme_error_t: Error Values. (line 24)
* gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN): Using the Assuan protocol.
(line 15)
* gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA): Using the Assuan protocol.
(line 24)
* gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE, const char *STATUS, const char *ARGS): Using the Assuan protocol.

(line 38)
* gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE, gpgme_status_code_t STATUS, const char *ARGS, int FD): Deprecated Functions.
(line 31)
* gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE, const char *STATUS, const char *ARGS, int FD): Advanced Key Editing.
(line 6)
* gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD): I/O Callback Interface.
(line 6)
* gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD, int FD): Passphrase Callback.
(line 6)
* gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG): I/O Callback Interface.

(line 19)
* gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS): Status Message Callback.
(line 6)
* gpgme_err_code: Error Values. (line 42)
* gpgme_err_code_from_errno: Error Values. (line 98)
* gpgme_err_code_t: Error Values. (line 6)
* gpgme_err_code_to_errno: Error Values. (line 103)
* gpgme_err_make: Error Values. (line 57)
* gpgme_err_make_from_errno: Error Values. (line 83)
* gpgme_err_source: Error Values. (line 49)
* gpgme_err_source_t: Error Values. (line 13)
* gpgme_event_io_t: I/O Callback Interface.
(line 59)
* gpgme_event_io_t <1>: Registering I/O Callbacks.
(line 7)
* gpgme_free: Destroying Data Buffers.
(line 25)
* gpgme_genkey_result_t: Generating Keys. (line 381)
* gpgme_get_armor: ASCII Armor. (line 13)
* gpgme_get_ctx_flag: Context Flags. (line 135)
* gpgme_get_dirinfo: Engine Version Check.
(line 6)
* gpgme_get_engine_info: Engine Information. (line 46)
* gpgme_get_include_certs: Included Certificates.
(line 37)
* gpgme_get_io_cbs: Registering I/O Callbacks.
(line 44)
* gpgme_get_key: Listing Keys. (line 178)
*
gpgme_get_keylist_mode: Key Listing Mode. (line 103)
* gpgme_get_offline: Offline Mode. (line 31)
* gpgme_get_passphrase_cb: Passphrase Callback. (line 63)
* gpgme_get_pinentry_mode: Pinentry Mode. (line 18)
* gpgme_get_progress_cb: Progress Meter Callback.
(line 31)
* gpgme_get_protocol: Protocol Selection. (line 21)
* gpgme_get_protocol_name: Protocols and Engines.
(line 58)
* gpgme_get_sender: Setting the Sender. (line 29)
* gpgme_get_sig_key: Deprecated Functions.
(line 587)
* gpgme_get_sig_status: Deprecated Functions.
(line 435)
* gpgme_get_sig_string_attr:
Deprecated Functions.
(line 491)
* gpgme_get_sig_ulong_attr: Deprecated Functions.

(line 525)
* gpgme_get_status_cb: Status Message Callback.
(line 31)
* gpgme_get_textmode: Text Mode. (line 20)
* gpgme_hash_algo_name: Hash Algorithms. (line 30)
* gpgme_hash_algo_t: Hash Algorithms. (line 10)
* gpgme_import_result_t: Importing Keys. (line 118)
* gpgme_import_status_t: Importing Keys. (line 80)
* gpgme_interact_cb_t: Advanced Key Editing.
(line 11)
* gpgme_invalid_key_t: Crypto Operations. (line 10)
* gpgme_io_cb_t:
I/O Callback Interface.
(line 7)
* gpgme_keylist_result_t: Listing Keys. (line 155)
* gpgme_key_get_string_attr: Deprecated Functions.
(line 266)
* gpgme_key_get_ulong_attr: Deprecated Functions.
(line 280)
* gpgme_key_ref: Manipulating Keys. (line 6)
* gpgme_key_release: Deprecated Functions.
(line 14)
* gpgme_key_sig_get_string_attr: Deprecated Functions.
(line 357)
* gpgme_key_sig_get_ulong_attr: Deprecated Functions.
(line 373)
* gpgme_key_sig_t: Key objects. (line
346)
* gpgme_key_t: Key objects. (line 10)
* gpgme_key_unref: Manipulating Keys. (line 10)
* gpgme_new: Creating Contexts. (line 6)
* gpgme_new_signature_t: Creating a Signature.
(line 57)
* gpgme_off_t: Exchanging Data. (line 24)
* gpgme_op_adduid: Generating Keys. (line 189)
* gpgme_op_adduid_start: Generating Keys. (line 215)
* gpgme_op_assuan_transact_ext: Using the Assuan protocol.
(line 64)
* gpgme_op_assuan_transact_start: Using the Assuan protocol.
(line 47)
* gpgme_op_card_edit: Deprecated Functions.
(line 85)
*
gpgme_op_card_edit_start: Deprecated Functions.
(line 95)
* gpgme_op_createkey: Generating Keys. (line 14)
* gpgme_op_createkey_start: Generating Keys. (line 119)
* gpgme_op_createsubkey: Generating Keys. (line 132)

* gpgme_op_createsubkey_start: Generating Keys. (line 176)
* gpgme_op_decrypt: Decrypt. (line 6)
* gpgme_op_decrypt_ext: Decrypt. (line 30)
* gpgme_op_decrypt_ext_start: Decrypt. (line 60)
* gpgme_op_decrypt_result: Decrypt. (line 164)
* gpgme_op_decrypt_start: Decrypt. (line 20)
* gpgme_op_decrypt_verify: Decrypt and Verify. (line 6)
* gpgme_op_decrypt_verify_start: Decrypt and Verify. (line 30)
* gpgme_op_delete: Deleting Keys.
(line 47)
* gpgme_op_delete_ext: Deleting Keys. (line 6)
* gpgme_op_delete_ext_start: Deleting Keys. (line 33)
* gpgme_op_delete_start: Deleting Keys. (line 52)
* gpgme_op_edit: Deprecated Functions.
(line 44)
* gpgme_op_edit_start: Deprecated Functions.
(line 68)
* gpgme_op_encrypt: Encrypting a Plaintext.
(line 6)
* gpgme_op_encrypt_ext: Encrypting a Plaintext.
(line 131)
* gpgme_op_encrypt_ext_start: Encrypting a Plaintext.
(line 224)
* gpgme_op_encrypt_result: Encrypting a Plaintext.

(line 252)
* gpgme_op_encrypt_sign: Encrypting a Plaintext.
(line 263)
* gpgme_op_encrypt_sign_ext: Encrypting a Plaintext.
(line 288)
* gpgme_op_encrypt_sign_ext_start: Encrypting a Plaintext.
(line 304)
* gpgme_op_encrypt_sign_start: Encrypting a Plaintext.
(line 274)
* gpgme_op_encrypt_start: Encrypting a Plaintext.
(line 113)
* gpgme_op_export: Exporting Keys. (line 59)
* gpgme_op_export_ext: Exporting Keys. (line 92)
* gpgme_op_export_ext_start: Exporting Keys. (line 114)
* gpgme_op_export_keys:
Exporting Keys. (line 126)
* gpgme_op_export_keys_start: Exporting Keys. (line 153)
* gpgme_op_export_start: Exporting Keys. (line 80)
* gpgme_op_genkey: Generating Keys. (line 304)
* gpgme_op_genkey_result: Generating Keys. (line 418)
* gpgme_op_genkey_start: Generating Keys. (line 369)
* gpgme_op_getauditlog: Additional Logs. (line 9)
* gpgme_op_getauditlog_start: Additional Logs. (line 54)

* gpgme_op_import: Importing Keys. (line 9)
* gpgme_op_import_ext: Deprecated Functions.
(line 18)
* gpgme_op_import_keys: Importing Keys. (line 35)
* gpgme_op_import_keys_start: Importing Keys. (line 65)
* gpgme_op_import_result: Importing Keys. (line 174)
* gpgme_op_import_start:
Importing Keys. (line 24)
* gpgme_op_interact: Advanced Key Editing.
(line 23)
* gpgme_op_interact_start: Advanced Key Editing.
(line 53)
* gpgme_op_keylist_end: Listing Keys. (line 111)
* gpgme_op_keylist_ext_start: Listing Keys. (line 34)
* gpgme_op_keylist_from_data_start: Listing Keys. (line 67)
* gpgme_op_keylist_next: Listing Keys. (line 94)
* gpgme_op_keylist_result: Listing Keys. (line 166)
* gpgme_op_keylist_start: Listing Keys. (line 6)
* gpgme_op_keysign: Signing Keys. (line 12)
* gpgme_op_keysign_start: Signing Keys. (line 73)
* gpgme_op_passwd: Changing Passphrases.
(line 6)
* gpgme_op_passwd_start: Changing Passphrases.
(line 21)
* gpgme_op_query_swdb: Checking for updates.
(line 68)
* gpgme_op_query_swdb_result: Checking for updates.
(line 80)
* gpgme_op_revsig: Signing Keys. (line 84)
* gpgme_op_revsig_start: Signing Keys. (line 119)
* gpgme_op_revuid: Generating Keys. (line 224)
* gpgme_op_revuid_start: Manipulating Keys. (line 58)
* gpgme_op_revuid_start <1>: Generating Keys. (line 252)
* gpgme_op_setexpire: Manipulating Keys. (line 15)
* gpgme_op_setexpire_start: Manipulating Keys. (line 47)
* gpgme_op_set_uid_flag_start:
Generating Keys. (line 293)
* gpgme_op_set_ui_flag: Generating Keys. (line 261)
* gpgme_op_sign: Creating a Signature.
(line 21)
* gpgme_op_sign_result: Creating a Signature.
(line 99)
* gpgme_op_sign_start: Creating a Signature.
(line 47)
* gpgme_op_spawn: Running other Programs.
(line 13)
* gpgme_op_spawn_start: Running other Programs.

(line 45)
* gpgme_op_tofu_policy: Changing TOFU Data. (line 29)
* gpgme_op_tofu_policy_start: Changing TOFU Data. (line 43)
* gpgme_op_verify: Verify. (line 6)
* gpgme_op_verify_result: Verify. (line 298)
* gpgme_op_verify_start: Verify. (line 26)
* gpgme_passphrase_cb_t: Passphrase Callback. (line 10)
* gpgme_pinentry_mode_t: Pinentry Mode. (line 26)
* gpgme_progress_cb_t: Progress Meter Callback. (line 8)
* gpgme_protocol_t: Protocols and Engines. (line 17)
* gpgme_protocol_t <1>: Engine Information. (line 7)
* gpgme_pubkey_algo_name: Public Key Algorithms. (line 58)
* gpgme_pubkey_algo_string: Public Key Algorithms. (line 68)
* gpgme_pubkey_algo_t: Public Key Algorithms.

(line 10)
* gpgme_query_swdb_result_t: Checking for updates. (line 11)
* gpgme_recipient_t: Decrypt. (line 75)
* gpgme_register_io_cb_t: I/O Callback Interface. (line 23)
* gpgme_release: Destroying Contexts. (line 6)
* gpgme_result_ref: Result Management. (line 15)
* gpgme_result_unref: Result Management. (line 23)
* gpgme_set_armor: ASCII Armor. (line 6)
* gpgme_set_ctx_flag: Context Flags. (line 6)
* gpgme_set_engine_info: Engine Configuration. (line 11)
* gpgme_set_global_flag: Library Version Check.

(line 44)
* gpgme_set_include_certs: Included Certificates. (line 6)
* gpgme_set_io_cbs: Registering I/O Callbacks. (line 35)
* gpgme_set_keylist_mode: Key Listing Mode. (line 6)
* gpgme_set_locale: Locale. (line 14)
* gpgme_set_offline: Offline Mode. (line 6)
* gpgme_set_passphrase_cb: Passphrase Callback. (line 40)
* gpgme_set_pinentry_mode: Pinentry Mode. (line 6)
* gpgme_set_progress_cb: Progress Meter Callback. (line 16)
* gpgme_set_protocol: Protocol Selection. (line 6)

* gpgme_set_sender: Setting the Sender. (line 13)
* gpgme_set_status_cb:
Status Message Callback.
(line 17)
* gpgme_set_textmode: Text Mode. (line 6)
* gpgme_signature_t: Verify. (line 92)
* gpgme_signers_add: Selecting Signers. (line 18)
* gpgme_signers_clear: Selecting Signers. (line 11)
* gpgme_signers_count: Selecting Signers. (line 25)
* gpgme_signers_enum: Selecting Signers. (line 31)
* gpgme_sign_result_t: Creating a Signature.
(line 85)
* gpgme_sig_mode_t: Creating a Signature.
(line 7)
* gpgme_sig_notation_add: Signature Notation Data.
(line 19)
* gpgme_sig_notation_clear:
Signature Notation Data.
(line 10)
* gpgme_sig_notation_get: Signature Notation Data.
(line 45)
* gpgme_sig_notation_t: Verify. (line 38)
* gpgme_sig_stat_t: Deprecated Functions.
(line 388)
* gpgme_ssize_t: Exchanging Data. (line 32)
* gpgme_status_cb_t: Status Message Callback.
(line 8)
* gpgme_strerror: Error Strings. (line 6)
* gpgme_strerror_r: Error Strings. (line 15)
* gpgme_strsource: Error Strings. (line 26)
* gpgme_subkey_t: Key objects. (line 112)
* gpgme_tofu_info_t: Key objects.
(line 282)
* gpgme_tofu_policy_t: Changing TOFU Data. (line 13)
* gpgme_user_id_t: Key objects. (line 217)
* gpgme_validity_t: Information About Keys.
(line 9)
* gpgme_verify_result_t: Verify. (line 276)
* gpgme_wait: Waiting For Completion.
(line 6)
* IMPORT_FILES: UI Server Import/Export Keys.
(line 9)
* INPUT: UI Server Encrypt. (line 23)
* INPUT <1>: UI Server Sign. (line 12)
* INPUT <2>: UI Server Decrypt. (line 12)
* INPUT <3>: UI Server Verify. (line 16)
* MESSAGE: UI

Server Verify. (line 10)
* MICALG: UI Server Sign. (line 43)
* off_t (*gpgme_data_seek_cb_t) (void *HANDLE, off_t OFFSET, int WHENCE): Callback Based Data Buffers.
(line 43)
* OUTPUT: UI Server Encrypt. (line 36)
* OUTPUT <1>: UI Server Sign. (line 18)
* OUTPUT <2>: UI Server Decrypt. (line 19)
* OUTPUT <3>: UI Server Verify. (line 23)
* PREP_ENCRYPT: UI Server Encrypt. (line 72)
* PROTOCOL: UI Server Encrypt. (line 98)
* RECIPIENT: UI Server Encrypt. (line 9)
* SENDER: Miscellaneous UI Server Commands.
(line 50)
* SESSION: Miscellaneous UI Server
Commands.
(line 69)
* SIGN: UI Server Sign. (line 33)
* SIGN_FILES: UI Server Sign/Encrypt Files.
(line 10)
* SIGSTATUS: UI Server Verify. (line 56)
* ssize_t (*gpgme_data_read_cb_t) (void *HANDLE, void *BUFFER, size_t SIZE): Callback Based Data Buffers.
(line 10)
* ssize_t (*gpgme_data_write_cb_t) (void *HANDLE, const void *BUFFER, size_t SIZE): Callback Based Data
Buffers.
(line 27)
* START_CONFDIALOG: Miscellaneous UI Server Commands.
(line 41)
* START_KEYMANAGER: Miscellaneous UI Server Commands.

(line 31)
* struct gpgme_data_cbs: Callback Based Data Buffers.
(line 59)
* struct gpgme_io_cbs: Registering I/O Callbacks.
(line 6)
* VERIFY: UI Server Verify. (line 31)
* VERIFY_FILES: UI Server Verify/Decrypt Files.
(line 10)
* void (*gpgme_data_release_cb_t) (void *HANDLE): Callback Based Data Buffers.
(line 54)
* void (*gpgme_event_io_cb_t) (void *DATA, gpgme_event_io_t TYPE, void *TYPE_DATA): I/O Callback
Interface.
(line 83)
* void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT, int TYPE, int CURRENT, int TOTAL):
Progress Meter Callback.

(line 6)
* void (*gpgme_remove_io_cb_t) (void *TAG): I/O Callback Interface.
(line 48)

* window-id: Miscellaneous UI Server Commands.
(line 21)
Wenn Sie dies lesen knnen, ist es wohl nicht
geheim genug.
hkp4py
requests
Additional license notices for GPGME. -*- org -*-

This file contains the copying permission notices for various files in
the GPGME distribution which are not covered by the GNU Lesser
General Public License (LGPL) or the GNU General Public License (GPL).

These notices all require that a copy of the notice be included
in the accompanying documentation and be distributed with binary
distributions of the code, so be sure to include this file along
with any binary distributions derived from the GNU C Library.

* MIT License

For files:
- cJSON.c, cJSON.h

#+begin_quote
Copyright (c) 2009 Dave Gamble

Permission is hereby granted, free of charge, to any person obtaining
a opy of this software and associated documentation files (the
"Software"), to eal in the Software without restriction, including
without limitation the ights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the
Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING ROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
#+end_quote
-*- mode: org -*-
#+TITLE: Maintenance Mode
#+AUTHOR: Ben McGinnes

#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Maintenance Mode from 2019
 :PROPERTIES:
 :CUSTOM_ID: maintenance-mode
 :END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

From the beginning of 2019 the Python bindings to GPGME will enter
maintenance mode, meaning that new features will not be added and only
bug fixes and security fixes will be made.
  This also means that
documentation beyond that existing at the end of 2018 will not be
developed further except to correct errors.

Though use of these bindings appears to have been quite well received,
there has been no indication of what demand there is, if any for
either financial backing of the current Python bindings development or
support contracts with g10code GmbH citing the necessity of including
the bindings.

** Maintainer from 2019 onward
  :PROPERTIES:
  :CUSTOM_ID: maintenance-mode-bm
  :END:

How does this affect the position of GnuPG Python Bindings Maintainer?

Well, I will remain as maintainer of the bindings; but without funding
for that position, the amount of time I will be able to dedicate
solely to this task will be limited and reduced to volunteered time.
As with all volunteered time and effort in free software projects,
this will be subject to numerous external imperatives.

** Using the Python Bindings from 2019 and beyond
:PROPERTIES:
:CUSTOM_ID:
maintenance-mode-blade-runner
:END:

For most, if not all, Python developers using these bindings; they
will continue to just work the same as they always have. Expansions
of GPGME itself are usually handled by SWIG with the existing code and
thus bindings are generated properly when the bindings are installed
alongside GPGME and when the latter is built from source.

In the rare circumstances where that is not enough to address some new
addition to GPGME, then that is a bug and thus subject to the
maintenance mode provisions (i.e. it will be fixed following a bug
report being raised and your humble author will need to remember where
the timesheet template was filed, depending on how many years off such
an event is).

All the GPGME functionality will continue to be accessible via the
lower level, dynamically generated methods which match the GPGME C
documentation. While the more intuitively Pythonic higher level layer
already covers the vast majority of functionality people require
with
key generation, signatures, certifications (key signing), encryption,
decryption, verification, validation, trust levels and so on.

Any wanted features lacking in the Python bindings are usually lacking
because they are missing from GPGME itself (e.g. revoking keys via the
API) and in such cases they are usually deliberately excluded. More
discussion of these issues can be found in the archives of the
[[https://lists.gnupg.org/mailman/listinfo/gnupg-devel][gnupg-devel mailing list]].

Any features existing in the dynamically generated layer for which
people want a specific, higher level function included to make it more
Pythonic (e.g. to avoid needing to learn or memorise cryptographic
mode values or GnuPG status code numbers), would be a feature request
and /not/ a bug.

It is still worthwhile requesting it, but the addition of such a
feature would not be guaranteed and provided on a purely volunteer
basis. Expediting such a request would require funding that request.

Those
with a commercial interest in expediting such a feature request
already know how to [[https://gnupg.org/cgi-bin/procdonate.cgi?mode=preset][expedite it]] (use the message field to
state what

feature is being requested).

** Documentation formats
:PROPERTIES:
:CUSTOM_ID: docs
:END:

The documentation has been written in Org mode for GNU Emacs, with
both Texinfo and reStructuredText formats generated from that. The
Texinfo files are intended for use with the rest of the GnuPG
documentation; while the reStructuredText files are intended for use
with Docutils and Sphinx, as with other Python projects.

*** Cautionary Notes regarding Sphinx and EPUB
:PROPERTIES:
:CUSTOM_ID: sphinx-made-epubs-suck
:END:

Though Python's Docutils in conjunction with Sphinx is capable of
generating some very useful HTML sites, as proven by [[https://readthedocs.org/][Read the Docs]] and
the [[https://docs.python.org/][Python documentation]], there are a number of output formats it does
not
handle well. At the top of the list of things it manages to break
so atrociously as to be embarassing is the [[http://idpf.org/epub][EPUB 3]] format.

The automatically generated EPUB of the CPython documentation always
contains hundreds of validation errors and even the modest amount of
documentation here [[https://files.au.adversary.org.s3.amazonaws.com/crypto/gpgme-
python/rst/epub/GPGMEPythonBindings.epub][produced a file]] with approximately thirty
validation errors. As the volume of documentation content increases,
so does the induced errors. Whereas Texinfo doesn't produce EPUB
output at all, nor does Org-mode.

Should there ever be genuine demand for this format, lodge a
[[https://dev.gnupg.org/maniphest/task/edit/form/4/][feature
request]] case marked for [[https://dev.gnupg.org/p/BenM/][my]] attention. The means of generating such
files flawlessly is already available, but is not yet part of the
GnuPG build system. Nor is it integrated with a means of converting
Org
mode input files to the relevant base format automatically, as can
already be done when converting Org to reStructuredText or Org to
Texinfo. As a certain amount of work would be required to get it
done, there would need to be clear demand for that work to be done.
Just GNU it!
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* m4/pth.m4: Removed.
* configure.ac: Remove check for pth and automake conditional
HAVE_PTH.

2011-06-16 Marcus Brinkmann <marcus@g10code.com>

Release 1.3.1

* configure.ac: Set LT version to C19/A8/R0.

2011-05-06 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am (SUBDIRS): Remove complus.

* configure.ac (AC_CONFIG_FILES): Remove complus/Makefile.
(BUILD_COMPLUS): Remove AM_CONDITIONAL.
* complus/: Remove very old and stale component.

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Remove.

2011-04-14 Werner Koch <wk@g10code.com>

* configure.ac: Require automake 1.11.

2011-04-06 Werner Koch <wk@g10code.com>

* autogen.sh (--build-w32):
Support option --build-w64.
* configure.ac (HAVE_W64_SYSTEM): Define.
(INSERT__TYPEDEFS_FOR_GPGME_H): New.
(GPGME_CONFIG_HOST): New.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* configure.ac (NEED_LIBASSUAN_VERSION): Bump to 2.0.2 for system hooks.

2010-12-30 Werner Koch <wk@g10code.com>

* configure.ac: Support a git revision.

2010-11-03 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys/types.h and
sys.stat.h.

2010-11-02 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys.time.h.

2010-08-19 Werner Koch <wk@g10code.com>

* configure.ac (AH_BOTTOM): Define GPG_ERR_ENABLE_ERRNO_MACROS.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for setlocale.

2010-05-07 Werner Koch <wk@g10code.com>

* configure.ac: Change checks to always require libassuan.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Update the thing.

* configure.ac: Check for locale.h.

2010-05-06
Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Detect Windows CE.
(HAVE_W32CE_SYSTEM): New symbol and automake conditional.
* ltmain.sh, m4/libtool.m4: Patch so that it works for Windows CE.

* configure.ac: Require libgpg-error 1.8.

2010-03-15 Werner Koch <wk@g10code.com>

* configure.ac (emacs_local_vars_begin)
(emacs_local_vars_read_only, emacs_local_vars_end): New.

2010-01-22 Werner Koch <wk@g10code.com>

* autogen.sh (--build-w32): Add --with-libassuan-prefix.

2010-01-11 Marcus Brinkmann <marcus@g10code.de>

Release 1.3.0.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Do not use echo -n. Test for __thread.

2009-12-17 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Make largefile check more robust.

2009-12-10 Werner Koch <wk@g10code.com>

 * configure.ac: Check for getgid and getegid.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

 Update to libtool 2.2.6a.
 * configure.ac: Invoke AC_CONFIG_MACRO_DIR.
 (AC_LIBTOOL_WIN32_DLL,
 AC_LIBTOOL_RC): Replace by ...
 (LT_PREREQ, LT_INIT, LT_LANG): ... these.
 * config.guess, config.sub, install-sh, ltmain.sh, m4/libtool.m4:
 Updated to libtool 2.2.6a.
 * m4/ltoptions.m4, m4/ltsugar.m4, m4/ltversion.m4,
 m4/lt~obsolete.m4: New files from libtool 2.2.6a.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Activate UIServer if FD passing is enabled and
 Assuan is available.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Check for argp.h and error_t.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (NEED_GPG_VERSION_DEFAULT): Bump to 1.4.0 as 1.3.0
 was development versions only.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Add support for G13.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (AC_CONFIG_FILES): Remove assuan/Makefile.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Replace internal libassuan by external libassuan.
* m4/libassuan.m4:
New file.
* Makefile.am (assuan): Remove variable.
(SUBDIRS): Remove ${assuan}.
* assuan/: Removed.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add AC_TYPE_UINTPTR_T.

* assuan/assuan.h [_ASSUAN_IN_GPGME_BUILD_ASSUAN]: Declare
_gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

Released GPGME 1.2.0.

* configure.ac (my_version): Set to 1.2.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump.
(LIBGPGME_LT_REVISION): Reset.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add infrastructure for compile time check of
_FILE_OFFSET_BITS.

2009-04-19 Moritz <moritz@gnu.org>

* Makefile.am (DISTCHECK_CONFIGURE_FLAGS): Specify --with-gpg.

2009-03-06 Marcus Brinkmann <marcus@g10code.de>

* assuan/: Update to libassuan SVN 2009-03-06.

2009-01-26 Werner Koch <wk@g10code.com>

* configure.ac (AC_CONFIG_FILES): Add tests/opassuan/Makefile.

2008-12-08 Marcus Brinkmann <marcus@g10code.de>

Release GPGME
1.1.8.

* configure.ac: Bump API revision.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

* configure.ac: Replace gpgme paths with src.
* gpgme: Move to ...
* src: ... this new directory.

2008-10-20 Werner Koch <wk@g10code.com>

* configure.ac (AC_CONFIG_FILES): Add gpgme.h.
(GNUPG_FIX_HDR_VERSION): Remove.

2008-10-17 Marcus Brinkmann <marcus@g10code.com>

Release GPGME 1.1.7.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2008-09-19 Moritz <moritz@gnu.org>

* configure.ac: Remove bogus "esac".

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

* configure.ac (_XOPEN_SOURCE) [apple-darwin]: Define it.

2008-07-04 Werner Koch <wk@g10code.com>

* config.guess, config.sub: Update to 2007-11-19. Also update
missing et al scripts.

2008-04-01 Werner Koch <wk@g10code.com>

* configure.ac (AC_INIT): Fix quoting.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump required version of automake up to 1.10.
* autogen.sh: Fix
aclocal check.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

Release GPGME 1.1.6.

* configure.ac: Support gpgconf.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* assuan-pipe-connect.c (pipe_connect_gpgme): Do not close process
handle here. Use this function also on Unix systems.

* assuan-pipe-connect.c (pipe_connect_gpgme): Fix last change.

* assuan-pipe-connect.c (pipe_connect_gpgme): New function, use it
if _ASSUAN_IN_GPGME_BUILD_ASSUAN.

2007-09-17 Werner Koch <wk@g10code.com>

* configure.ac: Use the svn version magic.

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for C++, Qt and support --enable-w32-qt.
* m4/pkg.m4: New file.

2007-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (--enable-w32-glib): Use --enableval, not
--withval.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-socket.c (_assuan_close): Always use close().
* assuan/assuan.h (_gpgme_io_close): New prototype.
(close): New
macro, define as _gpgme_io_close.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-io.c (_assuan_simple_read, _assuan_simple_write):
Always use read/write (which means _gpgme_io_read and
_gpgme_io_write).

2007-07-09 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.5.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGSM_DEFAULT) [*-mingw32*]: Initialize it.
(HAVE_ASSUAN_H): Set to 1 if we have it.
(funopen): Use AC_REPLACE_FUNCS.
(USE_DESCRIPTOR_PASSING): Define to 1 if we have it. Do not
define it at all if we don't.
(NETLIBS) [have_w32_system]: Add -lws2_32.
(DIRSEP_C, DIRSEP_S, EXPSEP_C, EXPSEP_S, PATHSEP_S)

[HAVE_DOSISH_SYSTEM]: Remove definitions.

* assuan/assuan.h (_assuan_funopen): Define to _gpgme_funopen.
* assuan/funopen.c: Move to ../gpgme/funopen.c.
* assuan/Makefile.am (libassuan_la_SOURCES): Remove funopen.c.

2007-07-04 Marcus Brinkmann <marcus@g10code.de>

*
assuan/Makefile.am (INCLUDES): Include $(top_srcdir)/gpgme.
* assuan/assuan.h: Include <ath.h> instead of trying to duplicate
the definitions.

* assuan/: Update files to 2007-07-04 version of assuan.

* autogen.sh: Use = not == in test.

2007-03-05 Werner Koch <wk@g10code.com>

Released 1.1.4.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

* autogen.sh: New option --force.

2007-01-29 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.3.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-01-26 Werner Koch <wk@g10code.com>

* configure.ac: Changed gpg and gpgsm version checks to work with
arbitrary names of the gpg binary. New option --disable-gpg-test
and --disable-gpgsm-test.

2007-01-09 Werner Koch <wk@g10code.com>

* configure.ac (NEED_GPG_VERSION, NEED_GPGSM_VERSION): Must define
after it may have been changed by an option.

2007-01-08 Werner Koch <wk@g10code.com>

* configure.ac: Require gpg-error 1.4 due to the use of
gpg_error_from_syserror.
(HAVE_ASSUAN_H):

New.

2007-01-05 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add options --with-gpg-version and
--with-gpgsm-version to allow overriding the minimum version
requirements.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Fix two typos in last change.

2006-12-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Use descriptor passing only if --enable-fd-passing
is provided.

* configure.ac: Add check for use of descriptor passing.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump to 1.3.0.

2006-09-19 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Turn stpcpy into a replacement function.
Check for unistd.h and add setenv as replacement function.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for network libraries and set NETLIBS.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

* lang, lang/cl: New subdirectories.
*
lang/Makefile.am, lang/README: New files.
* configure.ac (AC_CONFIG_FILES): Add lang/Makefile,
lang/cl/Makefile and lang/cl/gpgme.asd.
* Makefile.am (SUBDIRS): Add lang.

2006-03-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.1.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for release.
(LIBGPGME_LT_REVISION): Reset to 0 for release.

2006-01-05 Werner Koch <wk@g10code.com>

* configure.ac: Test for inline feature.
(AH_BOTTOM): New to define the pure attribute.

2006-01-03 Werner Koch <wk@g10code.com>

* configure.ac: Append SVN revision to the version.

2005-11-18 Werner Koch <wk@g10code.com>

* configure.ac (BUILD_REVISION): New.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add support for --enable-w32-glib (disabled by default). Invoke AM_PATH_GLIB_2_0.

2005-11-16 Werner Koch <wk@g10code.com>

* configure.ac
(CFLAGS) [W32]: Make sure that -mms-bitfields are used.

2005-11-15 Werner Koch <wk@g10code.com>

* configure.ac: Create BUILD_FILEVERSION from SVN Revision.

* autogen.sh [W32]: Build shared and static versions of the library.

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

* w32-dll/ChangeLog, w32-dll/build-dll, w32-dll/gpgme.def: Remove files.

* configure.ac: Instead checking for windres and dlltool, invoke AC_LIBTOOL_WIN32_DLL and AC_LIBTOOL_RC.
* src/Makefile.am [HAVE_W32_SYSTEM]: Use libtool, which simplifies the rules.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.0.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for release.
(LIBGPGME_LT_REVISION): Reset to 0 for release.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (HAVE_PTH): Don't add $PTH_CFLAGS to $CFLAGS here.

2005-08-26 Werner Koch <wk@g10code.com>

* configure.ac (SEPCONSTANTS): New to define DIRSEP_C et al.

2005-08-19 Werner Koch <wk@g10code.com>

*
configure.ac [W32]: Create values for versioninfo.rc and list substuture versioninfo.rc.
* configure.ac: Define ENABLE_GPGSM.

2005-08-08 Werner Koch <wk@g10code.com>

* configure.ac (stpcpy): Changed from replace to test.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AH_BOTTOM): Removed.

2005-03-09 Werner Koch <wk@g10code.com>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): Assume no when cross-compiling.

* Makefile.am (EXTRA_DIST): Include autogen.sh

* autogen.sh: Added the usual code to build for W32 (--build-w32).

* configure.ac: Fixed the mingw32 host string, removed OS/2 stuff.
(HAVE_DRIVE_LETTERS): Removed.
(HAVE_W32_SYSTEM): Added.
(AC_GNU_SOURCE): New to replace the identical AH_VERBATIM.
(AH_BOTTOM): Added.

2004-12-28 Werner Koch <wk@g10code.com>

Released 1.0.2.

* Makefile.am (AUTOMAKE_OPTIONS): Build bzip 2 version.
(ACLOCAL_AMFLAGS): Add -I m4.
* configure.ac: Require automake 1.9.3 and autoconf 2.59.

* acinclude.m4:
Changed quoting for automake 1.9.
* README: Use SHA1 instead of MD5.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Replace ttyname_r if it doesn't exist (and warn in
that case).

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* README: Refer to COPYING.LESSER and "each file" instead of
COPYING.
* COPYING.LESSER: New file.
* gpgme.spec.in (%doc): Add COPYING.LESSER.
* acinclude.m4, configure.ac, Makefile.am: Change license to LGPL
2.1 or later.
* TODO: Add copyright notice.
* README.CVS: Likewise.

* configure.ac (GPGSM_VERSION): Fix filter to get it.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.1.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 2.
(AC_INIT): Set version to 1.0.1.

* configure.ac: Set HAVE_GPGSM to true only if $GPGSM is not "no".

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.0.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.
(AC_INIT): Set version to 1.0.0.

* Makefile.am
(EXTRA_DIST): Remove README-alpha.
* README-alpha: Remove file.

2004-09-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable AC_CONFIG_MACRO_DIR for now.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Improve diagnostics with version check.

* configure.ac: Print diagnostics about found thread libraries at
the end. Check for the versions of GPG and GPGSM and print the
found versions at the end.
(HAVE_GPGSM): Do not require GPGSM to exist and be readable.
(AC_CONFIG_MACRO_DIR): Invoke with argument m4.

* acinclude.m4: Add copyright notice.
(jm_GLIBC21, AM_PATH_GPG_ERROR, _AC_PTH_ERROR, _AC_PTH_VERBOSE,
AC_CHECK_PTH): Removed.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for <sys/uio.h>.

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

Released 0.9.0.

* configure.ac (AC_INIT): Set version number to 0.9.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by one.
(LIBGPGME_LT_REVISION): Reset to zero.

2004-05-21
Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGME_CONFIG_API_VERSION): New variable,
substitute it.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.7.

* configure.ac (LIBGPGME_LT_REVISION): Bump it up.

2004-04-02 Thomas Schwinge <schwinge@nic-nac-project.de>

* autogen.sh: Added ACLOCAL_FLAGS.

2004-04-06 Werner Koch <wk@gnupg.org>

Released 0.4.6.

* config.guess, config.sub, ltmain.sh: Updated to those from
libtools 1.5.4.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.5.

* configure.ac (NEED_GPGSM_VERSION): Bump up to 1.9.6.

* Makefile.am (EXTRA_DIST): Remove autogen.sh and README.CVS.

2004-02-18 Werner Koch <wk@gnupg.org>

* configure.ac: Make the check for funopen fail with just a
warning.

2004-02-11 Werner Koch <wk@gnupg.org>

* autogen.sh (check_version): Removed bashism and simplified.

2004-02-10 Werner Koch <wk@gnupg.org>

* configure.ac: Fixed funopen test change.

2004-02-06 Moritz Schulte
<mo@g10code.com>

* configure.ac: Fix funopen replacement mechanism.

2004-01-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add invocation of AC_SYS_LARGEFILE, AC_TYPE_OFF_T
and AC_FUNC_FSEEKO.

2004-01-12 Werner Koch <wk@gnupg.org>

Released 0.4.4.

* configure.ac: Bumbed LT_Revision; now at C12/A1/R1.
(NEED_GPGSM_VERSION): Set to 1.9.3.
(min_automake_version): Added.
* README.CVS: New.
* Makefile.am (EXTRA_DIST): Added README.CVS.
* autogen.sh: Updated.

2003-11-19 Werner Koch <wk@gnupg.org>

* acinclude.m4: Add AM_PATH_GPG_ERROR.
* configure.ac: Check for timegm. Made warning messages more
prominent.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.3.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by 1.
(LIBGPGME_LT_REVISION): Set to 0.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Require libgpg-error 0.5.

* acinclude.m4: Remove libtool cruft, add jm_GLIBC21.
* configure.ac: Add check for
getenv_r, and call jm_GLIBC21.
Define HAVE_THREAD_SAFE_GETENV if appropriate.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Remove GPGME_CONFIG_LIBS and GPGME_CONFIG_CFLAGS.

2003-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Move invocation of AC_CANONICAL_HOST up to
suppress warning by autoconf.

2003-08-30 Robert Schiele <rschiele@uni-mannheim.de>

* gpgme.spec.in: %{_infodir}/dir is not packaged,
remove to prevent checking failure.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: If building Assuan, check for funopen and
fopencookie, and make isascii, putc_unlocked and memrchr
replacement functions.
(AM_PATH_GPG_ERROR): Require 0.3.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.3.

2003-07-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.

Released 0.4.2.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac:
Complain if libgpg-error is not found.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.2.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Bump up to 11.

* configure.ac: Use AM_PATH_GPG_ERROR.

* configure.ac: Check for libgpg-error. Define
GPG_ERR_SOURCE_DEFAULT.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump up to 1.2.2.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

In all files, replace the Gpgme* type names with the new gpgme_*
type names.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* assuan/: Update files to 2002-11-10 version of assuan.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* bonobo/gpgme.c, bonobo/main.c, bonobo/main.h, bonobo/Makefile,
bonobo/Makefile.am, bonobo/Makefile.in: Dead files removed.
* configure.ac: Remove automake conditional BUILD_BONOBO
(AC_CONFIG_FILES): Remove bonobo/Makefile.
*
Makefile.am (bonobo): Remove variable.
(SUBDIRS): Remove ${bonobo}.

* configure.ac: Remove all uses of GNUPG_CHECK_TYPEDEF, for byte,
ushort, ulong, u16 and u32.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Remove macro.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: New conditional HAVE_LD_VERSION_SCRIPT.
Call AC_CANONICAL_HOST, use host instead target.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump up to 0.4.1.

Released 0.4.0.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (automake_vers): Require 1.7 (really 1.7.1) for the
conditional source distribution bug fix.

2002-12-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Increase by one.
(LIBGPGME_LT_AGE, LIBGPGME_LT_REVISION): Set to 0.

2002-11-28 Marcus Brinkmann <marcus@g10code.de>

* NEWS: Add note about moving "gpgmeplug" to the "cryptplug"
package.
* README: Remove instructions related to "gpgmeplug".
* configure.ac:
Remove enable option "gpgmeplug" and automake
conditional BUILD_GPGMEPLUG, as well as the status info about it.
(GPGMEPLUG): Remove variable.
* Makefile.am (gpgmeplug): Remove variable.
(SUBDIRS): Remove ${gpgmeplug}.
* cryptplug.h, gpgme-openpgp.c, gpgmeplug.dox, gpgme-smime.c,
Makefile.am, gpgmeplug.c, ChangeLog: Files removed.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable GPGSM for all dosish systems.

2002-10-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_GPGSM.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version up to 0.4.0.
(NEED_GPG_VERSION): Bump up to 1.2.0.
(NEED_GPGSM_VERSION): Bump up to 0.9.0.
* README: Update version numbers.
* NEWS: Start entry for 0.4.0.

2002-09-20 Werner Koch <wk@gnupg.org>

Released 0.3.11.

* configure.ac: Bump up LIBGPGME_LT_REVISION.

* configure.ac (AC_CHECK_HEADERS): Check for sys/select.h.

2002-09-04 Marcus Brinkmann
<marcus@g10code.de>

* autogen.sh (autoconf_vers): Bump up to 2.53 to get the @&t@
quadrigraph. Always cutting the edge!

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Create and substitute LTLIBOBJS.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.10.

* NEWS: Update for 0.3.9 release.
* configure.ac: Bump up LIBGPGME_LT_REVISION.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.spec.in: Changed user name in Wojciech Polak's email
address from ghostface to polak per request by himself.

2002-08-28 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): New.
* configure.ac: Use it.

2002-08-23 Werner Koch <wk@gnupg.org>

* configure.ac (GPGME_CONFIG_CFLAGS): Renamed from GPGME_CFLAGS
and removed the libpath because it is set by the config script.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump version number to 0.3.10.

* NEWS: Add template for development version.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

Released 0.3.9.

* NEWS: Update for 0.3.9 release.
* Makefile.am (EXTRA_DIST): Add gpgme.spec.in.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* jnlib/argparse.c, jnlib/argparse.h, jnlib/ChangeLog,
jnlib/dotlock.c, jnlib/dotlock.h, jnlib/libjnlib-config.h,
jnlib/logging.c, jnlib/logging.h,jnlib/Makefile.am,
jnlib/mischelp.h, jnlib/README, jnlib/stringhelp.c,
jnlib/stringhelp.h, jnlib/strlist.c, jnlib/strlist.h,
jnlib/types.h, jnlib/xmalloc.c, jnlib/xmalloc.h: Remove files.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Remove jnlib.
* configure.ac: Don't check for unsigned short or unsigned long.
Don't check for memicmp, strlwr, strtoul, memmove, stricmp.
Make stpcpy a replaced function.
Don't define HAVE_JNLIB_LOGGING.
Don't generate jnlib/Makefile.

2002-07-02 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version number to 0.3.9; add a comment on
when to change it.

* gpgme.spec.in:
New. Contributed by Wojciech Polak.
* Makefile.am (dist-hook): New.

* AUTHORS: Added Wojciech and bug reporting addresses.

2002-06-25 Werner Koch <wk@gnupg.org>

Released 0.3.8.

* configure.ac: Bumbed LT version to 9/3/0.
(NEED_GPGSM_VERSION): Need 0.3.8 due to fixed export command.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.7.

* configure.ac (AC_INIT): Set version to 0.3.7.
(LIBGPGME_LT_REVISION): Add one.

* README: Document version requirement correctly.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* acinclude.m4: Fix Pth check so that it doesn't error out if pth
is not found.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add checks for Pth and pthreads.
* acinclude.m4: Add slightly hacked check for pth (seems to be an
autoconf version problem).

2002-05-21 Werner Koch <wk@gnupg.org>

* configure.ac (NEED_GPGSM_VERSION): We need gpgsm 0.3.7.

2002-05-03 Werner Koch <wk@gnupg.org>

Released 0.3.6.

2002-04-05
Marcus Brinkmann <marcus@g10code.de>

* acconfig.h: File removed.
* configure.ac (NEED_GPG_VERSION): Add description.
(NEED_GPGSM_VERSION): Likewise.
(HAVE_DOSISH_SYSTEM): Likewise.
(HAVE_DRIVE_LETTERS): Likewise.
(GPG_PATH): Likewise.
(GPGSM_PATH): Likewise.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Likewise.

2002-04-01 Werner Koch <wk@gnupg.org>

Released 0.3.5.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_DOSISH_SYSTEM.

2002-03-04 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version to 0.3.4-cvs to continue development.

Released 0.3.4.

* configure.ac: Bumbed LT version numbers to (7,1,0), requires
gpgsm 0.3.1.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Change version number to snapshot CVS
version.

2002-02-13 Werner Koch <wk@gnupg.org>

* configure.ac (vasprintf,fopencookie): Add checks.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT):
Bump version to 0.3.3.
* jnlib/Makefile.am: Rever to older version that includes xmalloc
but not dotlock and some other files. Reported by Stphane
Corthsy.

2002-02-10 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.2.

* configure.ac (AC_INIT): Bump version to 0.3.2.
* jnlib/libjnlibconfig.h: Revert to older version that doesn't
expect libgcrypt. Reported by Jose Carlos Garcia Sogo
<jsogo@debian.org>.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.1.

* configure.ac (LIBGPGME_LT_CURRENT): Bump it up to 6!
(NEED_GPGSM_VERSION): Bump it up to 0.3.0!
(AC_INIT): Bump version to 0.3.1

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (HAVE_JNLIB_LOGGING): Define always for assuan.

2001-12-19 Werner Koch <wk@gnupg.org>

* configure.ac (VERSION,PACKAGE): Defined and subst. Used for
AM_INIT_AUTOMAKE and moved all version number more to the top.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (libtool_vers):

Bump to 1.4.

* configure.ac (LIBGPGME_LT_CURRENT): Increment.
(LIBGPGME_LT_AGE): Reset.
Improve comment.
Fix wrong comment character.

2001-12-18 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Fixed for new automake.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPG): Substitute this variable.
(GPGSM): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_CONFIG_FILES): Add tests/gpg/Makefile and
tests/gpgsm/Makefile.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgmeplug): New variable, set to gpgmeplug if
[BUILD_GPGMEPLUG].
* configure.ac (AC_CONFIG_FILES): Add gpgmeplug/Makefile.
Support --enable-gpgmeplug.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Tighten version dependencies.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Support building the assuan library
(currently if GPGSM_PATH is set)..
* configure.ac: Support building
the assuan library.
* assuan: New directory, populated with the Assuan library
(copied from the newpg repository).

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPGSM_VERSION): New variable. Treat it
similarly to NEED_GPG_VERSION.
* acconfig.h: Likewise.

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* configure.in: Renamed to ...
* configure.ac: ... this. Update to autoconf 2.52. Lots of small
changes in the transition. Support --with-gpg=PATH and
--with-gpgsm=PATH options. Check if test suites can be run.
* acconfig.h: Add GPGSM_PATH.
* Makefile.am: New variable `tests', set to `tests' if
RUN_GPG_TESTS.
(SUBDIRS): Replace string `tests' with variable `tests'.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Invoke automake with `-a' (add missing files).
Do not invoke configure.

2001-09-17 Werner Koch <wk@gnupg.org>

Released 0.2.3.

* configure.in (NEED_GPG_VERSION): Set to 1.0.6. Incremented LT
current
and age.

* Makefile.am (SUBDIRS): Add doc

2001-06-12 Werner Koch <wk@gnupg.org>

Released 0.2.2.

2001-04-05 Werner Koch <wk@gnupg.org>

* configure.in (NEED_GPG_VERSION): Set to 1.0.4g

2001-04-02 Werner Koch <wk@gnupg.org>

Released 0.2.1.

Changed the copyright notices all over the place.

2001-02-28 Werner Koch <wk@gnupg.org>

Released 0.2.0.

2001-01-18 Werner Koch <wk@gnupg.org>

* autogen.sh: Added option --build-w32.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-05-11 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.
(clean-local): New rule.
* gpg/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.

2011-05-05 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am: Unset GPG_AGENT_INFO when setting up local
configuration.
(clean-local): Shut down local gpg-agent.

2011-05-04 Marcus Brinkmann <marcus@g10code.com>

* gpg/t-import.c (check_result): Complete secret key pair counting
and disable status check, as GPG 2.1 currently emits two IMPORT_OK
lines and we only look at the first.

2011-04-27 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am (DISTCLEANFILES):
Add S.gpg-agent.
(mkdemodirs, ./Alpha/Secret.gpg): Remove targets.
(GNUPGHOME): Export as absolute build directory (for gpg-agent).
(./pubring.gpg): Remove --homedir option, import secdemo.asc.
(clean-local): Rewrite.
* gpg/secdemo.asc: New file.
* gpg/pubkey-1.asc, gpg/seckey-1.asc: Change passphrase to
"abc" (now needed as GnuPG 2.1 asks for secret key passphrase on

import).
* gpg/t-keylist.c (keys): Update key info for Joe Random Hacker.
(main): Disable check for can_encrypt, as this is now in a
different subkey.
* gpg/t-encrypt-sign.c (check_result): Allow RMD160 hash
algorithm.
* gpg/t-import.c (check_result): One secret key pair now counts as
two secret keys, allow that.

2009-11-03 Werner Koch <wk@g10code.com>

* run-support.h (fail_if_err): Include program name.

* run-sign.c (main): Add option --uiserver.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan/t-command.c: Update to new interface.

2009-10-15 Werner Koch <wk@g10code.com>

* run-verify.c:
New.

2009-08-06 Werner Koch <wk@g10code.com>

* run-sign.c: New.

2009-07-07 Werner Koch <wk@g10code.com>

* run-keylist.c (main): Add options --cms and --openpgp.

* gpg/pgp-keylist.c: Rename to ...
* run-keylist.c: ... this.
* gpg/pgp-import.c: Rename to ...
* run-import.c: ... this.
* gpg/pgp-export.c: Rename to ...
* run-export.c: ... this.
* run-support.h: New. Copied from gpg/t-support.h.
* gpg/Makefile.am (noinst_PROGRAMS): Remove them.
* Makefile.am (noinst_PROGRAMS): Add them.
(noinst_HEADERS): New.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-support.h (passphrase_cb): Implement write() according to
the book to silence compiler warning.
* gpgsm/t-support.h (passphrase_cb): Likewise.

2009-06-16 Werner Koch <wk@g10code.com>

 * gpg/pgp-import.c: New.
 * gpg/t-support.h (print_import_result, nonnull): Factored out
 from other tools.

 * gpg/pgp-export.c, gpg/pgp-keylist.c: New.

2009-06-09 Werner Koch <wk@g10code.com>

 * gpg/Makefile.am
 (./pubring.gpg): Ignore errors in case of
 already imported keys. Add --no-permission-warning and remove
 obsolete --allow-secret-key-import.
 * gpg/mkdemodirs.in (GPG): Add --no-permission-warning.

 * gpg/t-edit.c (edit_fnc): Use gpgme_io_write.

2009-04-19 Moritz <moritz@gnu.org>

 * gpg/Makefile.am (EXTRA_DIST): Replaced mkdemodirs with mkdemodirs.in.
 (mkdemodirs): New target.
 (clean-local): Added command for removing mkdemodirs script.
 (./Alpha/Secret.gpg): Added dependency on mkdemodirs.

 * gpg/mkdemodirs: Renamed to ...
 * gpg/mkdemodirs.in: ... here.
 * gpg/mkdemodirs.in (GPG): Derive value from @GPG@ instead of
 hard-coding "gpg".

2009-02-24 Werner Koch <wk@g10code.com>

 * opassuan/t-command.c: Adjust for changed new op_assuan interface.

2009-02-03 Werner Koch <wk@g10code.com>

 * gpg/t-keylist.c (main): Check that new fields is_cardkey and
 card_number are not set.

2009-01-26 Werner Koch <wk@g10code.com>

 * opassuan/: New.
 * opassuan/Makefile.am:
 New.
 * opassuan/t-command.c: New.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Fix path to include file.
* gpg/Makefile.am (INCLUDES), gpgsm/Makefile.am (INCLUDES): Likewise.

2008-11-18 Werner Koch <wk@g10code.com>

* gpgsm/cms-decrypt.c: New.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (INCLUDES, LDADD): Replace gpgme path with src.
* gpg/Makefile.am (INCLUDES, LDADD, t_thread1_LDADD): Likewise.
* Makefile.am (LDADD): Likewise.

2008-10-30 Werner Koch <wk@g10code.com>

* gpgsm/cms-keylist.c: New.

2008-06-19 Werner Koch <wk@g10code.com>

* gpg/t-gpgconf.c (dump_arg): Add new types. Print strings in
quotes.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (DISTCLEANFILES): Add pubring.kbx~.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-gpgconf.c (main): Allow for dirmngr not to be available.

* gpg/Makefile.am (./gpg-agent.conf): Correct pinentry path.

* gpg/pinentry:
New file.
* gpg/Makefile.am (DISTCLEANFILES, all-local): Add gpg-agent.conf
(./gpg-agent.conf): New target.
(EXTRA_DIST): Add pinentry.

* gpg/t-gpgconf.c (main): Exit early if compiled without gpgconf.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Add pubring.kbx and dirmngr.conf.

* Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for

GNUPGHOME.
* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS): Add t-gpgconf.
t-gpgconf.c: New file.

2007-11-23 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (show_auditlog): Check for GPG_ERR_ASS_UNKNOWN_CMD.

2007-11-23 Werner Koch <wk@g10code.com>

* gpgsm/t-verify.c (check_result): Don't exit on error but set a flag.
(main): Cosnult flag for return value.
(show_auditlog): New.
(main): Use it.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* t-engine-info.c
(check_engine_info): Fix debug output.
* gpg/Makefile.am (tests_unix): New variable.
(TESTS): Use it.
* gpg/t-support.h (passphrase_cb) [HAVE_W32_SYSTEM]: Use WriteFile instead of write.
* gpg/t-wait.c [HAVE_W32_SYSTEM]: Define sleep as _sleep.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (main): Release TEXT and SIG.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Change := into =.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgsm/t-support.h (init_gpgme) [W32]: Do not init the locales as
the constants are not available.

2007-02-26 Werner Koch <wk@g10code.com>

* gpg/t-verify.c (double_plaintext_sig): New.
(main): Check it.

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Skip unknown keys. Newer versions of
GPGSM import more keys than older ones.

2005-12-06 Werner Koch <wk@g10code.com>

* gpg/t-keylist.c (main): Changed for that secondary keys now have
a fingerprint.
*
gpg/t-keylist-sig.c (main): Ditto.
* gpgsm/t-keylist.c (main): Ditto. The test used to be wrong.

2005-10-18 Werner Koch <wk@g10code.com>

* gpg/pubdemo.asc, gpg/secdemo.asc: Add 2 expired subkeys to
Whisky.
* gpg/t-keylist.c: Reordered list to match new demo keyring. Add
arg for number of subkeys and for extra checking function.
(main): Enhanced a few error outputs. Changed subkey
counting. Call extra checking function.
(check_whisky): New.

2005-10-07 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Allow for an email address as a second
uid.

* gpg/t-sig-notation.c: Change critical notation to something
GnuPG understands.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Remove gpg.conf.
(DISTCLEANFILES): Add gpg.conf.
(all-local): Add gpg.conf.
(./gpg.conf): New target.
* gpg/gpg.conf: Remove file.

* gpg/Makefile.am (EXTRA_DIST): Add gpg.conf.

* gpg/Makefile.am (TESTS): Add t-sig-notation.
* gpg/t-sig-notation.c
(check_result): New file.
* gpg/t-verify.c (check_result): Also check the length of the
notation data.
* gpg/gpg.conf: New file.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Add t-filename.
* gpg/t-filename.c: New file.

2005-09-23 Werner Koch <wk@g10code.com>

 * gpg/t-support.h (init_gpgme) [W32]: Don't use LC_MESSAGES.

 * gpg/t-encrypt-large.c: New test.
 * gpg/Makefile.am (TESTS): Add t-encrypt-large.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

 * gpg/Makefile.am (TESTS): Add t-wait.
 * gpg/t-wait.c (main): New test.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

 * gpg/mkdemodirs: Add copyright notice.

 * gpgsm/Makefile.am, gpgsm/t-support.h, gpgsm/t-decrypt.c,
 gpgsm/t-encrypt.c, gpgsm/t-export.c, gpgsm/t-genkey.c,
 gpgsm/t-import.c, gpgsm/t-keylist.c, gpgsm/t-sign.c,
 gpgsm/t-verify.c, gpg/Makefile.am, gpg/t-decrypt.c,
 gpg/t-decrypt-verify.c, gpg/t-edit.c, gpg/t-encrypt.c,
 gpg/t-encrypt-sign.c, gpg/t-encrypt-sym.c,
 gpg/t-eventloop.c,
 gpg/t-export.c, gpg/t-genkey.c, gpg/t-import.c, gpg/t-keylist.c,
 gpg/t-keylist-sig.c, gpg/t-sign.c, gpg/t-signers.c,
 gpg/t-support.h, gpg/t-thread1.c, gpg/t-trustlist.c,
 gpg/t-verify.c, Makefile.am, t-data.c, t-engine-info.c,
 t-version.c: Change license to LGPL.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-keylist.c (struct): Add new fields VALIDITY and
 KEY_LENGTH.
 (main): Use them.
 * gpgsm/t-import.c (check_result): New argument total_stat.
 (main): Pass this argument. Reduce number of total considered
 keys to 1 for the second test.

2004-04-05 Werner Koch <wk@gnupg.org>

 * gpgsm/Makefile.am: Changed the faked system time to 20011213T12000.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-keylist.c: Add chain IDs.

2004-03-03 Werner Koch <wk@gnupg.org>

* gpgsm/t-export.c (main): Also check exporting 2 certificates.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgsm/t-import.c (check_result): gpgsm does now
return info in
the result->imports; adjust for that.

* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Reset the GPG_AGENT_INFO.

Include config.h at the top of each C source. This is required
due to LFS support.

* gpg/t-keylist-sig.c (main): s/class/sig_class/.
* gpg/t-signers.c (check_result): Ditto.
* gpg/t-sign.c (check_result): Ditto.
* gpg/t-encrypt-sign.c (check_result): Ditto.
* gpgsm/t-sign.c (check_result): Ditto.

2004-01-12 Werner Koch <wk@gnupg.org>

* gpg/t-keylist-sig.c (main): Temporary disabled one test due top
gpg 1.3.4 problems.
* gpg/t-import.c (check_result): Likewise.

2003-11-19 Werner Koch <wk@gnupg.org>

* gpg/t-support.h (DIM): Added.

* gpg/t-verify.c (check_result): Rewrote test for notations
because the order of notaions is not guaranteed.

* gpgsm/t-support.h (fail_if_err): Also print the numeric values.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: Include <sys/types.h> for old systems.

* gpgsm/Makefile.am
(DISTCLEANFILES): Add random_seed.

* gpg/t-thread1.c (thread_one): Do not call initialize_gpgme.
Likewise.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-thread1.c (main): Call init_gpgme here.

(initialize_gpgme): Function removed.

* gpg/t-thread1.c: New file.
* gpg/Makefile.am (TESTS): Add t-thread1.c.
(t_thread1_LDADD): New variable.
(LDADD): Remove GPG Error lib.
* gpgsm/Makefile.am (LDADD): Likewise.

* gpg/t-import.c (main): Likewise.
* gpg/t-keylist-sig.c (main): Likewise.
* gpg/t-keylist.c (main): Likewise.
* gpg/t-sign.c (main): Likewise.
* gpg/t-signers.c (main): Likewise.
* gpg/t-trustlist.c (main): Likewise.
* gpgsm/t-support.h: Include <stdlib.h> and <locale.h>.
(init_gpgme): New function.
* gpg/t-support.h: Likewise.
* gpgsm/t-verify.c (main): Call init_gpgme.
* gpgsm/t-decrypt.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-genkey.c (main): Likewise.
* gpgsm/t-import.c (main):
Likewise.
* gpgsm/t-keylist.c (main): Likewise.
* gpgsm/t-sign.c (main): Likewise.
* gpg/t-verify.c (main): Call init_gpgme.
* gpg/t-decrypt-verify.c (main): Likewise.
* gpg/t-decrypt.c (main): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt-sym.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpg/t-genkey.c (main): Likewise.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-sign.c (check_result): Change output format for signature
class to unsigned int.
* gpg/t-signers.c (check_result): Likewise.
* gpg/t-encrypt-sign.c (check_result): Likewise.
* gpgsm/t-sign.c (check_result): Likewise.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (check_result): Change type of SUMMARY to

unsigned int.
* gpg/t-decrypt-verify.c (check_verify_result): Likewise.
* gpg/t-keylist-sig.c (keys): Change type of member CLASS
to
unsigned int.
* t-data.c (read_cb): Change type of AMOUNT to unsigned int.
* t-version.c (version): Remove unused variable.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpg/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpgsm/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* gpg/Makefile.am (noinst_HEADERS): New variable.
* gpg/t-support.h: New file.
* gpgsm/Makefile.am (noinst_HEADERS): New variable.
* gpgsm/t-support.h: New file.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Adapt to new syntax.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

2003-05-28 Marcus
Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Rewrite recipient management.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Order t-keylist and t-keylist-sig after

t-import.
* gpg/t-edit.c (edit_fnc): Fix primary UID for keylisting tests.
* gpg/t-keylist.c: Change order of user IDs.
* gpg/t-keylist-sig.c: Likewise.
* gpg/t-import.c: Add support for gpg in CVS.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* t-data.c: Remove TEST_OUT_CB.
(main): Likewise.
* gpg/t-trustlist.c (main): Access ITEM directly.

* (t-decrypt-verify.c, t-decrypt.c, t-edit.c, t-encrypt-sign.c,
t-encrypt-sym.c, t-sign.c, t-signers.c): Include <unistd.h>.
(passphrase_cb): Rewritten.
* t-edit.c (edit_fnc): Rewritten.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

*
gpg/t-keylist-sig.c (main): Remove timestamp check.

* gpgsm/t-keylist.c: Add check for timestamp.

* gpg/Makefile.am (TESTS): Add t-keylist-sig.
* gpg/t-keylist-sig.c: New file.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Do not call print_op_info.
(print_op_info): Function removed.

* gpg/t-keylist.c: Rewritten.
* gpgsm/t-keylist.c (main): Rewritten.
* gpg/t-edit.c (main): Do not use gpgme_key_get_as_xml. Use
gpgme_key_unref instead gpgme_key_release.
* gpg/t-signers.c (main): Use gpgme_key_unref instead
gpgme_key_release.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-trustlist.c: Rewritten.

* gpg/t-verify.c (main): Rewritten.
* gpg/t-decrypt-verify.c: Rewritten.
* gpgsm/t-verify.c (main): Rewritten.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-decrypt.c (main): Rewritten.

* gpg/t-decrypt.c: Rewritten.

* gpg/t-signers.c: Rewritten.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

*
gpg/t-encrypt-sign.c (check_result): Rewritten.

* gpg/t-sign.c: Rewritten.
* gpgsm/t-sign.c: Rewritten.
* gpg/t-encrypt.c: Check for invalid recipients.
* gpgsm/t-encrypt.c: Likewise.

* gpg/t-import.c (check_result): Really use FPR.
* gpgsm/t-import.c (check_result): Rewritten.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-import.c: Rewritten.

* gpgsm/t-genkey.c: Rewritten.
* gpgsm/Makefile.am (noinst_PROGRAMS): Add t-genkey.
* gpg/t-genkey.c: Include <stdlib.h>.
(main): Check result->fpr before checking its length.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-genkey.c: Rewritten to match new semantics.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-decrypt.c (passphrase_cb): Fix to new prototype.
* gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
* gpg/t-edit.c (passphrase_cb): Likewise.
* gpg/t-encrypt-sign.c (passphrase_cb): Likewise.
* gpg/t-encrypt-sym.c (passphrase_cb): Likewise.
* gpg/t-sign.c (passphrase_cb): Likewise.
*
gpg/t-signers.c (passphrase_cb): Likewise.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* t-engine-info.c: Use file_name instead path throughout.

* Makefile.am (TESTS): Add t-engine-info.
* t-engine-info.c: New file.
* gpg/t-encrypt.c (main): Don't print engine info.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (main): Adjust caller of gpgme_op_verify.
* gpg/t-verify.c (main): Likewise.
* gpg/t-decrypt-verify.c (main): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (./gpgsm.conf): Add a faked system time to
avoid certification's expiry.
* gpgsm/t-encrypt.c (main): Use the short certification name.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-genkey.c (main): Add missing argument to gpgme_op_genkey
invocation.

2002-10-09 Marcus Brinkmann
<marcus@g10code.de>

* gpg/t-decrypt.c (print_data): Update to new gpgme_data_read
interface, and use gpgme_engine_check_version instead
gpgme_check_version.
* gpg/t-decrypt-verify.c (print_data): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt.c (print_data): Likewise.
* gpg/t-encrypt-sign.c (print_data): Likewise.
* gpg/t-encrypt-sym.c (print_data): Likewise.
* gpg/t-eventloop.c (print_data): Likewise.
* gpg/t-export.c (print_data): Likewise.
* gpg/t-sign.c (print_data): Likewise.
* gpg/t-signers.c (print_data): Likewise.
* gpgsm/t-decrypt.c (print_data): Likewise.
* gpgsm/t-encrypt.c (print_data): Likewise.
* gpgsm/t-export.c (print_data): Likewise.
* gpgsm/t-sign.c (print_data): Likewise.
* gpg/t-verify.c (main): Likewise for gpgme_op_verify.
* gpgsm/t-verify.c (main): Likewise for gpgme_op_verify.
* t-data.c (read_once_test): Likewise.
(write_test): Update for new behaviour of data objects.

(main): Remove type test.

2002-09-30 Werner Koch <wk@gnupg.org>

*
gpgsm/t-keylist.c (doit): Add arg SECRET.
(main): Add option --secret.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* t-version.c: Include <string.h>. Reported by Stphane Corthsy.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-keylist.c (main): Test PATTERN for NULL before printing.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-08-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: Also add a test for the expire command (testing
the passphrase callback).

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: New file.
* gpg/Makefile (TESTS): Add t-edit.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Change type of I to size_t and
rename to LEN.
* gpg/t-verify.c (main): Likewise. Submitted by Stphane
Corthsy.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: New file.
* gpg/Makefile (TESTS): Add t-eventloop.

2002-06-26 Werner Koch <wk@gnupg.org>

*
gpgsm/t-import.c (print_op_info): New.
(main): Print operation info.

2002-06-25 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (DISTCLEANFILES): new.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (TESTS): Add t-export.
gpgsm/t-export.c: New file.

2002-06-20 Werner Koch <wk@gnupg.org>

* gpgsm/t-sign.c (main): Also test a normal signature.

* gpg/Makefile (TESTS_ENVIRONMENT): Set GPG_AGENT_INFO empty.
* gpg/t-signers.c, gpg/t-sign.c, gpg/t-encrypt-sym.c
* gpg/t-encrypt-sign.c, gpg/t-decrypt.c
* gpg/t-decrypt-verify.c (main): Changed the GPG_AGENT_INFO check to
match the one in ../../gpgme/rungpg.c.

2002-06-12 Werner Koch <wk@gnupg.org>

* gpgsm/t-keylist.c (doit): Print operation info if available.

2002-06-10 Werner Koch <wk@gnupg.org>

* gpgsm/t-verify.c (print_sig_stat): Print the error token.

2002-06-04 Werner Koch <wk@gnupg.org>

* gpgsm/t-encrypt.c (main): Add a simple option parser and allow
to specify an encryption
key.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (all-local): Remove dependency on ./secring.gpg.
(./secring.gpg): Remove target, and move all rules for this target
to ...
(./pubring.gpg): ... here. This was necessary because GnuPG 1.0.7
does create an empty secring.gpg file when importing public keys.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.
(status_string): Add new exipred stati.

2002-05-03 Werner Koch <wk@gnupg.org>

* gpg/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.

(status_string): Add new exipred stati.

2002-04-05 Marcus Brinkmann <marcus@g10code,de>

* gpgsm/Makefile.am (./trustlist.txt): Put more into this file to
prevent use of gpg-agent.
(./gpg-agent.conf): Remove target.
(all-local): Remove ./gpg-agent.conf.

2002-04-05 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c
(main): Use gpgme_engine_check_version instead
gpgme_check_engine.
* gpgsm/t-encrypt.c (main): Likewise.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sym.

2002-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Remove random_seed, which is now
in DISTCLEANFILES.

2002-03-04 Werner Koch <wk@gnupg.org>

* gpg/Makefile.am (DISTCLEANFILES): Added.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (main): Add a few more sanity checks, and a check
for normal signatures.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sign.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sign.

2002-02-13 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (private-keys-v1.d): Don't
fail when the directory already exists.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): New target.

(distclean-local): Rename to
...
(clean-local): ... this.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (./private-keys-v1.d/$(key_id).key): Fix rule.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-genkey.c: New file (not added to Makefile.am because of
gpg-agent bug).

2002-02-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Update value.
(all-local): Add .key to keyid filename.
(./private-keys-v1.d/$(key_id)): Renamed to ...
(./private-keys-v1.d/$(key_id).key): ... this.
(all-local): Add ./gpgsm.conf, ./trustlist.txt.
(./gpgsm.conf, ./trustlist.txt): New target.
* gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Renamed to ...
* gpgsm/32100C27173EF6E9C4E9A25D3D69F86D37A4F939: ... this.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-import.c (print_op_info): New function.
(main): Use it.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-signers.c (passphrase_cb): Change type of r_hd to void**.
* gpg/t-sign.c (passphrase_cb):
Likewise.
* gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
* gpg/t-decrypt.c (passphrase_cb): Likewise.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-decrypt-verify.c: Don't include `mcheck.h'. Reported by
Stphane Corthsy.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Add missing line continuation.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (EXTRA_DIST): Add $(key_id).

2001-12-16 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile: Rename `pubcerts.kbx' to `pubring.kbx'.

2001-12-15 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (check_two_contexts): Set protocols.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-sign.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-sign.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-decrypt.c: New file.
* gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Likewise.
* gpgsm/Makefile.am (TESTS): Add
t-decrypt.
(key_id): New variable.
(all-local): New target ./private-keys-v1.d/$(key_id) added.
(./private-keys-v1.d/$(key_id)): New target.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-verify.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (GPG): Set to @GPG_PATH@.
(./pubring.gpg): Use $(GPG) instead gpg.
(./secring.gpg): Likewise.

* gpgsm/t-import.c (main): Remove third test case.
* gpgsm/Makefile.am (GPGSM): Set to @GPGSM@.
(all-local): New target.
(./pubcerts.kbx): Likewise.
* gpgsm/t-encrypt.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-encrypt.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c: New file.
* gpgsm/Makefile.am (TESTS): Add t-keylist.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/cert_dfn_pca01.der: New file.
 * gpgsm/cert_dfn_pca15.der: Likewise.
 * gpgsm/cert_g10code_test1.der: Likewise.
 * gpgsm/t-import.c: Likewise.
 *
 gpgsm/Makefile.am (EXTRADIST): Add new files.
 (TESTS): Add t-import.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

 * gpg/: New directory.
 * Makefile.am, t-verify.c, t-encrypt.c, t-signers.c, t-trustlist.c,
 t-sign.c, t-keylist.c, t-import.c, t-genkey.c, t-export.c,
 t-decrypt-verify.c, t-decrypt.c, t-version.c, t-data.c, mkdemodirs.
 cipher-1.asc, cipher-2.asc, geheim.txt, pubdemo.asc, pubkey-1.asc,
 secdemo.asc, seckey-1.asc): Move to sub directory gpg/.

 * gpg/Makefile.am (INCLUDES): Include gpgme/, not include/ and
 intl/.
 (LDD): Correct relative path to gpgme library.
 (TESTS): Remove t-version and t-data.
 * gpg/t-verify.c, gpg/t-encrypt.c, gpg/t-signers.c, gpg/t-trustlist.c,
 gpg/t-sign.c, gpg/t-keylist.c, gpg/t-import.c, gpg/t-genkey.c,
 gpg/t-export.c, gpg/t-decrypt-verify.c, gpg/t-decrypt.c,
 t-version.c, t-data.c): Include gpgme.h, not "../gpgme/gpgme.h".

 * Makefile.am: New file.
 * gpgsm/: New directory.
 * gpgsm/Makefile.am: New file.

2001-11-16 Marcus
 Brinkmann <marcus@g10code.de>

 * Makefile.am (TESTS): Add t-decrypt-verify.
 * t-decrypt-verify.c: New file.
 * cipher-2.asc: Likewise.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

 * t-data.c: Include stddef.h.
 (read_once_test): Change type of READ to size_t.
 (read_test): Likewise.
 (write_test): Likewise.

2001-10-29 Marcus Brinkmann <marcus@g10code.de>

* t-signers.c: New file.
* Makefile.am (TESTS): Add t-signers.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Revert last change.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Set environment to $(srcdir),
not current directory.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* t-data.c (write_test): New function.
(main): Invoke write_test for all rounds except TEST_OUT_CB.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Remove spurious duplicate to silence
automake.

2001-10-16 Marcus Brinkmann <marcus@g10code.de>

*
t-version.c: New file.
* t-data.c: Likewise.
* t-data-1.txt: Likewise.
* t-data-2.txt: Likewise.
* Makefile.am (TESTS): Add t-version, t-data.

2001-09-17 Werner Koch <wk@gnupg.org>

* t-keylist.c (check_two_contexts): New.

2001-09-03 Werner Koch <wk@gnupg.org>

* t-encrypt.c (print_op_info): New and use it after each operation.

2001-08-28 Werner Koch <wk@gnupg.org>

* t-sign.c (print_op_info): New and use it after each operation.

2001-03-15 Werner Koch <wk@gnupg.org>

* t-keylist.c (doit): List subkeys too, show caps.

2001-02-13 Werner Koch <wk@gnupg.org>

* t-verify.c (print_sig_stat): Repaled ulong by unsigned long
because we don't use the config stuff here.

2001-02-12 Werner Koch <wk@gnupg.org>

* tests/t-verify.c (print_sig_stat): Print info about the keys.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited
permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
(11:private-key(3:dsa(1:p129:eC_L&$2,6tx.gh1VirlqI9
,^g3.$DveUvX1'oIj)(1:q21: #UFK2z(tuVG)(1:g128:zu^Rab;qeQQA B?/6/aspfE/
gx!Mr0YY*oMrJc2xWG:.r6)(1:y128:Uf]j^@oEn4j#QrRq" RcEa E/}4C[3A
5+~~.#!+
)W&5d)ij)(1:x21:`)))
libgpgme.vers - List of symbols to export.
Copyright (C) 2002, 2004, 2005, 2009, 2012 g10 Code GmbH
#
This file is part of GPGME.
#
GPGME is free software; you can redistribute it and/or modify
it under the terms of the GNU Lesser general Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.
#
GPGME is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU Lesser General Public License for more details.
#
You should have received a copy of the GNU Lesser General Public
License along with this program; if not, see <https://www.gnu.org/licenses/>.

#--
Please remember to add new functions also to gpgme.def
#--

GPGME_1.1 {

```
global:
  gpgme_set_engine_info;

   gpgme_ctx_get_engine_info;
  gpgme_ctx_set_engine_info;

  gpgme_data_set_file_name;
  gpgme_data_get_file_name;
  gpgme_data_identify;

  gpgme_sig_notation_clear;
  gpgme_sig_notation_add;
  gpgme_sig_notation_get;

  gpgme_free;

  gpgme_op_getauditlog_start;
  gpgme_op_getauditlog;

  gpgme_conf_release;
  gpgme_conf_arg_new;
  gpgme_conf_arg_release;
  gpgme_conf_opt_change;
  gpgme_op_conf_load;
  gpgme_op_conf_save;
  gpgme_op_conf_dir;

  gpgme_cancel_async;

  gpgme_op_assuan_result;
  gpgme_op_assuan_transact;
  gpgme_op_assuan_transact_start;

  gpgme_check_version_internal;

  gpgme_io_read;
  gpgme_io_write;

  gpgme_result_ref;
  gpgme_result_unref;

  gpgme_op_import_keys;
  gpgme_op_import_keys_start;
  gpgme_op_export_keys;
  gpgme_op_export_keys_start;

  gpgme_op_assuan_transact_ext;
```

gpgme_wait_ext;

gpgme_op_vfs_mount_result;
gpgme_op_vfs_mount;
gpgme_op_vfs_create;

gpgme_key_from_uid;
gpgme_set_sub_protocol;
gpgme_get_sub_protocol;

gpgme_op_passwd_start;
gpgme_op_passwd;

gpgme_set_global_flag;

gpgme_io_writen;

gpgme_set_pinentry_mode;
gpgme_get_pinentry_mode;

gpgme_get_dirinfo;

gpgme_op_spawn_start;
gpgme_op_spawn;

gpgme_set_offline;
gpgme_get_offline;

gpgme_set_status_cb;
gpgme_get_status_cb;

gpgme_pubkey_algo_string;
gpgme_set_ctx_flag;
gpgme_get_ctx_flag;
gpgme_data_set_flag;

gpgme_op_createkey_start;
gpgme_op_createkey;
gpgme_op_createsubkey_start;
gpgme_op_createsubkey;
gpgme_op_adduid_start;
gpgme_op_adduid;
gpgme_op_revuid_start;
gpgme_op_revuid;
gpgme_op_keysign_start;
gpgme_op_keysign;
gpgme_op_tofu_policy_start;
gpgme_op_tofu_policy;

```
  gpgme_op_interact_start;
  gpgme_op_interact;

  gpgme_addrspec_from_uid;

  gpgme_set_sender;
  gpgme_get_sender;

  gpgme_op_query_swdb;
  gpgme_op_query_swdb_result;

   gpgme_op_set_uid_flag_start;
  gpgme_op_set_uid_flag;

  gpgme_op_decrypt_ext;
  gpgme_op_decrypt_ext_start;

  gpgme_data_new_from_estream;

};


GPGME_1.0 {
 global:
  gpgme_check_version;
  gpgme_get_engine_info;
  gpgme_engine_check_version;

  gpgme_err_code_from_errno;
  gpgme_err_code_to_errno;
  gpgme_err_make_from_errno;
  gpgme_error_from_errno;
  gpgme_strerror;
  gpgme_strerror_r;
  gpgme_strsource;

  gpgme_data_get_encoding;
  gpgme_data_new;
  gpgme_data_new_from_cbs;
  gpgme_data_new_from_fd;
  gpgme_data_new_from_file;
  gpgme_data_new_from_filepart;
  gpgme_data_new_from_mem;
  gpgme_data_new_from_stream;
  gpgme_data_read;
  gpgme_data_release;
  gpgme_data_release_and_get_mem;
  gpgme_data_seek;
```

gpgme_data_set_encoding;
gpgme_data_write;

gpgme_get_protocol_name;
gpgme_hash_algo_name;
gpgme_pubkey_algo_name;

gpgme_new;
gpgme_get_armor;
gpgme_get_include_certs;
gpgme_get_io_cbs;
gpgme_get_keylist_mode;
gpgme_get_passphrase_cb;
gpgme_get_progress_cb;
gpgme_get_protocol;
gpgme_get_textmode;
gpgme_release;
gpgme_set_armor;
gpgme_set_include_certs;
gpgme_set_io_cbs;
gpgme_set_keylist_mode;
gpgme_set_locale;
gpgme_set_passphrase_cb;
gpgme_set_progress_cb;
gpgme_set_protocol;
gpgme_set_textmode;
gpgme_signers_add;
gpgme_signers_clear;
gpgme_signers_count;
gpgme_signers_enum;

gpgme_key_ref;
gpgme_key_unref;
gpgme_key_release;

gpgme_trust_item_ref;
gpgme_trust_item_unref;

gpgme_cancel;
gpgme_op_card_edit;
gpgme_op_card_edit_start;
gpgme_op_decrypt;
gpgme_op_decrypt_result;
gpgme_op_decrypt_start;
gpgme_op_decrypt_verify;
gpgme_op_decrypt_verify_start;
gpgme_op_delete;
gpgme_op_delete_start;

gpgme_op_delete_ext;
gpgme_op_delete_ext_start;
gpgme_op_edit;
gpgme_op_edit_start;
gpgme_op_encrypt;
gpgme_op_encrypt_start;
gpgme_op_encrypt_ext;
gpgme_op_encrypt_ext_start;
gpgme_op_encrypt_sign;
gpgme_op_encrypt_sign_ext;
gpgme_op_encrypt_sign_start;
gpgme_op_encrypt_sign_ext_start;
gpgme_op_encrypt_result;

gpgme_op_export;
gpgme_op_export_ext;
gpgme_op_export_ext_start;
gpgme_op_export_start;
gpgme_op_genkey;
gpgme_op_genkey_result;
gpgme_op_genkey_start;
gpgme_get_key;
gpgme_op_import;
gpgme_op_import_result;
gpgme_op_import_start;
gpgme_op_keylist_end;
gpgme_op_keylist_ext_start;
gpgme_op_keylist_from_data_start;
gpgme_op_keylist_next;
gpgme_op_keylist_result;
gpgme_op_keylist_start;
gpgme_op_sign;
gpgme_op_sign_result;
gpgme_op_sign_start;
gpgme_op_trustlist_end;
gpgme_op_trustlist_next;
gpgme_op_trustlist_start;
gpgme_op_verify;
gpgme_op_verify_result;
gpgme_op_verify_start;
gpgme_wait;

gpgme_data_new_with_read_cb;
gpgme_data_rewind;
gpgme_get_sig_status;
gpgme_get_sig_string_attr;
gpgme_get_sig_ulong_attr;
gpgme_get_sig_key;

```
  gpgme_key_get_string_attr;
  gpgme_key_get_ulong_attr;
  gpgme_key_sig_get_string_attr;
  gpgme_key_sig_get_ulong_attr;
  gpgme_op_import_ext;
  gpgme_trust_item_get_int_attr;
  gpgme_trust_item_get_string_attr;
  gpgme_trust_item_release;

  gpgme_err_code_from_syserror;
  gpgme_err_set_errno;

  gpgme_op_setexpire;
  gpgme_op_setexpire_start;

  gpgme_op_revsig;
  gpgme_op_revsig_start;

 local:
  *;

};
# -*- mode: org -*-
#+TITLE: What's New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* What's New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:

| Version:        | 0.0.1                              |
| GPGME Version:  | 1.13.0                             |
| Author:         | Ben McGinnes <ben@gnupg.org>       |
| Author GPG Key: | DB4724E6FA4286C92B4E55C4321E4E2373590E5D |
| Language:       | Australian English, British English |
| xml:lang:       | en-AU, en-GB, en                   |

Last time the most obviously new thing was adding the /What's New/
section to the HOWTO.  Now it's moving it out of the HOWTO.
```

** New in GPGME 1130
 :PROPERTIES:
  :CUSTOM_ID: new-stuff-1-13-0
 :END:

Additions since GPGME 1.12.0 include:

- Moving the /What's New/ section out of the basic [[file:gpgme-python-howto.org][HOWTO]] document and
 into its own file so as to more readily include other documents
 beyond that HOWTO.
- Moving the preceding, archival, segments into [[file:what-was-new.org][another file]].
- Added =gpg.version.versionintlist= to make it easier for Python
 developers to check for a specific version number, even with beta
 versions (it will drop the "-betaN" part).
- Added expanded detail on issues pertaining to installing for Windows
 users.
- Bindings enter [[file:maintenance-mode][maintenance mode]] from January, 2019.
- Added documentation on maintenance mode and what changes can be made
 to the code when in that status. Essentially that boils down to bug
 fixes only and no feature requests.
- The import-keys-hkp.py example script, which uses the =hkp4py=
 module to search the SKS servers for a key, has been
 tightened up to
 search for both hexadecimal key IDs and user ID strings with reduced
 chance of unnecessary repitition. There may still be some
 repetition if a key includes a user ID matching the hexadecimal
 value of a key ID.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that

any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

^L

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact

all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the
ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.
^L
Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete
corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a)
Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that

uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will
operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.
^L
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on

the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined
with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited
by law if you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.
^L
11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they
do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent

license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution
system which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free

programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this.
Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED
ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms
of the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file
to most
effectively convey the exclusion of warranty; and each file should
have at least the "copyright" line and a pointer to where the full

notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston,
MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
1603972630
##Sketch 1 2
document()
layout('A4',1)
fp((0,0,0))
ft(1)
Fn('Helvetica-Bold')
Fs(18)
dstyle('Text')
fp((0,1,0.498))
ft(1)
lp((0,0,0))
lw(0.283465)

lc(1)
lj(0)
ld(())
la1()
la2()
dstyle('Application Box')
layer('Layer 1',1,1,0,0,(0,0,0))
lw(1)
r(0,0,0,0,688.145,44.1554)
lw(1)
r(0,0,0,0,682.363,85.0359)
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(605.383,329.758,0)
bs(605.383,230.546,0)
lw(1)
r(0,0,0,0,807.414,53.6148)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(480.134,240.945,0)
bs(480.358,325.277,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(474.803,432.284,0)
bs(475.334,360.243,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(354.331,432.284,0)
bs(352.806,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(212.598,432.284,0)
bs(212.598,361.417,0)
fp((0.999,1,0.4))
lw(0.283465)
r(70.5968,0,0,-56.6929,191.608,488.976,0.0603744,0.151107)
lw(1)
r(0,0,0,0,88.5492,390.805)

```
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(226.772,524.409,0)
bs(226.772,488.976,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(403.937,528.718,0)
bs(403.937,488.976,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(240.945,432.284,0)
bs(240.574,394.994,0)
bs(595.276,396.85,0)
bs(595.276,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(333.071,432.284,0)
bs(333.07,425.196,0)
bs(333.07,382.677,0)
bs(240.945,382.677,0)
bs(240.945,361.417,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,318.897,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(10)
txt('GPG',(1,0,0,0.905764,344.004,335.686))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,446.763,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
```

```
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgConf',(0.552654,0,0,0.500564,481.802,340.184),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,191.338,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgSM',(0.552654,0,0,0.500574,226.376,340.185),1,1)
G_()
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(347.244,325.984,0)
bs(347.244,325.984,0)
bs(347.244,255.118,0)
bs(304.724,255.118,0)
bs(304.724,226.771,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(233.858,325.984,0)
bs(233.858,255.118,0)
bs(276.378,255.118,0)
bs(276.378,226.771,0)
fp((0,0,0))
le()
lw(1)
Fn('Palatino-Roman')
txt('2008-07-17',(0.608301,0,0,0.608301,708.661,65.8308))
lw(1)
r(0,0,0,0,750.427,153.265)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(219.685,325.984,0)
bs(219.685,198.425,0)
bs(219.685,162.992,0)
```

G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4333,162.992,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('LDAP
 Server',(0.552654,0,0,0.552654,92.1261,148.819),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('(CRLs, Certificates)',(0.552654,0,0,0.552654,92.1261,134.646),1,1)
G_()
G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4331,99.2125,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('HTTP Server',(0.552654,0,0,0.552654,92.1259,85.0394),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('(CRLs)',(0.552654,0,0,0.552654,92.1259,70.8662),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.866,0,0,-31.2962,191.338,158.855,0.0670228,0.151107)
fp((0,0,0))

```
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('DirMngr',(0.552654,0,0,0.552654,224.02,142.978),1,1)
G_()
lw(2)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(219.15,126.18,0)
bs(219.685,77.9528,0)
bs(155.906,77.9528,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(233.858,127.559,0)
bs(233.858,99.2125,0)
bs(276.378,99.2125,0)
bs(276.378,85.0393,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(248.031,127.559,0)
bs(248.031,113.386,0)
bs(375.59,113.386,0)
bs(375.59,85.0393,0)
G()
fp((1,0.647,0.31))
lw(0.283465)
r(99.2124,0,0,-28.3464,333.07,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Certificate
 Cache',(0.552654,0,0,0.552654,382.606,69.8548),1,1)
fp((1,0.647,0.31))
lw(0.283465)
r(70.5589,0,0,-28.3464,248.031,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
```

Fn('Helvetica')
Fs(14)
style('Text')
txt('CRL Cache',(0.552654,0,0,0.552654,284.147,70.6936),1,1)
G_()
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,240.945,0)
bs(503.149,283.464,0)
bs(588.189,283.465,0)
bs(588.189,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,283.464,0)
bs(503.149,283.464,0)
bs(361.417,283.464,0)
bs(361.417,325.984,0)
lw(1)
la2(([(-4.0,
 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(361.417,283.464,0)
bs(205.512,283.465,0)
bs(205.512,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.015,85.0393,0)
bs(574.015,141.732,0)
bs(262.204,141.732,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(602.361,85.0393,0)
bs(602.361,170.079,0)
bs(439.37,170.079,0)
bs(439.37,311.811,0)
bs(460.629,311.811,0)
bs(460.629,325.984,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(389.763,240.945,0)
bs(389.763,269.291,0)
bs(290.551,269.291,0)

bs(290.551,340.157,0)
bs(262.204,340.157,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(389.763,269.291,0)
bs(559.843,269.291,0)
bs(559.843,333.071,0)
bs(574.016,333.071,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(488.976,85.0393,0)
bs(488.976,127.559,0)
bs(389.763,127.559,0)
bs(389.763,212.598,0)
lw(2)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(205.512,127.559,0)
bs(205.512,113.386,0)
bs(170.079,113.386,0)
bs(170.079,141.732,0)
bs(155.906,141.732,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(622.961,356.76,0)
bs(622.961,518.503,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3459,573.199,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgAgent',(0.552654,0,0,0.500554,608.238,340.185),1,1)
G_()
lp((0.392,0.584,0.929))

```
lw(4.25)
b()
bs(721.712,467.717,0)
bs(721.712,297.838,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,686.278,297.637,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('SCdaemon',(0.552654,0,0,0.500564,721.316,283.492),1,1)
G_()
fp((1,0.647,0.31))
lw(0.283465)
lj(1)
r(86.162,0,0,-117.493,679.192,566.929,0.181818,0.333333)
G()
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(18)
txt('Smartcard',(0.552654,0,0,0.552654,698.127,491.036))
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-31.2962,686.279,557.593,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Card
 Reader',(0.552654,0,0,0.552654,721.318,541.975),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(73.6353,0,0,-41.2944,587.066,565.703,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
```

```
style('Text')
txt('PIN Entry',(0.57675,0,0,0.729211,623.632,545.097),1,1)
G_()
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(643.758,340.157,0)
bs(643.758,340.157,0)
bs(707.539,340.158,0)
bs(707.539,304.724,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.016,283.465,0)
bs(587.066,283.464,0)
bs(686.278,283.464,0)
G()
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(98.9053,325.985,0)
bs(98.9053,240.945,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,63.7795,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('WatchGnuPG',(0.552654,0,0,0.552654,98.8185,338.713),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.5589,0,0,-28.1194,63.7795,240.718,0.0670228,0.168178)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Log
```

Socket',(0.552654,0,0,0.552654,98.8175,225.1),1,1)
G_()
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,446.457,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,485.621,226.772),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,545.669,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,584.834,70.8662),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(84.6546,0,0,-27.3609,347.245,239.959,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help
Files',(0.552654,0,0,0.552654,388.252,224.705),1,1)
G_()
G()
fp((1,0.647,0.31))

lw(0.283465)
r(84.6546,0,0,-27.3609,446.457,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help Files',(0.552654,0,0,0.552654,487.464,69.7854),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,248.032,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Keybox Files',(0.552654,0,0,0.552654,289.59,226.322),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.866,0,0,-28.3464,574.016,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Private Keys',(0.552654,0,0,0.552654,609.449,226.772),1,1)
G_()
G()
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')

```
Fs(24)
txt('Scute',(0.552654,0,0,0.599958,224.978,465.775),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Times-Roman')
Fs(10)
txt('(pkcs#11)',(1,0,0,1.08559,206.081,445.011))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(198.827,0,0,-56.6929,304.322,488.976,0.0603744,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(36)
txt('GPGME
 Library',(0.552654,0,0,0.552654,404.952,457.853),1,1)
G_()
G()
lw(1)
style('Application Box')
r(197.598,0,0,-42.5187,304.724,566.928,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('GPGME aware Application',(0.98062,0,0,0.937018,334.892,540.985))
G_()
G()
lw(1)
style('Application Box')
r(127.829,0,0,-41.7496,162.992,566.159,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('Legacy Application',(174.688,540.01))
G_()
G()
G()
lp((0.392,0.584,0.929))
lw(4.25197)
```

```
b()
bs(749.296,162.296,0)
bs(705.89,162.296,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0,
 -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,100.083,0)
bs(744.472,100.083,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,131.189,0)
bs(744.472,131.189,0)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('execute/access',(0.31891,0,0,0.280771,726.951,87.3768),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('closely linked',(0.31891,0,0,0.280771,724.715,149.589),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Assuan protocol',(0.31891,0,0,0.280771,728.535,118.483),1,1)
G_()
lw(1)
r(56.6929,0,0,-92.126,701.575,170.079)
G_()
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(248.031,325.984,0)
```

bs(248.031,297.638,0)
bs(538.583,297.638,0)
bs(538.583,340.157,0)
bs(566.929,340.157,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(375.591,325.984,0)
bs(375.591,304.724,0)
bs(531.496,304.724,0)
bs(531.496,347.244,0)
bs(566.929,347.244,0)
guidelayer('Guide
Lines',1,0,0,1,(0,0,1))
grid((0,0,7.08661,7.08661),1,(0,0,1),'Grid')
00~0
*H
0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10
011203093638Z
021203093638Z0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 100
*H
0l+Pu.\-ZT$e'nE&h4<}BePm[%j-/7PcHKi@FKy~npcd${]K~Q00U37Tq8_eK40U#037Tq8_eK4om0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10U00
*H
l8gD Z
wYL,M'j
pk2pf|L ;Rl}#h$~O!9;3e\A'v&P^$'Oc.-TS~A>:fQY<
-*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Introduction
 :PROPERTIES:
 :CUSTOM_ID: intro
 :END:

Version:	0.1.5
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
Language codes:	en-AU, en-GB, en

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.

** Python 2 versus Python
 3
  :PROPERTIES:
  :CUSTOM_ID: py2-vs-py3
  :END:

Though the GPGME Python bindings themselves provide support for both
Python 2 and 3, the focus is unequivocally on Python 3 and
specifically from Python 3.4 and above. As a consequence all the
examples and instructions in this guide use Python 3 code.

Much of it will work with Python 2, but much of it also deals with
Python 3 byte literals, particularly when reading and writing data.
Developers concentrating on Python 2.7, and possibly even 2.6, will
need to make the appropriate modifications to support the older string
and unicode types as opposed to bytes.

There are multiple reasons for concentrating on Python 3; some of
which relate to the immediate integration of these bindings, some of
which relate to longer term plans for both GPGME and the python
bindings and some of which relate to the impending EOL period for
Python 2.7. Essentially, though, there is little value in tying the
bindings to a version of the language which
 is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data
types with which GPGME deals considerably easier.

** Examples
  :PROPERTIES:
  :CUSTOM_ID: howto-python3-examples

:END:

All of the examples found in this document can be found as Python 3
scripts in the =lang/python/examples/howto= directory.

** Unofficial Drafts
:PROPERTIES:
:CUSTOM_ID: unofficial-drafts
:END:

In addition to shipping with each release of GPGME, there is a section
on locations to read or download [[#draft-editions][draft editions]] of this document from
at the end of it. These are unofficial versions produced in between
major releases.

** What's New
:PROPERTIES:
:CUSTOM_ID: new-stuff
:END:

Full details of what is new are now available in the [[file:what-is-new.org][What's New]] file
and archives of the preceding /What's New/ sections are available in
the [[file:what-was-new][What Was New]] file.

*** New in GPGME 1130
:PROPERTIES:
:CUSTOM_ID:
new-stuff-1-13-0
:END:

See the [[file:what-is-new#new-stuff-1-13-0][What's New]] document for what is new in version 1.13.0.

*** New in GPGME 1120
:PROPERTIES:
:CUSTOM_ID: new-stuff-1-12-0
:END:

See the [[file:what-was-new#new-stuff-1-12-0][What Was New]] document for what was new in version 1.12.0.

* GPGME Concepts
:PROPERTIES:
:CUSTOM_ID: gpgme-concepts
:END:

** A C API
:PROPERTIES:
:CUSTOM_ID: gpgme-c-api
:END:

Unlike many modern APIs with which programmers will be more familiar with these days, the GPGME API is a C API. The API is intended for use by C coders who would be able to access its features by including the =gpgme.h= header file with their own C source code and then access its functions just as they would any other C headers.

This is a very effective method of gaining complete access to the API and in the most efficient manner possible. It does, however, have the drawback that it cannot be directly used by other languages without some
means of providing an interface to those languages. This is where the need for bindings in various languages stems.

** Python bindings
:PROPERTIES:
:CUSTOM_ID: gpgme-python-bindings
:END:

The Python bindings for GPGME provide a higher level means of accessing the complete feature set of GPGME itself. It also provides a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of =gpgme.h= generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied to the exact same version of GPGME used to generate that copy of =gpgme.h=.

** Difference between the Python bindings and other GnuPG Python packages
:PROPERTIES:
:CUSTOM_ID: gpgme-python-bindings-diffs
:END:

There have been numerous attempts to add GnuPG support to Python over the years. Some of the most well known are listed here, along with what differentiates them.

*** The python-gnupg package maintained
by Vinay Sajip
:PROPERTIES:
:CUSTOM_ID: diffs-python-gnupg
:END:

This is arguably the most popular means of integrating GPG with Python. The package utilises the =subprocess= module to implement wrappers for the =gpg= and =gpg2= executables normally invoked on the command line (=gpg.exe= and =gpg2.exe= on Windows).

The popularity of this package stemmed from its ease of use and capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the past; most of which stemmed from using unsafe methods of accessing the command line via the =subprocess= calls. While some effort has been made over the last two to three years (as of 2018) to mitigate this, particularly by no longer providing shell access through those subprocess calls, the wrapper is still somewhat limited in the scope of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

*** The gnupg package created
and maintained by Isis Lovecruft
:PROPERTIES:
:CUSTOM_ID: diffs-isis-gnupg
:END:

In 2015 Isis Lovecruft from the Tor Project forked and then re-implemented the python-gnupg package as just gnupg. This new package also relied on subprocess to call the =gpg= or =gpg2= binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however, resulted in conflicts with the original python-gnupg and since its functions were called in a different manner to python-gnupg, the release of this package also resulted in a great deal of consternation when people installed what they thought was an upgrade that subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License version 3.0 (or any later version).

*** The PyME package maintained by Martin Albrecht

:PROPERTIES:
:CUSTOM_ID: diffs-pyme
:END:

This package is the origin of these bindings, though they are somewhat
different now.
For details of when and how the PyME package was
folded back into GPGME itself see the [[file:short-history.org][Short History]] document.[fn:1]

The PyME package was first released in 2002 and was also the first
attempt to implement a low level binding to GPGME. In doing so it
provided access to considerably more functionality than either the
=python-gnupg= or =gnupg= packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME
itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version 2.1 (or any
later version).

* GPGME Python bindings installation
:PROPERTIES:
:CUSTOM_ID: gpgme-python-install
:END:

** No PyPI
:PROPERTIES:
:CUSTOM_ID: do-not-use-pypi
:END:

Most
third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against =gpgme.h= and =gpgme.h= is generated from
=gpgme.h.in= at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require

either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding [[#snafu-cffi][CFFI and SWIG]] at the end of this
section for further details.

** Requirements
:PROPERTIES:
:CUSTOM_ID: gpgme-python-requirements
:END:

The GPGME Python bindings only have three requirements:

1. A suitable version of Python 2 or Python 3. With Python 2 that
means CPython
2.7 and with Python 3 that means CPython 3.4 or
higher.
2. [[https://www.swig.org][SWIG]].
3. GPGME itself. Which also means that all of GPGME's dependencies
must be installed too.

*** Recommended Additions
:PROPERTIES:
:CUSTOM_ID: gpgme-python-recommendations
:END:

Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide
a significant advantage in some way.

1. If possible, use Python 3 instead of 2.
2. Favour a more recent version of Python since even 3.4 is due to
reach EOL soon. In production systems and services, Python 3.6
should be robust enough to be relied on.
3. If possible add the following Python modules which are not part of
the standard library: [[http://docs.python-requests.org/en/latest/index.html][Requests]],
[[https://cython.org/][Cython]],
[[https://pendulum.eustace.io/][Pendulum]] and [[https://github.com/Selfnet/hkp4py][hkp4py]].

Chances are quite high that at least the first one and maybe two of
those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly

well known and commonly installed ones, however, which are in many cases likely to have already been installed on many systems or be familiar to Python programmers.

** Installation
:PROPERTIES:
:CUSTOM_ID: installation
:END:

Installing the Python bindings is effectively achieved by compiling and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME are installed you only need to confirm that the version(s) of Python you want the bindings installed for are in your =$PATH=.

By default GPGME will attempt to install the bindings for the most recent or highest version number of Python 2 and Python 3 it detects in =$PATH=. It specifically checks for the =python= and =python3= executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: =python=, =python2= and =python2.7=.

For Python 3 it checks for these executables in this order: =python3=, =python3.7=, =python3.6=, =python3.5= and =python3.4=.[fn:2]

On systems where =python= is actually =python3= and not =python2= it may be possible that =python2= may be overlooked, but there have been no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has been extensive testing and work with these bindings with no issues specifically relating to the new version of Python or any of the new features of either the language or the bindings. This has also been the case with Python 3.7.1rc1. With that in mind and given the release of Python 3.7.1 is scheduled for around the same time as GPGME 1.12.0, the order of preferred Python versions has been changed to move Python 3.7 ahead of Python 3.6.

*** Installing GPGME
:PROPERTIES:
:CUSTOM_ID: install-gpgme
:END:

See the GPGME =README= file for details of how to install GPGME from source.

** Known Issues
:PROPERTIES:
:CUSTOM_ID: snafu
:END:

There are a few known issues with the current build process and the Python bindings. For the most part these are easily addressed should they be encountered.

*** Breaking Builds
:PROPERTIES:
:CUSTOM_ID: snafu-a-swig-of-this-builds-character
:END:

Occasionally when installing GPGME with the Python bindings included it may be observed that the =make= portion of that process induces a large very number of warnings and, eventually errors which end that part of the build process. Yet following that with =make check= and =make install= appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to dynamically generate the C bindings for GPGME in
the first place. So
the entire process will always produce =lang/python/python2-gpg/= and =lang/python/python3-gpg/= directories. These should contain the build output generated during compilation, including the complete bindings and module installed into =site-packages=.

Occasionally the errors in the early part or some other conflict (e.g. not installing as */root/* or */su/*) may result in nothing being installed to the relevant =site-packages= directory and the build directory missing a lot of expected files. Even when this occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the *root* user or prepended with =sudo -H=[fn:3] in the =lang/python/= directory:

#+BEGIN_SRC shell
/path/to/pythonX.Y setup.py build
/path/to/pythonX.Y setup.py build
/path/to/pythonX.Y setup.py install

#+END_SRC

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or
 incomplete steps during the
=configure=, =make= and =make install= steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
=setup.py= and =gpgme.h= files).

**** IMPORTANT Note
   :PROPERTIES:
   :CUSTOM_ID: snafu-swig-build-note
   :END:

If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when
listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build
process before generating bindings for those other languages. In
these cases it may be preferable to configure all preferred language
bindings separately with alternative =configure= steps for GPGME using
the =--enable-languages=$LANGUAGE= option.

Alternatively
 =make= (or =gmake=, depending on your platform) may be
run with the the =-k= option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.

*** Reinstalling Responsibly
  :PROPERTIES:
  :CUSTOM_ID: snafu-lessons-for-the-lazy
  :END:

Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the
relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing
 the previous version(s) is simply a matter of changing to the
relevant =site-packages= directory for the version of Python in
question and removing the =gpg/= directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

*** Multiple installations
  :PROPERTIES:
  :CUSTOM_ID: snafu-the-full-monty
  :END:

For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings *must*
 match those used to
compile Python itself, including the version number(s) (at least going
by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME [[https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e][1.12.1]] the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, and so on
up until the current dev branch that it finds. Usually this will be in the
same prefix as GPGME itself, but is dictated by the =$PATH= when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find, including alternative prefixes.

*** Won't Work With Windows
:PROPERTIES:
:CUSTOM_ID: snafu-runtime-not-funtime
:END:

There are semi-regular reports of Windows users
having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
[[https://python.org][Python website]] (i.e. mostly MSI installers, sometimes self-extracting
=.exe= files).

The Windows versions of Python are not built using Cygwin, MinGW or
Msys2; they're built using Microsoft Visual Studio. Furthermore the
version used is /considerably/ more advanced than the version which
MinGW obtained a small number of files from many years ago in order to
be able to compile anything at all. Not only that, but there are
changes to the version of Visual Studio between some micro releases,
though that is is particularly the case with Python 2.7, since it has
been kept around far longer than it should have
been.

There are two theoretical solutions to this issue:

1. Compile and install the GnuPG stack, including GPGME and the
Python bindings using the same version of Microsoft Visual Studio
used by the Python Foundation to compile the version of Python
installed.

If there are multiple versions of Python then this will need to be
done with each different version of Visual Studio used for those
versions of Python.

2. Compile and install Python using the same tools used by choice,
such as MinGW or Msys2.

Do *not* use the official Windows installer for Python unless
following the first method.

In this type of situation it may even be for the best to accept that
there are less limitations on permissive software than free software
and simply opt to use a recent version of the Community Edition of

Microsoft Visual Studio to compile and build all of it, no matter what.

Investigations into the extent or the limitations of this issue are ongoing.

The following table lists the version of Microsoft Visual Studio which needs to be used when compiling GPGME and the Python bindings with each version of the CPython binary released [[https://www.python.org/downloads/windows/][for Windows]]:

CPython	Microsoft product name	runtime filename
2.7.6	Visual Studio 2008	MSVCR90.DLL
3.4.0	Visual Studio 2010	MSVCR100.DLL
3.5.0	Visual Studio 2015	*see below*
3.6.0	Visual Studio 2015	*see below*
3.7.0	Visual Studio 2017*	*see below*

It is important to note that MingW and Msys2 ship with the Visual C runtime from Microsoft Visual Studio 2005 and are thus *incompatible* with all the versions of CPython which can be used with the GPGME Python bindings.

It is also important to note that from CPython 3.5 onwards, the Python Foundation has adopted the reworking of the Visual C runtime which was performed for Visual Studio 2015 and aimed at resolving many of these kinds of issues. Much greater detail on these issues and the correct file(s) to link to are available from Matthew Brett's invaluable page, [[https://matthew-brett.github.io/pydagogue/python_msvc.html][Using Microsoft Visual C with Python]]. It is also worth reading the Microsoft Developer Network blog post on [[http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx][the universal CRT]] and Steve Dower's blog posts on Python extensions ([[http://stevedower.id.au/blog/building-for-python-3-5][part 1]] and [[http://stevedower.id.au/blog/building-for-python-3-5-part-two][part 2]]).

The second of those two posts by Steve Dower contains the details of specific configuration options required for compiling anything to be used with official CPython releases. In addition to those configuration and compiler settings to use, the versions of Visual Studio prior to Visual Studio 2015 did not support 64-bit systems by default. So compiling a 64-bit version of these bindings for a 64-bit version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the [[https://wiki.python.org/moin/WindowsCompilers][Windows compilers]] wiki page on the CPython wiki is another essential reference on the relevant versions

of Visual Studio to use and the degree of compatibility with CPython releases.

Eventually someone will ask why there isn't an installable binary for Windows, which the GPGME of the licenses do not preclude as long as the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with differing configuration options depending on the target Windows version and whether the architecture is 64-bit or 32-bit makes it difficult to provide a correct binary installer for Windows users. At the bare minimum doing so would require the GnuPG project compile ten different versions of the bindings with each release; both 32-bit and 64-bit versions for CPython 2.7 and 3.4,
with 64-bit versions for both
x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5, 3.6, 3.7 and later releases. That's the bare *minimum*, it'd probably be higher.

Additionally, with only a binary installation used in conjunction with the CPython installer from =python.org= the advanced options available which utilise [[#cython][Cython]] will not be able to be used at all. Cython depends on being able to compile the C code it generates and that too would need to utilise a matching runtime to both the installed version of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

1. Use a recent version of CPython; at least 3.5, but ideally 3.6 or later.

2. Use Visual Studio 2015 or the standalone build tools for Visual Studio 2017 (or later).

3. Compile both CPython and GPGME with these bindings using the tools selected in step 2.

4. Ignore MingW, Msys2 and the official CPython binary installers.

5. Be thankful the answer to this question wasn't simply to say something like, install Linux or install FreeBSD (or even Apple's OS X).

*** CFFI is the Best and GPGME should use it instead of SWIG
:PROPERTIES:
:CUSTOM_ID: snafu-cffi
:END:

There are many reasons for favouring [[https://cffi.readthedocs.io/en/latest/overview.html][CFFI]] and proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the bindings to Python using the =gpgme.h= file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of
 applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in
at least one of CFFI's dependencies before any of this can be
addressed.

So if you're a massive fan of CFFI; that's great, but if you want this
project to switch to CFFI then rather than just insisting that it
should, I'd suggest you volunteer to bring CFFI up to the level this
project needs.

If you're actually seriously considering doing so, then I'd suggest
taking the =gpgme-tool.c= file in the GPGME =src/= directory and
getting that to work with any of the CFFI API methods (not the ABI
methods, they'll work with pretty much anything). When you start
running into trouble with "ifdefs" then you'll know what sort of
things are lacking. That doesn't even take into account the amount of
work saved via SWIG's code generation techniques either.

***
 Virtualised Environments
   :PROPERTIES:
   :CUSTOM_ID: snafu-venv
   :END:

It is fairly common practice amongst Python developers to, as much as
possible, use packages like virtualenv to keep various things that are
to be installed from interfering with each other. Given how much of
the GPGME bindings is often at odds with the usual pythonic way of
doing things, it stands to reason that this would be called into
question too.

As it happens the answer as to whether or not the bindings can be used
with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching
prefix of GPGME itself. Which means that when GPGME, and ideally the
rest of the GnuPG stack, is installed to a prefix like =/usr/local= or
=/opt/local= then the bindings would need to be installed to the main
Python installation and not a virtualised abstraction. Attempts to
separate the two in the past have been known to cause weird and
intermittent errors ranging from
 minor annoyances to complete failures
in the build process.

As a consequence we only recommend building with and installing to the
main Python installations within the same prefix as GPGME is installed
to or which are found by GPGME's configuration stage immediately prior
to running the make commands. Which is exactly what the compiling and
installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled
module may be installed into a virtualenv of the same major and minor
version matching the build. Alternatively it is possible to utilise a
=sites.pth= file in the =site-packages/= directory of a virtualenv
installation, which links back to the system installations
corresponding directory in order to import anything installed system
wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet
complete, preliminary testing of them indicates that both are viable
as
 long as the main installation is complete. Which means that
certain other options normally restricted to virtual environments are
also available, including integration with pythonic test suites
(e.g. [[https://docs.pytest.org/en/latest/index.html][pytest]]) and other large projects.

That said, it is worth reiterating the warning regarding non-standard
installations. If one were to attempt to install the bindings only to
a virtual environment without somehow also including the full GnuPG
stack (or enough of it as to include GPGME) then it is highly likely
that errors would be encountered at some point and more than a little
likely that the build process itself would break.

If a degree of separation from the main operating system is still
required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. [[https://www.virtualbox.org/][VirtualBox]]), a
hardware emulation layer (e.g. [[https://www.qemu.org/][QEMU]]) or an application container
(e.g.

[[https://www.docker.com/why-docker][Docker]]).

Finally it should be noted that the limited tests conducted thus far
have been using the =virtualenv= command in a new directory to create
the virtual python environment. As opposed to the standard =python3
-m venv= and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command =python3 -m virtualenv /path/to/install/virtual/thingy=
instead.

*** Post installation
  :PROPERTIES:
  :CUSTOM_ID: snafu-docs
  :END:

Following installation it is recommended to move the
=post_installer.py= script from the =lang/python/examples/howto/=
directory to the =lang/python/= directory and run it. This will fix
or restore files needed by Sphinx which may be removed during a
distribution build for release. It will also generate reST files from
Org mode files with Pandoc and generate Texinfo files from Org mode
files with GNU Emacs and Org mode (in batch
 mode). Additionally it
will fix the UTF-8 declaration line in the Texinfo files (Emacs
expects "UTF-8" to be "utf-8").

* Fundamentals
 :PROPERTIES:
 :CUSTOM_ID: howto-fund-a-mental
 :END:

Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly or these Python bindings.

** No REST
  :PROPERTIES:
  :CUSTOM_ID: no-rest-for-the-wicked
  :END:

The first part of which is or will be fairly blatantly obvious upon
viewing the first example, but it's worth reiterating anyway. That
being that this API is /*not*/ a REST API. Nor indeed could it ever
be one.

Most, if not all, Python programmers (and not just Python programmers)
know how easy it is to work with a RESTful API. In fact they've
become so popular that many other APIs attempt to emulate REST-like
behaviour as much as they are able. Right down to the use of JSON
formatted output to facilitate the use of their API without having
 to
retrain developers.

This API does not do that. It would not be able to do that and also
provide access to the entire C API on which it's built. It does,
however, provide a very pythonic interface on top of the direct
bindings and it's this pythonic layer that this HOWTO deals with.

** Context
  :PROPERTIES:
  :CUSTOM_ID: howto-get-context
  :END:

One of the reasons which prevents this API from being RESTful is that
most operations require more than one instruction to the API to
perform the task. Sure, there are certain functions which can be
performed simultaneously, particularly if the result known or strongly
anticipated (e.g. selecting and encrypting to a key known to be in the
public keybox).

There are many more, however, which cannot be manipulated so readily:
they must be performed in a specific sequence and the result of one
operation has a direct bearing on the outcome of subsequent
operations. Not merely by generating an error either.

When dealing with this type
 of persistent state on the web, full of
both the RESTful and REST-like, it's most commonly referred to as a
session. In GPGME, however, it is called a context and every
operation type has one.

* Working with keys
 :PROPERTIES:
 :CUSTOM_ID: howto-keys
 :END:

** Key selection
  :PROPERTIES:
  :CUSTOM_ID: howto-keys-selection
  :END:

Selecting keys to encrypt to or to sign with will be a common occurrence when working with GPGMe and the means available for doing so are quite simple.

They do depend on utilising a Context; however once the data is recorded in another variable, that Context does not need to be the same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that key's key ID or fingerprint, preferably the full fingerprint without any spaces in it. A long key ID will probably be okay, but is not advised and short key IDs are already a problem with some being generated to match specific patterns. It does not matter whether the pattern is upper or lower case.

So this is the best method:

```
#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC
```

This is passable and very likely to be common:

```
#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC
```

And this is a really bad idea:

```
#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
#+END_SRC
```

Alternatively it may be that the intention is to create a list of keys which all match a particular search string. For instance all the addresses at a particular domain, like this:

#+BEGIN_SRC python -i
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
#+END_SRC

*** Counting keys
  :PROPERTIES:
  :CUSTOM_ID: howto-keys-counting
  :END:

Counting the number of keys in your public keybox (=pubring.kbx=), the
format which has superseded
 the old keyring format (=pubring.gpg= and
=secring.gpg=), or the number of secret keys is a very simple task.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys: {0}
 Number of public keys: {1}
""".format(secnum, pubnum))
#+END_SRC

NOTE: The [[#cython][Cython]] introduction in the [[#advanced-use][Advanced and Experimental]]
section uses this same key counting code with Cython to demonstrate
some areas where Cython can improve performance even with the
bindings. Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.

** Get key
 :PROPERTIES:
 :CUSTOM_ID: howto-get-key

:END:

An alternative method of getting a single key via its fingerprint is
available directly within a Context
with =Context().get_key=. This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due to expire at the end of 2018:

#+BEGIN_SRC python -i
import gpg

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
#+END_SRC

Whereas this example demonstrates selecting the author's current key
with the =secret= key word argument set to =True=:

#+BEGIN_SRC python -i
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
#+END_SRC

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively
display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

** Importing keys
:PROPERTIES:
:CUSTOM_ID: howto-import-key
:END:

Importing keys is possible with the =key_import()= method and takes

one argument which is a bytes literal object containing either the
binary or ASCII armoured key data for one or more keys.

The following example retrieves one or more keys from the SKS
keyservers via the web using the requests module. Since requests
returns the content as a bytes literal object, we can then use that
directly to import the resulting data into our keybox.

```
#+BEGIN_SRC python -i
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)
result
 = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
   print(result)
elif result is not None and hasattr(result, "considered") is True:
   num_keys = len(result.imports)
   new_revs = result.new_revocations
   new_sigs = result.new_signatures
   new_subs = result.new_sub_keys
   new_uids = result.new_user_ids
   new_scrt = result.secret_imported
   nochange = result.unchanged
   print("""
 The total number of keys considered for import was:  {0}

    Number of keys revoked:  {1}
  Number of new signatures:  {2}
     Number of new subkeys:  {3}
    Number of new user IDs:  {4}
 Number of new secret keys:  {5}
  Number of unchanged keys:  {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
   for i in range(num_keys):
       print("{0}\n".format(result.imports[i].fpr))
else:
```

```
  pass
#+END_SRC
```

NOTE: When searching for a key ID of any length
 or a fingerprint
(without spaces), the SKS servers require the the leading =0x=
indicative of hexadecimal be included. Also note that the old short
key IDs (e.g. =0xDEADBEEF=) should no longer be used due to the
relative ease by which such key IDs can be reproduced, as demonstrated
by the Evil32 Project in 2014 (which was subsequently exploited in
2016).

Testing for whether a string in any given search is or may be a
hexadecimal value which may be missing the leading =0x= is a simple
matter of using a try/except statement which attempts to convert the
string as hex to an integer and then back to hex; then using that to
search with. Raising a ValueError simply results in treating the
string as a string. This is the method and logic utilised in the
=import-keys-hkp.py= script (see below).

*** Working with ProtonMail
```
  :PROPERTIES:
  :CUSTOM_ID: import-protonmail
  :END:
```

Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail
 public keys.

```
#+BEGIN_SRC python -i
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []

if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")
```

```
if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
  ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
  ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
  ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
  ksearch.append("{0}@protonmail.com".format(keyterm))
  ksearch.append("{0}@protonmail.ch".format(keyterm))
  ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") ==
 2 and keyterm.startswith("@") is False:
  uidlist = keyterm.split("@")
  for uid in uidlist:
    ksearch.append("{0}@protonmail.com".format(uid))
    ksearch.append("{0}@protonmail.ch".format(uid))
    ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
  uidlist = keyterm.split("@")
  for uid in uidlist:
    ksearch.append("{0}@protonmail.com".format(uid))
    ksearch.append("{0}@protonmail.ch".format(uid))
    ksearch.append("{0}@pm.me".format(uid))
else:
  ksearch.append(keyterm)

for k in ksearch:
  payload = {"op": "get", "search": k}
  try:
    r = requests.get(url, verify=True, params=payload)
    if r.ok is True:
      result = c.key_import(r.content)
    elif r.ok is False:
      result = r.content
  except Exception as e:
    result = None

  if result is not None and hasattr(result, "considered") is False:
    print("{0} for {1}".format(result.decode(), k))
  elif result is not None
 and hasattr(result, "considered") is True:
    num_keys = len(result.imports)
    new_revs = result.new_revocations
    new_sigs = result.new_signatures
    new_subs = result.new_sub_keys
```

```
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

      {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
        print(e)
#+END_SRC
```

Both the above example, [[../examples/howto/pmkey-import.py][pmkey-import.py]],
 and a version which prompts
for an alternative GnuPG home directory, [[../examples/howto/pmkey-import-alt.py][pmkey-import-alt.py]], are
available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool. One notable difference
being that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.

*** Importing with HKP for Python
    :PROPERTIES:
    :CUSTOM_ID: import-hkp4py
    :END:

Performing the same tasks with the [[https://github.com/Selfnet/hkp4py][hkp4py module]] (available via PyPI)
is not too much different, but does provide a number of options of

benefit to end users. Not least of which being the ability to perform some
 checks on a key before importing it or not. For instance it may be the policy of a site or project to only import keys which have not been revoked. The hkp4py module permits such checks prior to the importing of the keys found.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
  pattern = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  pattern = sys.argv[1]
else:
  pattern = input("Enter the pattern to search for keys or user IDs: ")



if pattern is not None:
  try:
     key = server.search(hex(int(pattern, 16)))
     keyed = True
  except ValueError as ve:
     key = server.search(pattern)
     keyed = False

  if key is not None:
     keys.append(key[0])
     if keyed is True:
        try:
           fob = server.search(pattern)
        except:
           fob = None
        if fob is not
 None:
           keys.append(fob[0])
     else:
        pass
  else:
     pass
```

```
  for logrus in pattern.split():
     try:
        key = server.search(hex(int(logrus, 16)))
        hexed = True
     except ValueError as ve:
        key = server.search(logrus)
        hexed = False

     if key is not None:
        keys.append(key[0])
        if hexed is True:
           try:
              fob = server.search(logrus)
           except:
              fob = None
           if fob is not None:
              keys.append(fob[0])
        else:
           pass
     else:
        pass


if len(keys) > 0:
  for key in keys:
     import_result = c.key_import(key.key_blob)
     results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
     print(result)
  elif result is not None and hasattr(result, "considered") is True:
      num_keys = len(result.imports)
     new_revs = result.new_revocations
     new_sigs = result.new_signatures
     new_subs = result.new_sub_keys
     new_uids = result.new_user_ids
     new_scrt = result.secret_imported
     nochange = result.unchanged
     print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
Number of new signatures:  {2}
   Number of new subkeys:  {3}
  Number of new user IDs:  {4}
Number of new secret keys:  {5}
Number of unchanged keys:  {6}
```

```
The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
       for i in range(num_keys):
           print(result.imports[i].fpr)
       print("")
   else:
       pass
#+END_SRC
```

Since the hkp4py module handles multiple keys just as effectively as
one (=keys= is a list of responses per matching key), the example
above is able to do a little bit more with the returned
 data before
anything is actually imported.

*** Importing from ProtonMail with HKP for Python
  :PROPERTIES:
  :CUSTOM_ID: import-protonmail-hkp4py
  :END:

Though this can provide certain benefits even when working with
ProtonMail, the scope is somewhat constrained there due to the
limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg"
produces hundreds of results from any time the word appears in any
part of a user ID. Performing the same search on the ProtonMail
keyserver returns zero results, even though there are at least two
test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that
server by ProtonMail to require an exact match of the full email
address of the ProtonMail user whose key is being requested.
Presumably this is intended to reduce breaches of privacy of their
users as an email address must already be known before a key for that
address
 can be obtained.

**** Import from ProtonMail via HKP for Python Example no. 1
   :PROPERTIES:
   :CUSTOM_ID: import-hkp4py-pm1
   :END:

The following script is available with the rest of the examples under

the somewhat less than original name, =pmkey-import-hkp.py=.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.

Usage:  pmkey-import-hkp.py [search strings]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
  keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
     ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
     uidlist = keyterm.split("@")
```

```
    for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
    uidlist = keyterm.split("@")
    for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
       ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
  else:
    ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
    keys = server.search(k)
    if isinstance(keys, list) is True:
      for key in keys:
        allkeys.append(key)
        try:
          import_result = c.key_import(key.key_blob)
        except Exception as e:
          import_result = c.key_import(key.key)
    else:
      paradox.append(keys)
      import_result = None
  except Exception as e:
    import_result = None
  results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
    print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
    num_keys = len(result.imports)
     new_revs = result.new_revocations
    new_sigs = result.new_signatures
    new_subs = result.new_sub_keys
    new_uids = result.new_user_ids
    new_scrt = result.secret_imported
    nochange = result.unchanged
    print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

    {1}
```

```
  Number of keys revoked: {2}
Number of new signatures: {3}
   Number of new subkeys: {4}
  Number of new user IDs: {5}
Number of new secret keys: {6}
Number of unchanged keys: {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
       for i in range(num_keys):
           print(result.imports[i].fpr)
       print("")
   elif result is None:
       pass
#+END_SRC
```

**** Import from ProtonMail via HKP for Python Example no. 2
:PROPERTIES:
:CUSTOM_ID: import-hkp4py-pm2
:END:

Like its counterpart above, this script can also be found with the rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything passed as a =homedir= which either does not exist or which is not a directory, as also being a pssible user ID to check for. It's not guaranteed to pick up on all such cases, but it should cover most of them.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.

Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")
```

```
c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 3:
  homedir = sys.argv[1]
  keyterms = sys.argv[2:]
elif len(sys.argv)
 == 3:
  homedir = sys.argv[1]
  keyterm = sys.argv[2]
  keyterms.append(keyterm)
elif len(sys.argv) == 2:
  homedir = ""
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  keyterm = input("Enter the key ID, UID or search string: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
  keyterms.append(keyterm)

if len(homedir) == 0:
  homedir = None
  homeless = False

if homedir is not None:
  if homedir.startswith("~"):
    if os.path.exists(os.path.expanduser(homedir)) is True:
      if os.path.isdir(os.path.expanduser(homedir)) is True:
        c.home_dir = os.path.realpath(os.path.expanduser(homedir))
      else:
        homeless = True
    else:
      homeless = True
  elif os.path.exists(os.path.realpath(homedir)) is True:
    if os.path.isdir(os.path.realpath(homedir)) is True:
      c.home_dir = os.path.realpath(homedir)
    else:
      homeless = True
   else:
    homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
```

```
# a search string.
if homeless is True:
  keyterms.append(homedir)
  c.home_dir = None
else:
  pass

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
     ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
     uidlist = keyterm.split("@")

  for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  else:
     ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
     keys = server.search(k)
     if isinstance(keys, list) is True:
        for key in keys:
           allkeys.append(key)
           try:
              import_result = c.key_import(key.key_blob)
           except Exception as e:
              import_result = c.key_import(key.key)
     else:
```

```
            paradox.append(keys)
            import_result = None
    except Exception
  as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}
    Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs,
   new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
        pass
#+END_SRC


** Exporting keys
    :PROPERTIES:
    :CUSTOM_ID: howto-export-key
    :END:
```

Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine. Two of those functions are for exporting public keys and the
third is for exporting secret keys.

*** Exporting public keys
  :PROPERTIES:
  :CUSTOM_ID: howto-export-public-key
  :END:

There are two methods of exporting public keys, both of which are very
similar to the other. The default method, =key_export()=, will export
a public key or keys matching a specified pattern as normal. The
alternative, the =key_export_minimal()= method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

#+BEGIN_SRC
 python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

```
if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
     c.home_dir = os.path.expanduser(homedir)
  else:
     pass
elif
 os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export(pattern=logrus)
except:
  result = c.key_export(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
else:
  pass
#+END_SRC
```

It should be noted that the result will only return =None= when a search pattern has been entered, but has not matched any keys. When the search pattern itself is set to =None= this triggers the exporting of the entire public keybox.

```
#+BEGIN_SRC python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
```

```
  keyfile = sys.argv[1]
  logrus
 = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_minimal(pattern=logrus)
except:
  result = c.key_export_minimal(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
else:
  pass
#+END_SRC
```

*** Exporting secret keys
  :PROPERTIES:
  :CUSTOM_ID: howto-export-secret-key
  :END:

Exporting secret keys is, functionally, very similar to exporting
public
 keys; save for the invocation of =pinentry= via =gpg-agent= in
order to securely enter the key's passphrase and authorise the export.

The following example exports the secret key to a file which is then
set with the same permissions as the output files created by the
command line secret key export options.

```
#+BEGIN_SRC python -i
import gpg
```

```
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
   keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass
```

```
if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
#+END_SRC

Alternatively the approach
 of the following script can be used.  This
longer example saves the exported secret key(s) in files in the GnuPG
home directory, in addition to setting the file permissions as only
readable and writable by the user.  It also exports the secret key(s)
twice in order to output both GPG binary (=.gpg=) and ASCII armoured
(=.asc=) files.

#+BEGIN_SRC python -i
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
  gpgconfcmd = "gpgconf --list-dirs homedir"

a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()
```

```
if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
   logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir
 = homedir
else:
  pass

if c.home_dir is not None:
  if c.home_dir.endswith("/"):
     gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
     ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
```

```
      gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
      ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
      hd = os.environ["GNUPGHOME"]
  else:
      try:
          hd = subprocess.getoutput(gpgconfcmd)
      except:
          process = subprocess.Popen(gpgconfcmd.split(),
                                     stdout=subprocess.PIPE)
          procom = process.communicate()
          if sys.version_info[0] == 2:
              hd = procom[0].strip()
          else:
              hd = procom[0].decode().strip()
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)

try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result
 = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
      f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
      f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
#+END_SRC


*** Sending public keys to the SKS Keyservers
  :PROPERTIES:
  :CUSTOM_ID: howto-send-public-key
  :END:
```

As with the previous section on importing keys, the =hkp4py= module adds another option with exporting keys in order to send them to the public keyservers.

The following example demonstrates how this may be done.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server
 = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")

if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
     export_result = c.key_export(pattern=logrus)
  except Exception as e:
     print(e)
     export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
     try:
        send_result = server.add(export_result)
     except:
        send_result = server.add(export_result.decode())
     if send_result is not None:
        print(send_result)
     else:
        pass
  except Exception as e:
```

```
      print(e)
else:
  pass
#+END_SRC
```

An expanded version of this script with additional functions for
specifying an alternative homedir location is in the examples
directory as =send-key-to-keyserver.py=.

The =hkp4py= module appears to
 handle both string and byte literal text
data equally well, but the GPGME bindings deal primarily with byte
literal data only and so this script sends in that format first, then
tries the string literal form.

* Basic Functions
 :PROPERTIES:
 :CUSTOM_ID: howto-the-basics
 :END:

The most frequently called features of any cryptographic library will
be the most fundamental tasks for encryption software. In this
section we will look at how to programmatically encrypt data, decrypt
it, sign it and verify signatures.

** Encryption
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-encryption
  :END:

Encrypting is very straight forward. In the first example below the
message, =text=, is encrypted to a single recipient's key. In the
second example the message will be encrypted to multiple recipients.

*** Encrypting to one key
   :PROPERTIES:
   :CUSTOM_ID: howto-basic-encryption-single
   :END:

Once the the Context is set the main issues with encrypting data is
essentially reduced
 to key selection and the keyword arguments
specified in the =gpg.Context().encrypt()= method.

Those keyword arguments are: =recipients=, a list of keys encrypted to

(covered in greater detail in the following section); =sign=, whether
or not to sign the plaintext data, see subsequent sections on signing
and verifying signatures below (defaults to =True=); =sink=, to write
results or partial results to a secure sink instead of returning it
(defaults to =None=); =passphrase=, only used when utilising symmetric
encryption (defaults to =None=); =always_trust=, used to override the
trust model settings for recipient keys (defaults to =False=);
=add_encrypt_to=, utilises any preconfigured =encrypt-to= or
=default-key= settings in the user's =gpg.conf= file (defaults to
=False=); =prepare=, prepare for encryption (defaults to =False=);
=expect_sign=, prepare for signing (defaults to =False=); =compress=,
compresses the plaintext prior to encryption (defaults to =True=).

```
#+BEGIN_SRC python -i
import
 gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:
   afile.write(ciphertext)
#+END_SRC
```

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the =gpg.conf= file:

```
#+BEGIN_SRC python -i
import gpg

a_key = "0x12345678DEADBEEF"

with open("secret_plans.txt", "rb") as afile:
   text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
```

```
ciphertext,
 result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                 always_trust=True,
                                 add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC
```

If the =recipients= parameter is empty then the plaintext is encrypted symmetrically. If no =passphrase= is supplied as a parameter or via a callback registered with the =Context()= then an out-of-band prompt for the passphrase via pinentry will be invoked.

*** Encrypting to multiple keys
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-encryption-multiple
  :END:

Encrypting to multiple keys essentially just expands upon the key selection process and the recipients from the previous examples.

The following example encrypts a message (=text=) to everyone with an email address on the =gnupg.org= domain,[fn:4] but does /not/ encrypt to a default key or other key which is configured to
 normally encrypt
to.

```
#+BEGIN_SRC python -i
import gpg

text = b"""Oh look, another test message.

The same rules apply as with the previous example and more likely
than not, the message will actually be drawn from reading the
contents of a file or, maybe, from entering data at an input()
prompt.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data
format.
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []
```

```
for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC
```

All it would take to change the above example to sign
the message
and also encrypt the message to any configured default keys would
be to change the =c.encrypt= line to this:

```
#+BEGIN_SRC python -i
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  always_trust=True,
                                  add_encrypt_to=True)
#+END_SRC
```

The only keyword arguments requiring modification are those for which
the default values are changing. The default value of =sign= is
=True=, the default of =always_trust= is =False=, the default of
=add_encrypt_to= is =False=.

If =always_trust= is not set to =True= and any of the recipient keys
are not trusted (e.g. not signed or locally signed) then the
encryption will raise an error. It is possible to mitigate this
somewhat with something more like this:

```
#+BEGIN_SRC python -i
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org",
 secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])
```

```
  try:
     ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                         add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
     for i in range(len(e.recipients)):
        for n in range(len(logrus)):
           if logrus[n].fpr == e.recipients[i].fpr:
              logrus.remove(logrus[n])
           else:
              pass
     try:
        ciphertext, result, sign_result = c.encrypt(text,
                                            recipients=logrus,
                                            add_encrypt_to=True)
        with open("secret_plans.txt.asc", "wb") as afile:
           afile.write(ciphertext)
     except:
        pass
#+END_SRC

This will attempt to encrypt to all the keys searched
 for, then remove
invalid recipients if it fails and try again.


** Decryption
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-decryption
  :END:

Decrypting something encrypted to a key in one's secret keyring is
fairly straight forward.

In this example code, however, preconfiguring either =gpg.Context()=
or =gpg.core.Context()= as =c= is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to =c= simply adds lines for no
gain.

#+BEGIN_SRC python -i
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
  try:
     plaintext, result, verify_result = gpg.Context().decrypt(cfile)
```

```
  except gpg.errors.GPGMEError as e:
      plaintext = None
      print(e)

if plaintext is not None:
  with open(newfile, "wb") as nfile:
    nfile.write(plaintext)

  else:
      pass
#+END_SRC
```

The data available in =plaintext= in this example is the decrypted content as a byte object, the recipient key IDs and algorithms in =result= and the results of verifying any signatures of the data in =verify_result=.

If =gpg.Context().decrypt(cfile, verify=False)= is called instead, then =verify_result= will be returned as =None= and the rest remains as described here.

** Signing text and files
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-signing
 :END:

The following sections demonstrate how to specify keys to sign with.

*** Signing key selection
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-signers
  :END:

By default GPGME and the Python bindings will use the default key configured for the user invoking the GPGME API. If there is no default key specified and there is more than one secret key available it may be necessary to specify the key or keys with which to sign messages and files.

```
#+BEGIN_SRC python -i
import gpg

logrus = input("Enter
 the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
```

#+END_SRC

The signing examples in the following sections include the explicitly designated =signers= parameter in two of the five examples; once where the resulting signature would be ASCII armoured and once where it would not be armoured.

While it would be possible to enter a key ID or fingerprint here to match a specific key, it is not possible to enter two fingerprints and match two keys since the patten expects a string, bytes or None and not a list. A string with two fingerprints won't match any single key.

*** Normal or default signing messages or files
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-normal
  :END:

The normal or default signing process is essentially the same as is most often invoked when also encrypting a message or file. So when the encryption component is not utilised, the result is to produce an encoded
 and signed output which may or may not be ASCII armoured and which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the plaintext is already compressed. ASCII armouring will be determined according to the value of =gpg.Context().armor=.

The compression algorithm is selected in much the same way as the symmetric encryption algorithm or the hash digest algorithm is when multiple keys are involved; from the preferences saved into the key itself or by comparison with the preferences with all other keys involved.

#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:

```
  afile.write(signed_data.decode())
#+END_SRC

Though everything in this example is accurate, it is more likely that
reading the input data from another
 file and writing the result to a
new file will be performed more like the way it is done in the next
example.  Even if the output format is ASCII armoured.

#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
#+END_SRC


*** Detached signing messages and files
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-detached
  :END:

Detached signatures will often be needed in programmatic uses of
GPGME, either for signing files (e.g. tarballs of code releases) or as
a component of message signing (e.g. PGP/MIME encoded email).

#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.asc",
 "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC
```

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
#+END_SRC
```

*** Clearsigning messages or text
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-clear
  :END:

Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

```
#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with
 open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC
```

In spite of the appearance of a clear-signed message, the data handled
by GPGME in signing it must still be byte literals.

```
#+BEGIN_SRC python -i
import gpg
```

```
with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
  afile.write(signed_data)
#+END_SRC
```

** Signature verification
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-verification
 :END:

Essentially there are two principal methods of verification of a signature. The first of these is for use with the normal or default signing method and for clear-signed messages. The second is for use with files and data with detached signatures.

The following example is intended for use with the default signing method where the file was not ASCII armoured:

```
#+BEGIN_SRC python
 -i
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"

c = gpg.Context()

try:
  data, result = c.verify(open(gpg_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
```

```
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC
```

Whereas this next example, which is almost identical would work with normal ASCII armoured files and with clear-signed files:

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
      sign = result.signatures[i]
     print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC
```

In both of the previous examples it is also possible to compare the original data that was signed against the signed data in =data= to see if it matches with something like this:

```
#+BEGIN_SRC python -i
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
```

```
else:
  pass
#+END_SRC
```

The following two examples, however, deal with detached signatures. With his method of verification the data that was signed does not get returned since it is already being explicitly referenced in the first argument of =c.verify=. So =data= is =None= and only the information in =result= is available.

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()

try:
  data,
 result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
     sign = result.signatures[i]
     print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC

#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()
```

```
try:
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC


*
 Creating keys and subkeys
 :PROPERTIES:
 :CUSTOM_ID: key-generation
 :END:

The one thing, aside from GnuPG itself, that GPGME depends on, of
course, is the keys themselves.  So it is necessary to be able to
generate them and modify them by adding subkeys, revoking or disabling
them, sometimes deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's
greatest secret agent, Danger Mouse.  Since Danger Mouse is a secret
agent he needs to be able to protect information to =SECRET= level
clearance, so his keys will be 3072-bit keys.

The pre-configured =gpg.conf= file which sets cipher, digest and other
preferences contains the following configuration parameters:

#+BEGIN_SRC conf
 expert
 allow-freeform-uid
 allow-secret-key-import
 trust-model tofu+pgp
 tofu-default-policy unknown
 enable-large-rsa
```

enable-dsa2
cert-digest-algo SHA512
default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128
AES BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP
Uncompressed
personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES
personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
personal-compress-preferences ZLIB BZIP2 ZIP Uncompressed
#+END_SRC

** Primary key
:PROPERTIES:
:CUSTOM_ID: keygen-primary
:END:

Generating a primary key uses the =create_key= method in a Context.
It contains multiple arguments and keyword arguments, including:
=userid=, =algorithm=, =expires_in=, =expires=, =sign=, =encrypt=,
=certify=, =authenticate=, =passphrase= and =force=. The defaults for
all of those except =userid=, =algorithm=, =expires_in=, =expires= and
=passphrase= is =False=. The defaults for =algorithm= and
=passphrase= is =None=. The default for =expires_in= is =0=. The
default for =expires= is =True=. There is no default for =userid=.

If =passphrase= is left as =None=
then the key will not be generated
with a passphrase, if =passphrase= is set to a string then that will
be the passphrase and if =passphrase= is set to =True= then gpg-agent
will launch pinentry to prompt for a passphrase. For the sake of
convenience, these examples will keep =passphrase= set to =None=.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
sign=True, certify=True)
#+END_SRC

One thing to note here is the use of setting the =c.home_dir=
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this

example in a separate location rather than adding it to existing and
active key store data. As with the default directory, =~/.gnupg=, any
temporary or separate directory needs the permissions set to only
permit access by the directory
 owner. On posix systems this means
setting the directory permissions to 700.

The =temp-homedir-config.py= script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
=GenkeyResult= object, which includes the following data:

```
#+BEGIN_SRC python -i
print("""
Fingerprint:  {0}
Primary Key:  {1}
 Public Key:  {2}
 Secret Key:  {3}
Sub Key:  {4}
User IDs:  {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
        dmkey.uid))
#+END_SRC
```

Alternatively the information can be confirmed using the command line
program:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>

  bash-4.4$
#+END_SRC
```

As with generating keys manually, to preconfigure expanded preferences
for the cipher, digest and compression algorithms, the =gpg.conf= file
must contain those details in the home directory in which the new key
is being generated. I used a cut down version of my own =gpg.conf=
file in order to be able to generate this:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
```

```
quit
 Secret key is available.

 sec  rsa3072/026D2F19E99E63AA
     created: 2018-03-15  expires: 2019-03-15  usage: SC
     trust: ultimate      validity: ultimate
 [ultimate] (1). Danger Mouse <dm@secret.example.net>

 [ultimate] (1). Danger Mouse <dm@secret.example.net>
     Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH,
IDEA, CAST5, 3DES
     Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
     Compression: ZLIB, BZIP2, ZIP, Uncompressed
     Features: MDC, Keyserver
 no-modify

 bash-4.4$
#+END_SRC


** Subkeys
  :PROPERTIES:
  :CUSTOM_ID: keygen-subkeys
  :END:

Adding subkeys to a primary key is fairly similar to creating the
primary key with the =create_subkey= method.  Most of the arguments
are the same, but not quite all.  Instead of the =userid= argument
there is now a =key= argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key.  Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
#+END_SRC

As with the primary key, the results here can be checked with:
```

```
#+BEGIN_SRC python -i
print("""
Fingerprint: {0}
Primary Key: {1}
  Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmsub.fpr, dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
        dmsub.uid))
#+END_SRC
```

As well as on the command line with:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>
 ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

 bash-4.4$
#+END_SRC
```

```
** User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids
  :END:
```

```
*** Adding User IDs
   :PROPERTIES:
   :CUSTOM_ID: keygen-uids-add
   :END:
```

By comparison to creating primary keys and subkeys, adding a new user ID to an existing key is much simpler. The method used to do this is =key_add_uid= and the only arguments it takes are for the =key= and the new =uid=.

```
#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
```

```
c.home_dir = "~/.gnupg-dm"

dmfpr
 = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
#+END_SRC
```

Unsurprisingly the result of this is:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <danger.mouse@secret.example.net>
 uid           [ultimate] Danger Mouse <dm@secret.example.net>
 ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

 bash-4.4$
#+END_SRC
```

```
*** Revoking User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids-revoke
  :END:

Revoking a user ID is a fairly similar process, except that it uses
the =key_revoke_uid= method.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid
 = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
#+END_SRC
```

** Key certification
  :PROPERTIES:
  :CUSTOM_ID: key-sign
  :END:

Since key certification is more frequently referred to as key signing,
the method used to perform this function is =key_sign=.

The =key_sign= method takes four arguments: =key=, =uids=,
=expires_in= and =local=. The default value of =uids= is =None= and
which results in all user IDs being selected. The default value of
both =expires_in= and =local= is =False=; which results in the
signature never expiring and being able to be exported.

The =key= is the key being signed rather than the key doing the
signing. To change the key doing the signing refer to the signing key
selection above for signing messages and files.

If the =uids= value is not =None= then it must either be a string to
match a single user ID or a list of strings to match multiple user
IDs. In this case the matching of those strings must be precise and
it
 is case sensitive.

To sign Danger Mouse's key for just the initial user ID with a
signature which will last a little over a month, do this:

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
#+END_SRC

*** Verifying key certifications
   :PROPERTIES:
   :CUSTOM_ID: key-sign-verify
   :END:

#+BEGIN_SRC python -i
import gpg
import time

```
c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
#+END_SRC
```

Which for Danger Mouse displays the following:

```
#+BEGIN_EXAMPLE
 0x92E3F6115435C65A  Thu Mar 15 13:17:44 2018  Danger Mouse <dm@secret.example.net>
  0x321E4E2373590E5D  Mon Nov 26 12:46:05 2018  Ben McGinnes <ben@adversary.org>
#+END_EXAMPLE
```

The two key signatures listed are for the self-certification of Danger Mouse's key made when the key was created in March, 2018; and the second is a signature made by the author and set to expire at the end of the year. Note that the second signature was made with the following code (including the preceding code to display the output of the certifications or key signatures):

```
#+BEGIN_SRC python -i
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
ts = tp.total_seconds()
total_secs = math.ceil(ts)
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
```

```
keys
 = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
#+END_SRC
```

Note that this final code block includes the use of a module which is
/not/ part of Python's standard library, the [[https://pendulum.eustace.io/][pendulum module]]. Unlike
the standard datetime module, pendulum makes working with dates and
times significantly easier in Python; just as the requests module
makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using
the GPGME Python bindings, they are both highly recommended more
generally.

```
* Advanced or Experimental Use Cases
 :PROPERTIES:
 :CUSTOM_ID: advanced-use
 :END:
```

```
** C plus Python plus SWIG plus Cython
  :PROPERTIES:
  :CUSTOM_ID: cython
  :END:
```

In
 spite of the apparent incongruence of using Python bindings to a C
interface only to generate more C from the Python; it is in fact quite
possible to use the GPGME bindings with [[http://docs.cython.org/en/latest/index.html][Cython]]. Though in many
cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable. One of the better and easier examples being the one of
the early examples in this HOWTO, the [[#howto-keys-counting][key counting]] code. Running that
example as an executable Python script, =keycount.py= (available in
the =examples/howto/= directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically
 and timed it using
=time= utility, with the following results:

#+BEGIN_SRC shell
 bash-4.4$ time keycount.py

 Number of secret keys: 23
 Number of public keys: 12112

 real 11m52.945s
 user 0m0.913s
 sys 0m0.752s

 bash-4.4$
#+END_SRC

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the [[http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html][Cython Basic Tutorial]] to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the =gpg= module to the end of the script:

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys: {0}
   Number
 of public keys: {1}

""".format(secnum, pubnum))
#+END_SRC

Save that into a file called =keycount.pyx= and then create a
=setup.py= file which contains this:

```
#+BEGIN_SRC python -i
from distutils.core import setup
from Cython.Build import cythonize

setup(
  ext_modules = cythonize("keycount.pyx")
)
#+END_SRC
```

Compile it:

```
#+BEGIN_SRC shell
 bash-4.4$ python setup.py build_ext --inplace
 bash-4.4$
#+END_SRC
```

Then run it in a similar manner to =keycount.py=:

```
#+BEGIN_SRC shell
 bash-4.4$ time python3.7 -c "import keycount"

 Number of secret keys:  23
 Number of public keys:  12113


 real 6m47.905s
 user 0m0.785s
 sys 0m0.331s

 bash-4.4$
#+END_SRC
```

Cython turned =keycount.pyx= into an 81KB =keycount.o= file in the
=build/= directory, a 24KB =keycount.cpython-37m-darwin.so= file to be
imported into Python 3.7 and a 113KB =keycount.c= generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the =keycount.pyx= file or the full
 1,452 bytes of the
full executable =keycount.py= example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The =keycount.pyx= and =setup.py= files used to generate this example
have been added to the =examples/howto/advanced/cython/= directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the
[[http://docs.cython.org/en/latest/src/tutorial/pure.html#magic-attributes-within-the-pxd][Magic Attributes]] section
of the Cython documentation.

* Miscellaneous extras and work-arounds
 :PROPERTIES:
 :CUSTOM_ID: cheats-and-hacks
 :END:

Most of the things in the following sections are here simply because
there was no better place to put them, even though some are only
peripherally related to the GPGME Python bindings. Some are also
workarounds for functions not integrated
 with GPGME as yet. This is
especially true of the first of these, dealing with [[#group-lines][group lines]].

** Group lines
  :PROPERTIES:
  :CUSTOM_ID: group-lines
  :END:

There is not yet an easy way to access groups configured in the
gpg.conf file from within GPGME. As a consequence these central
groupings of keys cannot be shared amongst multiple programs, such as
MUAs readily.

The following code, however, provides a work-around for obtaining this
information in Python.

#+BEGIN_SRC python -i
import subprocess
import sys

if sys.platform == "win32":
   gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
   gpgconfcmd = "gpgconf --list-options gpg"

process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
   lines = procom[0].splitlines()

```
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
     break

groups = line.split(":")[-1].replace("",
 ").split(',')

group_lines = []
group_lists = []

for group in groups:
  group_lines.append(group.split("="))
  group_lists.append(group.split("="))

for glist in group_lists:
  glist[1] = glist[1].split()
#+END_SRC
```

The result of that code is that =group_lines= is a list of lists where =group_lines[i][0]= is the name of the group and =group_lines[i][1]= is the key IDs of the group as a string.

The =group_lists= result is very similar in that it is a list of lists. The first part, =group_lists[i][0]= matches =group_lines[i][0]= as the name of the group, but =group_lists[i][1]= is the key IDs of the group as a list.

A demonstration of using the =groups.py= module is also available in the form of the executable =mutt-groups.py= script. This second script reads all the group entries in a user's =gpg.conf= file and converts them into crypt-hooks suitable for use with the Mutt and Neomutt mail clients.

** Keyserver access for Python
:PROPERTIES:
:CUSTOM_ID:
hkp4py
:END:

The [[https://github.com/Selfnet/hkp4py][hkp4py]] module by Marcel Fest was originally a port of the old [[https://github.com/dgladkov/python-hkp][python-hkp]] module from Python 2 to Python 3 and updated to use the [[http://docs.python-requests.org/en/latest/index.html][requests]] module instead. It has since been modified to provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the =hkp= protocol prefix as =http= and =hkps= as
=https=, the module is able to be used even with servers which do not
support the full scope of keyserver functions.[fn:5] It also works quite
readily when incorporated into a [[#cython][Cython]] generated and compiled version
of any code.

*** Key import format
  :PROPERTIES:
  :CUSTOM_ID: hkp4py-strings
  :END:

The hkp4py module returns key data via requests as string literals
(=r.text=) instead of byte literals (=r.content=). This means that
the retrurned key data must be encoded to UTF-8 when importing
 that
key material using a =gpg.Context().key_import()= method.

For this reason an alternative method has been added to the =search=
function of =hkp4py.KeyServer()= which returns the key in the correct
format as expected by =key_import=. When importing using this module,
it is now possible to import with this:

#+BEGIN_SRC python -i
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
#+END_SRC

Without that recent addition it would have been necessary to encode
the contents of each =hkp4py.KeyServer().search()[i].key= in
=hkp4py.KeyServer().search()= before trying to import it.

An example of this is included in the [[#howto-import-key][Importing Keys]] section of this
HOWTO and the corresponding executable version of that example is
available in the =lang/python/examples/howto= directory as normal; the
executable version is the =import-keys-hkp.py= file.

** GPGME version checking
  :PROPERTIES:
  :CUSTOM_ID: gpgme-version-check
  :END:

For various reasons it may be necessary to check which version of

GPGME the bindings have been built against; including whether a
minimum required version of GPGME is in use.

For the most part the =gpg.version.versionstr= and
=gpg.version.versionlist= methods have been quite sufficient. The
former returns the same string as =gpgme-config --version=, while the
latter returns the major, minor and patch values in a list.

To check if the installed bindings have actually been built against
the current installed libgpgme version, this check can be performed:

```
#+BEGIN_SRC python -i
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,
                                      stderr=subprocess.PIPE)
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0]
 >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
     print("The GPGME Python bindings match libgpgme.")
  else:
     print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
#+END_SRC
```

For many developers, however, the preferred checking means checking
for a minimum version or point release. This is now readily available
via the =gpg.version.versionintlist= method (added in version
=1.12.1-beta79=). It is also now possible to easily check whether the
installed GPGME Python bindings were built from a development or beta
branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

```
#+BEGIN_SRC python -i
```

```
import gpg

try:
  if gpg.version.is_beta is True:
     print("The installed GPGME Python bindings were built from beta code.")
   else:
     print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
     if gpg.version.versionintlist[1] == 12:
        if gpg.version.versionintlist[2] == 1:
           print("This is the minimum version for using versionintlist.")
        elif gpg.version.versionintlist[2] > 1:
           print("The versionintlist method is available.")
        else:
           pass
     elif gpg.version.versionintlist[1] > 12:
        print("The versionintlist method is available.")
     else:
        pass
  elif gpg.version.versionintlist[0] > 1:
     print("The versionintlist method is available.")
  else:
     pass
except Exception as e:
  print(e)
#+END_SRC

The points where =pass= is used in the above example will most likely
also produce an =Exception= error since those results should only
occur in versions which do not have the =gpgme.version.is_beta=
 and
=gpgme.version.versionintlist= methods available.


* Copyright and Licensing
 :PROPERTIES:
 :CUSTOM_ID: copyright-and-license
 :END:


** Copyright
  :PROPERTIES:
  :CUSTOM_ID: copyright
  :END:
```

Copyright The GnuPG Project, 2018.

** Draft Editions of this HOWTO
  :PROPERTIES:
  :CUSTOM_ID: draft-editions
  :END:

Draft editions of this HOWTO may be periodically available directly
from the author at any of the following URLs:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 no SSL)]]
- [[https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html][GPGME Python Bindings HOWTO draft (HTML multiple files, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto/index.html][GPGME Python Bindings HOWTO draft (HTML
  multiple files, AWS S3 no SSL)]]

These draft versions have been generated from this document via GNU
Emacs [[https://orgmode.org/][Org mode]] to =.texi= and [[https://www.gnu.org/software/texinfo/][GNU Texinfo]] to HTML. Though it is
likely that the specific [[https://files.au.adversary.org/crypto/gpgme-python-howto][file]]
[[http://files.au.adversary.org/crypto/gpgme-python-howto.org][version]] used will be on the same server
with the generated output formats. Occasionally I may include the Org
mode generated XHTML versions:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 no SSL)]]

That XHTML version, however, is exported in a way which inherits a
colour scheme from [[https://github.com/holomorph/emacs-zenburn][the author's Emacs theme]] (which is a higher contrast
version
 of [[http://kippura.org/zenburnpage/][Zenburn]] ported by [[https://github.com/holomorph][Holomorph]]). So it's fine for people who
prefer dark themed web pages, but not so great for everyone else.

The GNU Texinfo and reStructured Text versions ship with the software,
while the GNU Emacs Info version is generated from the Texinfo
version using GNU Texinfo or GNU Makeinfo. The Texinfo format is
generated from the original Org mode source file in Org mode itself
either within GNU Emacs or via the command line by invoking Emacs in

batch mode:

#+BEGIN_SRC shell
 emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
 emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
#+END_SRC

The reStructuredText format is also generated from the Org mode source
file, except it is generated using [[https://pandoc.org][Pandoc]] with either of the following
commands (depending on the filename):

#+BEGIN_SRC shell
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst
 gpgme-python-howto.org
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
#+END_SRC

Note that the Org mode source files are identified as such via a mode
line at the top of each file and have had their =.org= file extensions
dropped in order to make scripted generation of output formats easier
and not require renaming files post-conversion.

Due to a bug in Org mode's texinfo conversion method, the recommended
steps for generating the Texinfo files for all the files in the
=lang/python/doc/src/= directory are as follows:

#+BEGIN_SRC shell
 for x in * ; do
    emacs $x --batch -f org-texinfo-export-to-texinfo --kill
    cat $x.texi | sed -e 's/@documentencoding UTF-8/@documentencoding utf-8/g' > ../texinfo/$x.texi
    pandoc -f org -t rst+smart -o ../rst/$x.rst $x
 done ;
 rm -fv *.texi
 cd ../texinfo
 mkdir info
 mkdir html
 for x in *.texi ; do
    makeinfo -v $x
    makeinfo --html --no-split $x
 done ;
 mv *.info info/
 mv
 *.html html/
#+END_SRC

This code snippet includes the generation of the reStructuredText
files and would be expected to be run from the =doc/src/= directory
containing the Org mode source files. It also assumes that the

commands are being run on POSIX compliant systems with basic tools
like sed, the Bourne shell and GNU Emacs[fn:6] available. The code
snippet also includes the steps for generating the Emacs Info files
and HTML files from the Texinfo files. Using reStructuredText files
with Sphinx is best left for the documentation of that project.

In addition to these there is a significantly less frequently updated
version as a HTML [[https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html][WebHelp site]]
(AWS S3 SSL); generated from DITA XML
source files, which can be found in [[https://dev.gnupg.org/source/gpgme/browse/ben%252Fhowto-dita/][an
alternative branch]] of the GPGME
git repository.

Various generated output formats may occasionally be found in
subdirectories
of the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python][gpgme-python]] directory. In
particular within
the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita][DITA]],
[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst][reStructuredText]] and
[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo][Texinfo]] subdirectories. The
=rst=
directory contains output files generated with Sphinx and may include a
considerable number of its possible output formats, but there are no
guarantees as to how recent these are or even if they are present.

These draft editions are not official documents and the version of
documentation in the master branch or which ships with released
versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding
that they may contain errors or may contain content
subject to change prior to an official release.

** License GPL compatible
:PROPERTIES:
:CUSTOM_ID: license
:END:

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.

* Footnotes

[fn:1] =short-history= and/or =short-history.html=.

[fn:2] With no issues reported specific to Python 3.7, the release of Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of 3.6 now. Production environments with more conservative requirements will always enforce their own policies anyway and installation to each supported
minor release is quite possible too.

[fn:3] Yes, even if you use virtualenv with everything you do in Python. If you want to install this module as just your user account then you will need to manually configure, compile and install the /entire/ GnuPG stack as that user as well. This includes libraries which are not often installed that way. It can be done and there are circumstances under which it is worthwhile, but generally only on POSIX systems which utilise single user mode (some even require it).

[fn:4] You probably don't really want to do this. Searching the keyservers for "gnupg.org" produces over 400 results, the majority of which aren't actually at the gnupg.org domain, but just included a comment regarding the project in their key somewhere.

[fn:5] Such as with ProtonMail servers. This also means that restricted servers which only advertise either HTTP or HTTPS end points and not HKP or HKPS end points must still be identified as as HKP or HKPS within the Python
Code. The =hkp4py= module will rewrite
these appropriately when the connection is made to the server.

[fn:6] Okay, Emacs might not necessarily qualify as a basic tool, but it is common enough that having it installed on a system isn't too great an expectation, nor is it difficult to add to most POSIX systems, even if the users of those systems do not personally use it.
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting on December 1st, 2011 we put change information only in the GIT commit log, and generate a top-level ChangeLog file from logs at "make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am: Remove build rules for libgpgme-pth.

* gpgme.m4: Remove support for libgpgme-pth.

2011-05-26 Marcus Brinkmann <marcus@g10code.com>

* decrypt.c (gpgme_op_decrypt_start, gpgme_op_decrypt): Check CTX.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_edit)
(gpgme_op_card_edit_start, gpgme_op_card_edit): Likewise.
* encrypt.c (gpgme_op_encrypt_start, gpgme_op_encrypt): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.
* export.c (gpgme_op_export_start,
gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)
(gpgme_op_getauditlog): Likewise.
* gpgconf.c (gpgme_op_conf_load, gpgme_op_conf_save): Likewise.
* import.c (gpgme_op_import_start, gpgme_op_import_keys_start)
(gpgme_op_import_keys, gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_start, gpgme_op_keylist_ext_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext): Likewise.
* passwd.c (gpgme_op_passwd_start, gpgme_op_passwd): Likewise.
* sign.c (gpgme_op_sign_start, gpgme_op_sign): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next): Likewise.
* verify.c (gpgme_op_verify_start, gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* vfs-create.c (gpgme_op_vfs_transact, gpgme_op_vfs_create):
Likewise.
* vfs-mount.c (gpgme_op_vfs_mount, gpgme_op_vfs_transact): Likewise.
* gpgme.c (gpgme_set_protocol)
(gpgme_set_sub_protocol)
(gpgme_set_armor, gpgme_set_include_certs)
(gpgme_set_keylist_mode, gpgme_set_passphrase_cb)
(gpgme_set_progress_cb, gpgme_set_io_cbs, gpgme_set_locale)
(gpgme_ctx_set_engine_info, gpgme_sig_notation_clear): Likewise.
* gpgme.c (gpgme_new): Check for valid R_CTX.
(gpgme_cancel, gpgme_cancel_async, gpgme_release): Likewise.

2011-04-06 Werner Koch <wk@g10code.com>

* gpgme-config.in: Add option --host. Change options --cflags and

--libs to collapse duplicate include and lib dirs. Try to put
extra libs at the end.

* gpgme.h.in: Use INSERT__TYPEDEFS_FOR_GPGME_H to include platform
specific typedefs.

2011-02-03 Werner Koch <wk@g10code.com>

* extra-stati.h: New.
* mkstatus: Extend to also process extra-stati.h
* Makefile.am (main_sources): Add extra-stati.h
(status-table.h): Depend on extra-stati.h and adjust rule.

2011-02-03
 Marcus Brinkmann <marcus@g10code.com>

* w32-io.c (_gpgme_io_socket): Return fd, not res.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* assuan-support.c (my_socket, my_connect): New functions.
(_gpgme_assuan_system_hooks): Add my_Socket, my_connect.
* priv-io.h (_gpgme_io_socket): New prototype.
* w32-io.c (pid_to_handle, handle_to_oid, fd_to_handle): Remove macros.
(is_socket): Remove function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Remove some dead code.
(_gpgme_io_spawn): Translate handles before DuplicateHandle them.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* w32-util.c (mkstemp): Don't use CreateFile instead of open (the
function is not used on Windows CE, and the callers were not
adjusted).

2011-01-21 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Fix the case that is
not self-assignment.

2010-12-08 Werner Koch <wk@g10code.com>

* gpgme-tool.c (strcpy_escaped_plus): New.
(DIM, xtoi_1, xtoi_2): New.
(cmd_keylist):
Allow for multiple patterns.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* w32-io.c (create_reader, create_writer): Use small stack size on
Windows CE.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* gpgme.h.in (gpgme_conf_arg_new): Make VALUE arg const void *.
* gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgme_conf_arg_new): Likewise.
* engine-gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgconf_write): Remove debug hack.

2010-11-19 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Support
self-assignment. Requested by Marc Mutz.

2010-11-17 Marcus Brinkmann <mb@g10code.com>

* vasprintf.c (int_vasprintf) [HAVE_W32CE_SYSTEM]: Just use a
fixed size buffer, as va_copy is not easy to fake.

2010-11-15 Marcus Brinkmann <mb@g10code.com>

* w32-ce.h (strcasecmp, strdup) [_MSC_VER]: Define.
* genkey.c, passphrase.c: Include util.h.

* w32-util.c (_gpgme_w32ce_get_debug_envvar): Fix return value.

2010-11-15 Werner Koch <wk@g10code.com>

*
data-compat.c (gpgme_data_new_from_filepart)
(gpgme_data_new_from_file) [W32CE && _MSC_VER]: Return not
GPG_ERR_NOT_IMPLEMENTED.

* w32-ce.h (HKEY_PERFORMANCE_DATA, HKEY_CURRENT_CONFIG, _IOLBF)
(abort) [_MSC_VER]: Provide these macros.

* ath.h [W32CE && _MSC_VER]: Include winsock2.h.

* ath.c (ath_read, ath_write) [W32CE && _MSC_VER]: Do not call
non-available functions.

2010-11-04 Werner Koch <wk@g10code.com>

* w32-ce.h [_MSC_VER && W32CE]: Undef leave.
* export.c: Include util.h so that we get the above undef.

* memrchr.c: Remove. Used to be a replacement function required
by the formerly included assuan code.

2010-11-03 Werner Koch <wk@g10code.com>

* debug.c (_gpgme_debug) [W32CE]: Replace locatime by GetLocalTime.

* signers.c (gpgme_signers_clear): Remove useless return.
Reported by Patrick Spendrin.

* w32-util.c: s/__inline__/GPG_ERR_INLINE/

* setenv.c: Include string.h due to our strerror replacement.

* w32-ce.h (access, bsearch):
New macros.
* w32-ce.c (_gpgme_wince_access): New.
(RegQueryValueExA): Change DATA to a void*.
(_gpgme_wince_bsearch): New. Taken from glibc 2.6.

Guard include of sys/stat.h and sys/types.h.

2010-11-02 Werner Koch <wk@g10code.com>

* data-fd.c (read, write, lseek) [W32CE && ! __MINGW32CE__]: New.
Taken from Pedro Alves Public Domain code.

* w32-ce.h (SHGetSpecialFolderPath): Remove our defines and
prototypes. We use the system provided prototypes now.
* w32-ce.c: Include shlobj.h
(_WIN32_IE): Define to 0x0400
(CreateFileA): New.
* w32-util.c: Explicitly include windows headers before util.h.
(_gpgme_w32ce_get_debug_envvar): Do not use wchar_t strings for
read_w32_registry_string.
(mkstemp): Use CreateFile instead of open.

* w32-io.c (handle_to_fd, fd_tohandle): Add. We need them for W32.
* w32-util.c (_WIN32_IE): Define to 0x0400.

* util.h [W32]: Include windows.h.
* w32-sema.c: Do not include windows.h directly.
* ath.c (ssize_t, pid_t)[_MSC_VER]: Add new
types.
* gpgme.c (gpgme_result_ref, gpgme_result_unref): Do not use a
void pointer in pointer arithmetic.
* w32-util.c: Include util.h prior to ath.h. Don't include
windows.h directly.

(F_OK): Define if not defined.
* w32-ce.c: Include string.h.
(RegQueryValueExA): Use WINAPI modifier to match the declaration.
* vfs-create.c: Include string.h because under W32CE with MSC we
get a warning related to our strerror replacement.
* encrypt-sign.c: Include stdlib.h, string.h and errno.h.
* priv-io.h [W32CE]: Include w32-ce.h
* w32-ce.h: Include winsock2.h and ws2tcpip.h.
(_MSV_VER): Remove useless macro.
(pid_t): Add typedef.

Guard all includes of unistd.h and sys/time.h.

2010-10-28 Marcus Brinkmann <marcus@g10code.com>

* opassuan.c (gpgme_op_assuan_transact_ext): Fix uninitialized
value use. Reported by Marc Mutz.

2010-10-07 Werner Koch <wk@g10code.com>

* gpgme-tool.c (ARGP_ERR_UNKNOWN): Use EDEADLK if available.

* w32-util.c (_gpgme_w32ce_get_debug_envvar) [W32CE]:
New.
* debug.c (debug_init) [W32CE]: Use new function.

2010-09-16 Werner Koch <wk@g10code.com>

* import.c: Include "util.h".
(parse_import): Return GPG_ERR_MISSING_ISSUER_CERT.

* util.h: Add fallback define for GPG_ERR_MISSING_ISSUER_CERT.
* op-support.c: Include "util.h".
(_gpgme_parse_inv_recp): Handle new code 12.

2010-09-02 Marcus Brinkmann <marcus@g10code.de>

* error.c (gpgme_err_code_to_errno): Fix cut and paste bug (thanks
to Marc Mutz).

2010-09-01 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c: Revert change from 2009-06-18, as it created a race
condition.

2010-08-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.def: Add gpgme_err_code_from_syserror and gpgme_err_set_errno.

* libgpgme.vers: Likewise.
* gpgme.h.in (gpgme_error_from_errno): Fix return type to
gpgme_error_t.
(gpgme_err_code_from_syserror, gpgme_err_set_errno): New prototype.
(gpgme_error_from_syserror): New inline function (why are
gpgme_err_make_from_errno and gpgme_error_from_errno
not inline
functions?).
* error.c (gpgme_error_from_errno): Fix return type to gpgme_error_t.
(gpgme_err_set_errno, gpgme_err_code_from_syserror): New functions.

2010-08-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (result_encrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml): Check vigorously for null pointers.

* w32-io.c (GPGCEDEV_IOCTL_ASSIGN_RVID): New macro.
(_gpgme_io_spawn): Use ASSIGN_RVID.

2010-06-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Remove debug printf.

2010-06-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use special hack for Windows CE to
get at stdin and stdout.

* engine-gpgsm.c (gpgsm_new): Translate returned achild_fds back
to child_fds.

* debug.h (TRACE_SUC6): New macro.
* w32-io.c (MAX_SLAFD): New macro.
(fd_table): New static variable.
(new_fd, release_fd): New functions.
(fd_to_handle, handle_to_fd, handle_to_socket):
Remove macros.
(MAX_READERS, MAX_WRITERS): Increase to 64.
(notify_table): Increase to MAX_SLAFD.
(struct reader_context_s, struct writer_context_s): Add member
file_sock.
(reader, writer): Use file_hd vs file_sock to decide if socket
operations to use. Remove auto-detect mode.
(create_reader, create_writer): Set file_sock. Unblock pending
thread only if this is a pipe fd.
(_gpgme_io_pipe): Allocate fds from table and return slot indices
instead of windows handles. This allows to properly handle RVIDs.

(_gpgme_io_close): Handle dup'ed file descriptors.
(build_commandline) [HAVE_W32_SYSTEM]: Use RVID from fd table now.
(_gpgme_io_spawn): Use fd table now.
(_gpgme_io_fd2str): Use RVID from fd table now.
(_gpgme_io_dup): Implement using fd table.
(_gpgme_io_socket): Allocate fds from table.
(_gpgme_io_connect): Use fd from table.

* w32-glib-io.c (find_channel): Check that the slot is used.

2010-06-09 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c [HAVE_W32CE_SYSTEM]:
Include assuan.h and winioctl.h.
(GPGCEDEV_IOCTL_UNBLOCK) [HAVE_W32CE_SYSTEM]: Define.
(set_synchronize) [HAVE_W32CE_SYSTEM]: Stub it out.
(is_socket): Allow to return -1 for auto-detect (old behaviour).
(is_socket) [HAVE_W32CE_SYSTEM]: Return -1.
(reader): Handle auto-detect case. Handle ctx->stop_me before
checking for EOF.
(destroy_reader) [HAVE_W32CE_SYSTEM]: Unblock a pending reader.
(writer): Handle auto-detect case. Handle ctx->stop_me with
ERROR_BUSY.
(destroy_writer) [HAVE_W32CE_SYSTEM]: Unblock a pending writer.
(_gpgme_io_pipe) [HAVE_W32CE_SYSTEM]: Implement in terms of a
half-pipe.
(build_commandline) [HAVE_W32CE_SYSTEM]: New function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Implement it differently
for this platform.
(_gpgme_io_fd2str) [HAVE_W32CE_SYSTEM]: Implement it for RVIDs.
(_gpgme_io_dup) [HAVE_W32CE_SYSTEM]: Stub it out.

* gpgme-tool.c (result_add_timestamp): Add missing NULL argument.
(result_sign_to_xml): Protect against NULL
fingerprint.
(struct server): New members input_fd, input_filename,
input_stream output_fd, output_filename, output_stream,
message_filename, message_stream.
(server_reset_fds): Deallocate those.
(server_parse_fd): New function.
(server_data_obj): Take optional filename argument and direction
argument. Also take new argument to return a filestream that
needs to be closed after destroying the data object.
Change all callers, too.
(input_notify, output_notify): Removed.
(cmd_input, cmd_output): New functions.
(gpgme_server): Do not register input and output notifier.
(register_commands): Use cmd_input and cmd_output.

(cmd_message): Rewritten to use server_parse_fd.
(cmd_delete, cmd_keylist): Fix inverted option check.
(main) [HAVE_W32CE_SYSTEM]: Sleep a bit to work around bug in ssh.

* genkey.c (gpgme_op_genkey): Return err with TRACE_ERR.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_timegm) [HAVE_W32_SYSTEM]: New static
function.
(_gpgme_parse_timestamp)
[HAVE_W32_SYSTEM]: Use it.

* gpgme-tool.c (main): Protect call to setlocale with
HAVE_SETLOCALE.

* Makefile.am (system_components): Remove custom cppflags from
RCCOMPILE (because gpg-error adds -idirafter that makes RC bail.
[HAVE_W32CE_SYSTEM]: Add w32-ce.h and w32-ce.c, clear
libexec_PROGRAMS.
* w32-ce.h, w32-ce.c: New files.

* priv-io.h: Include <sys/types.h>
* util.h: Likewise.

2010-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: Include ath.h
(HAVE_ALLOW_SET_FOREGROUND_WINDOW) [!HAVE_W32CE_SYSTEM]: Define
it.
(RTLD_LAZY, dlopen, dlsym,
dlclose) [!HAVE_ALLOW_SET_FORGROUND_WINDOW]: Don't define anymore.
(_gpgme_allow_set_foreground_window) [!HAVE_ALLOW_SET_FOREGROUND_WINDOW]:
Make it a stub.
(read_w32_registry_string): Use FooA variants of Windows functions
instead of Foo (which dispatches depending on UNICODE).
[!HAVE_W32CE_SYSTEM]: Don't check environment.
(w32_shgetfolderpath): Remove.
(find_program_at_standard_place): Call
SHGetSpecialFolderPath
(which is available on all Windows systems
and also Windows CE).
(mkstemp): Use ath_self instead of getpid.
(_gpgme_mkstemp): Use GetTempPathA instead of GetTempPath.

* gpgme.h.in: Use _WIN32 instead of _MSC_VER. Include time.h for
time_t.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c, gpgme.c, engine-gpgsm.c, engine-gpg.c,
op-support.c, engine-assuan.c, gpgme-tool.c: Include <locale.h>
only if available with HAVE_LOCALE_H and conditionalize use of
LC_CTYPE on its definition.
* engine-gpgconf.c: Do not include <locale.h>.

* engine-gpgsm.c (gpgsm_new, start): Cast between int and
assuan_fd_t.
* assuan-support.c (my_pipe, my_close, my_read, my_write): Likewise.
* gpgme-tool.c (server_data_obj, server_reset_fds, gpgme_server),
(my_recvmsg, my_sendmsg, my_spawn): Likewise.
* engine-assuan.c (start): Likewise.
* engine-g13.c (start): Likewise.

2010-05-06 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c, w32-io.c, w32-qt-io.cpp,
w32-sema.c, w32-util.c:
Do not include <signal.h>.

* sign.c, data-user.c, conversion.c, debug.c, verify.c, data.c,
decrypt.c, delete.c, assuan-support.c, import.c, engine-gpgsm.c,
data-mem.c, op-support.c, w32-io.c, w32-util.c, data-compat.c: Use
gpg_error_from_syserror instead gpg_error_from_errno, and use
gpg_err_set_errno to set error number.
* setenv.c: Include <gpg-error.h> and define __set_errno to use
gpg_err_set_errno.
* gpgme-tool.c (ARGP_ERR_UNKNOWN): Define to EDEADLOCK (which is
mapped in Windows CE) instead of E2BIG (which is not).
(gt_import_keys): Initialize err.

2010-04-19 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Cast to avoid warning.
* engine-g13.c (g13_new): Make ARGV array of pointer to const
char.
(g13_assuan_simple_command) [!USE_DESCRIPTOR_FUNCTION]: Don't define.
* ops.h (_gpgme_key_append_name): Same in prototype.
* key.c (_gpgme_key_append_name): Make SRC argument pointer to
const char.
* posix-util.c
(_gpgme_get_uiserver_socket_path): Make HOMEDIR
const.
* vfs-mount.c (gpgme_op_vfs_transact_start): Never define this
potentially useful but currently unused function.
* vfs-create.c (gpgme_op_vfs_transact_start): Likewise.

2010-04-16 Werner Koch <wk@g10code.com>

* w32-io.c (is_socket): New.
(reader, writer): Use it to figure out the API to use.

2010-03-15 Werner Koch <wk@g10code.com>

* gpgme.h.in: Add autoconf template to set generated file to
read-only in an emacs buffer.

2010-03-12 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_STATUS_SUCCESS): Use the right file for the
change; see below.

* passwd.c (op_data_t): New.
(passwd_start): Setup OPD.
(passwd_status_handler): Return GPG_ERR_NOT_SUPPORTED if needed.
* context.h (OPDATA_PASSWD): New.
* gpgme.h (GPGME_STATUS_SUCCESS): New.

2010-03-09 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (gpgsm_keylist): Try to start the agent.

2010-02-17 Werner Koch <wk@g10code.com>

* posix-io.c (notify_table):
Change implementation.
(notify_table_item_t, notify_table_size, notify_table_lock): New.
(_gpgme_io_close, _gpgme_io_set_close_notify): Adjust for new
implementation.

2010-02-16 Werner Koch <wk@g10code.com>

* gpgme-tool.c (spacep, has_option, skip_options): New.
(cmd_export): Implement option --minimal.

* gpgme.h.in (GPGME_EXPORT_MODE_MINIMAL): New.
* export.c (export_start, export_ext_start): Implement it.
* engine-gpg.c (export_common): Ditto.

2010-01-25 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_connect): Fix return code check to make it work.

* version.c (do_subsystem_inits): Remove superfluous second

WSAStartup.

2010-01-22 Werner Koch <wk@g10code.com>

* w32-io.c (writer): Try to use send first.
(reader): Try to use recv first.

2010-01-08 Werner Koch <wk@g10code.com>

* engine-gpg.c (gpg_passwd): New.
(_gpgme_engine_ops_gpg): Register.
* passwd.c (parse_error): New.
(passwd_status_handler): Use it.

2010-01-07 Marcus Brinkmann <marcus@g10code.de>

*
gpgme-tool.c (result_xml_write_cb_t, struct result_xml_state):
New types.
(MAX_TAGS): New macro.
(result_init, result_xml_indent, result_xml_tag_start)
(result_xml_tag_data, result_xml_tag_end, result_add_error)
(result_add_pubkey_algo, result_add_hash_algo, result_add_keyid)
(result_add_fpr, result_add_timestamp, result_add_sig_mode)
(result_add_value, result_add_string, result_encrypt_to_xml)
(result_decrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml, result_keylist_to_xml)
(result_vfs_mount_to_xml): New functions.
(gt_result): Rewritten.

2010-01-05 Werner Koch <wk@g10code.com>

* gpgme-tool.c (gt_passwd, cmd_passwd): New.
(register_commands): Register.

* gpgme.h.in (gpgme_op_passwd_start, gpgme_op_passwd): New.
* libgpgme.vers, gpgme.def: Add new functions.
* passwd.c: New.
* Makefile.am (main_sources): Add passwd.c
* engine.c, engine.h (_gpgme_engine_op_passwd): New.
* engine-backend.h (struct
engine_ops): Add PASSWD.
* engine-gpgsm.c (gpgsm_passwd): New.
(_gpgme_engine_ops_gpgsm): Register.
(gpgsm_reset): Reset only if we have a connection.

* gpgme.h.in (GPGME_PK_ECDSA, GPGME_PK_ECDH): New.

* gpgme.c (gpgme_pubkey_algo_name): Add them.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Test for TLS, not __GNUC__

2009-12-15 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Calloc, not malloc, the fd_items.

2009-12-10 Werner Koch <wk@g10code.com>

* debug.c (debug_init): Test on sgid process.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (LTRCCOMPILE): Refactor with ...
(RCCOMPILE): ... this new macro.
(SUFFIXES): Add .lo.
(gpgme_res_ldflag): Removed.
(gpgme_res): Use libtool object file name here.
(libgpgme_la_LDFLAGS): Remove gpgme_res_ldflag usage.
(libgpgme_la_LIBADD): Add gpgme_res.

* ath.c (ath_self) [HAVE_W32_SYSTEM]: Fix typo.

2009-12-02 Werner Koch <wk@g10code.com>

* gpgconf.c (gpgme_conf_arg_release):
No return in a function
returning void. Reported by Wyllys Ingersoll.

2009-12-01 Werner Koch <wk@g10code.com>

* gpgme-tool.c (cmd_getauditlog): Add flag --html.
(hlp_getauditlog): New.

* gpgme-tool.c (GT_GCC_A_SENTINEL, GT_GCC_A_PRINTF): New.
(gt_write_status): Use sentinel.
(argp_error, log_error): Use printf attribute.
(argp_parse): Remove extra argument to argp_error.
(_gt_progress_cb, gt_get_engine_info, gt_get_keylist_mode)
(gt_result): Add NULL arg.

2009-11-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan.c (opassuan_start): Allocate result structure before
beginning operation.

2009-11-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use assuan_fd_t and assuan_fdopen
on fds.

2009-11-13   <wk@g10code.com>

* sign.c (_gpgme_sign_status_handler): Handle SIG_CREATED_SEEN.
* engine-uiserver.c (uiserver_sign): Make sending SENDER optional.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset):
Instead of last change, only set
sub protocol if it is not the default.

2009-11-10 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Ignore GPG_ERR_NOT_IMPLEMENTED
while setting the sub protocol.

* engine-uiserver.c (uiserver_new): Pass fdpassing flag to
assuan_socket_connect.
(set_recipients): Replace fingerprint by user id.

* engine-gpgsm.c (set_recipients): Fix non-terminating loop in
case of a missing key.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set default sub protocol.
* gpgme-tool.c: Implement get sub protocol.

* gpgme.h.in (gpgme_get_sub_protocol): Add prototype.
* gpgme.def, libgpgme.vers: Add gpgme_get_sub_protocol.
* context.h (struct gpgme_context): New member sub_protocol.
* gpgme.c (gpgme_set_sub_protocol): Set CTX->sub_protocol.
(gpgme_get_sub_protocol): New function.
* op-support.c (_gpgme_op_reset): Set sub protocol.

* Makefile.am (uiserver_components): New variable.
(main_sources):
Add it.
* ops.h, key.c (_gpgme_key_append_name): Take CONVERT argument,
implement it. Adjust callers.
(gpgme_key_from_uid): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_DEFAULT.

(gpgme_encrypt_flags_t): Add GPGME_ENCRYPT_PREPARE,
GPGME_ENCRYPT_EXPECT_SIGN.
(gpgme_set_sub_protocol, gpgme_key_from_uid): New functions.
* libgpgme.vers, gpgme.def: Add new functions.
* gpgme.c (gpgme_set_protocol): Add UIServer protocol.
(gpgme_set_sub_protocol): New function.
(gpgme_get_protocol_name): Add UIServer and default protocol.
* assuan-support.c: Return correct error values, implement
socketpair for POSIX.
* priv-io.h, posix-io.c, w32-io.c, w32-glib-io.c,
w32-qt-io.cpp (_gpgme_io_spawn): Add ATFORK and ATFORKVALUE
arguments. Implement it for POSIX. Adjust all callers.
* engine.h, engine-backend.h (_gpgme_engine_set_protocol)
(_gpgme_engine_op_decrypt_verify): New prototypes. Adjust all
users.
* engine.c (engine_ops, gpgme_get_engine_info): Add UIServer
engine.
(_gpgme_engine_set_protocol,
_gpgme_engine_op_decrypt_verify): New
function.
* decrypt-verify.c (decrypt_verify_start): Call
_gpgme_engine_op_decrypt_verify.
* util.h, posix-util.c,
w32-util.c (_gpgme_get_uiserver_socket_path): New function.
* engine-gpgsm.c (gpgsm_set_fd): Fix _gpgme_io_pipe invocation.
* gpgme-tool.c: Some support for UIServer protocol.
* engine-uiserver.c: New file.

2009-11-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Close server side FDs.

2009-11-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (struct gpgme_tool): New members write_data and
write_data_hook.
(gt_write_data): New function.
(gt_result): Output vfs_mount result.
(server_write_data): New function.
(gpgme_server): Initialize write_data members.

2009-11-05 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c (struct engine_g13): Remove members RESULT_CB and
RESULT_CB_VALUE.
(g13_assuan_simple_command, status_handler): Don't use those
anymore.
(g13_transact): Remove them from argument list, too.

* vfs-mount.c (_gpgme_vfs_mount_status_handler): New function.
(_gpgme_op_vfs_mount): Pass it to transact.

* engine-assuan.c (llass_new): Update use of assuan_socket_connect.
* engine-gpgsm.c (gpgsm_new): Update use of assuan_pipe_connect.
* engine-g13.c (g13_new): Likewise.

* priv-io.h (IOSPAWN_FLAG_NOCLOSE): New flag.
* w32-io.c (_gpgme_io_spawn): Implement this flag.
* posix-io.c (_gpgme_io_spawn): Likewise.
* w32-glib-io.c (_gpgme_io_spawn): Likewise.
* assuan-support.c (my_spawn): Set this flag.

* decrypt.c (gpgme_op_decrypt_start): Fix use of debug macro.
* decrypt-verify.c (gpgme_op_decrypt_verify_start): Likewise.
* delete.c (gpgme_op_delete_start): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_card_edit_start):
Likewise.
* encrypt.c (gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export_ext_start)
(gpgme_op_export_keys_start,
gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start): Likewise.
* import.c (gpgme_op_import_start, gpgme_op_import_keys_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start): Likewise.
* sign.c (gpgme_op_sign_start): Likewise.
* verify.c (gpgme_op_verify_start): Likewise.
* vfs-create.c (gpgme_op_vfs_create): Likewise.
* vfs-mount.c (gpgme_op_vfs_mount): Likewise.

2009-11-04 Marcus Brinkmann <marcus@g10code.de>

* ath.h (ath_self): New prototype. Include <stdint.h>
* ath.c, ath-pth.c, ath-pthread.c (ath_self): New function.
* debug.h: Rewrite most macros to beautify debug output.
(_gpgme_debug_buffer): Remove tagname and tag argument.
(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New prototypes.
* debug.c: Include <time.h>. Don't include assuan.h.
(frame_nr, FRAME_NR): New thread-specific variable and macro.
(debug_init): Do not initialize assuan.
Call _gpgme_debug after
initialization instead using printf directly.
(_gpgme_debug): Do not call debug_init (we now ensure proper
initialization by user). Add timestamp and thread/process ID.
(_gpgme_debug_buffer): Do not take tagname and tag argument.

(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New functions.
* version.c (gpgme_check_version_internal, gpgme_check_version):
Fix debug string. Do not initialize assuan.
* posix-io.c (get_max_fds): Use 0 not NULL (nicer debug output).

2009-11-04 Werner Koch <wk@g10code.com>

* gpgme-tool.c (register_commands): Add HELP feature.

2009-11-03 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_PROTOCOL_UISERVER): New.

2009-11-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (main_sources): Change g13.c to vfs-mount.c. Add
vfs-create.c
* vfs-create.c: New file.
* g13.c: Renamed to ...
* vfs-mount.c: ... this new file.
* gpgme.h.in (gpgme_op_vfs_create): New prototype.
* gpgme.def, libgpgme.vers: Add gpgme_op_vfs_create.
*
gpgme-tool.c (gt_vfs_create, cmd_vfs_create): New functions.
(register_commands): Add VFS_CREATE and CREAET.

2009-11-02 Marcus Brinkmann <marcus@g10code.de>

* debug.h (_gpgme_debug_buffer): Make TAG argument const const.
* debug.c (_gpgme_debug_buffer): Likewise.
* gpgme-tool.c (input_notify, output_notify): Adjust type to new
assuan interface.
* decrypt.c (gpgme_op_decrypt_result): Remove unused variable.
* opassuan.c (gpgme_op_assuan_transact): Fix return value.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (noinst_PROGRAMS): New target gpgme-tool.
(gpgme_tool_LDADD): New variable.
* gpgme-tool.c: New file.
* ops.h (_gpgme_sig_notation_clearm _gpgme_signers_clear): New
prototypes.
* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_GPGCONF (when
had that gone missing?).
(_gpgme_sig_notation_clear): New function without debug output.
(gpgme_release): Call it and _gpgme_signers_clear.
* signers.c (_gpgme_signers_clear): New

function without debug output.
* g13.c (gpgme_op_vfs_mount): Add debug output.
* assuan-support.c (my_spawn): Allow fd_child_list to be NULL.
* conversion.c (_gpgme_encode_percent_string): Fix infinite loop.
* debug.h: Put tag in front of debug lines, should make for nicer
output.
* engine-assuan.c (llass_new): Use our new system hooks for libassuan.
* engine-g13.c (g13_new): Remove redundant assuan context allocation.
* version.c (gpgme_check_version_internal): Delay debug output
until after gpgme_check_version was called.

2009-10-28 Marcus Brinkmann <marcus@g10code.de>

* signers.c, encrypt-sign.c, encrypt.c, delete.c, keylist.c,
edit.c, import.c, export.c: Fix last change in debug output.

2009-10-27 Marcus Brinkmann <marcus@g10code.de>

* edit.c (gpgme_op_edit_start, gpgme_op_edit)
(gpgme_op_card_edit_start, gpgme_op_card_edit): Add debug output.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.
* encrypt.c (gpgme_op_encrypt_start,
gpgme_op_encrypt)
(gpgme_op_encrypt_result): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey)
(gpgme_op_genkey_result): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)
(gpgme_op_getauditlog): Likewise.
* import.c (gpgme_op_import_result, gpgme_op_import_start)
(gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_result, keylist_colon_handler)
(gpgme_op_keylist_start, gpgme_op_keylist_ext_start)
(gpgme_op_keylist_next, gpgme_op_keylist_end, gpgme_get_key): Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext, gpgme_op_assuan_result)
(gpgme_op_assuan_transact): Likewise.
* signers.c (gpgme_signers_add, gpgme_signers_clear): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next, gpgme_op_trustlist_end): Likewise.
* verify.c (gpgme_op_verify_start,
gpgme_op_verify)
(gpgme_op_verify_result): Likewise.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (struct gpgme_io_event_done_data)
(gpgme_io_event_done_data_t): New types.
(struct _gpgme_op_assuan_result): Deprecate the err member.
(gpgme_op_assuan_result): Deprecate (for now).
(gpgme_op_assuan_transact_ext): New prototype.
(gpgme_op_assuan_transact): Deprecate.
(struct _gpgme_op_g13_result): Replace with ...
(struct _gpgme_op_vfs_mount_result): ... this.
(gpgme_op_g13_mount): Replace with ...
(gpgme_op_vfs_mount): ... this.
* gpgme.def (gpgme_op_assuan_transact_ext, gpgme_wait_ext)
(gpgme_op_vfs_mount_result, gpgme_op_vfs_mount): New.
(gpgme_op_g13_mount): Remove.
* libgpgme.vers: Likewise.
* engine-backend.h (struct engine_ops): Remove RESULT_CB and
RESULT_CB_VALUE args in opassuan_transact member. Add CANCEL_OP
member.
* ops.h (_gpgme_cancel_with_err, _gpgme_wait_on_condition): Add
OP_ERR argument.
(_gpgme_wait_one_ext):
New prototype.
* context.h (ctx_op_data_id_t): Add OPDATA_VFS_MOUNT.
* engine-g13.c (g13_cancel_op): New function.
(parse_status): Remove declaration.
(g13_assuan_simple_command): Do nothing with status lines for now.
(status_handler): Update opaque value access.
(_gpgme_engine_ops_g13): Add new cancel_op member.
* gpgme.c (_gpgme_cancel_with_err): Add new parameter OP_ERR.
Handle operational errors.
(gpgme_cancel, gpgme_io_read, gpgme_io_write): Add debug output.
* data.c (_gpgme_data_inbound_handler)
(_gpgme_data_outbound_handler): Adjust opaque value access.
* engine-gpg.c (command_handler, status_handler)
(colon_line_handler): Likewise.
* engine-gpgsm.c (status_handler): Likewise.
* engine-gpg.c (_gpgme_engine_ops_gpg): Add cancel_op member.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Likewise.
* g13.c: Rewritten (and will be rewritten again).
* engine.h (_gpgme_engine_op_assuan_transact): Remove result_cb
and result_cb_value parameters from prototype.
(_gpgme_engine_cancel_op):
New prototype.
* engine.c (engine_ops) [! ENABLE_ASSUAN]: Add missing comma.
(_gpgme_engine_op_assuan_transact): Remove result_cb and
result_cb_value parameter.
(_gpgme_engine_cancel_op): New function.
* wait.h (_gpgme_run_io_cb): Add new argument OP_ERR.

(struct io_cb_data): New struct to pass opaque data and get a
op_err return value. Needed because we can't modify I/O callback
handler signature because it is exposed to the user.
* wait.c (_gpgme_run_io_cb): Add OP_ERR parameter. Handle
operational errors.
* wait-user.c (_gpgme_user_io_cb_handler): Handle operational
errors.
* wait-private.c (_gpgme_wait_on_condition): New argument to
retrieve the operational result. Handle operational errors in
session based protocols.
(_gpgme_wait_one_ext): New function.
(_gpgme_wait_one): Pass argument in invocation of
_gpgme_wait_on_condition.
* wait-global.c (struct ctx_list_item): Add member OP_ERR.
(ctx_done): New argument OP_ERR.
(ctx_wait): New argument
OP_ERR.
(gpgme_wait_ext): New function based on gpgme_wait but handling
operational errors.
(gpgme_wait): Implement in term of gpgme_wait_ext.
* keylist.c (gpgme_op_keylist_next): Pass argument in invocation
of _gpgme_wait_on_condition.
* trustlist.c (gpgme_op_trustlist_next): Pass argument in
invocation of _gpgme_wait_on_condition.
* engine-assuan.c (struct engine_llass): Replace members RESULT_CB
and RESULT_CB_VALUE by LAST_OP_ERR.
(_gpgme_engine_assuan_last_op_err): Add this hack function.
(llass_cancel_op): New function.
(_gpgme_engine_llass_ops): Add cancel_op member.
(llass_status_handler): Update opaque value access.
(llass_transact): Remove RESULT_CB and RESULT_CB_VALUE arguments.
* opassuan.c: Move compat hacks to the end of file.
(opassuan_start): Do not set OPD->result.err.
Do not pass RESULT_Cb and CTX to _gpgme_engine_op_assuan_transact.
(gpgme_op_assuan_transact_ext): New function.

* debug.h (DEBUG_GLOBAL): New debug level.
* conversion.c (gnupg_errors,
_gpgme_map_gnupg_error): Removed.
* data-user.c (gpgme_data_new_from_cbs): Add debug output.
* data-fd.c (gpgme_data_new_from_fd): Likewise.
* data-stream.c (gpgme_data_new_from_stream): Likewise.
* decrypt.c (gpgme_op_decrypt_result, gpgme_op_decrypt_start)
(gpgme_op_decrypt): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* sign.c (gpgme_op_sign_result): Fix debug message.

* data-mem.c (gpgme_data_new): Improve debug output.
* verify.c (parse_trust): Use atoi instead of
_gpgme_map_gnupg_error.
* decrypt.c (_gpgme_decrypt_status_handler): Likewise.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Remove @NETLIBS@ from LIBADDs.
(g13_components): New variable.
(main_sources): Add $(g13_components).
* g13.c, engine-g13.c: New files.
* engine.c (engine_ops): Check for assuan for assuan engine, add
g13 engine.
* util.h (_gpgme_get_g13_path,
_gpgme_encode_percent_string): New
prototypes.
* conversion.c (_gpgme_encode_percent_string): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_G13.
(struct _gpgme_op_g13_result, gpgme_g13_result_t): New types.
(gpgme_op_g13_mount): New function.
* gpgme.def, libgpgme.vers: Add gpgme_op_g13_mount.
* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_G13.
(gpgme_get_protocol_name): Add GPGME_PROTOCOL_G13.
* posix-util.c (_gpgme_get_g13_path): New function.
* w32-util.c (_gpgme_get_g13_path): New function.
* engine-backend.h (_gpgme_engine_ops_g13): New declaration.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (netlibs): Remove.
(assuan_cflags, assuan_libs): Add.

* Makefile.am (assuan_cppflags, assuan_libobjs): Removed.
(gpgsm_components): Move engine-assuan.c to ...
(assuan_components): ... this new variable.
(main_sources): Add this new variable.
(AM_CPPFLAGS): Remove $(assuan_cppflags).
(AM_CFLAGS): Add @LIBASSUAN_CFLAGS@.
(libgpgme_la_DEPENDENCIES,
libgpgme_pth_la_DEPENDENCIES)
(libgpgme_glib_la_DEPENDENCIES, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_pthread_la_DEPENDENCIES): Remove $(assuan_libobjs).
(libgpgme_la_LIBADD, libgpgme_pth_la_LIBADD)
(libgpgme_glib_la_LIBADD, libgpgme_qt_la_LIBADD))
(libgpgme_pthread_la_LIBADD): Replace $(assuan_libobjs) by
@LIBASSUAN_LIBS@.
* priv-io.h [!HAVE_W32_SYSTEM]: Declare _gpgme_io_recvmsg,
_gpgme_io_sendmsg, _gpgme_io_waitpid.

* engine-backend.h: Define with [ENABLE_ASSUAN] instead
of [ENABLE_GPGSM].
* posix-io.c (_gpgme_io_waitpid): Make non-static.
* util.h (ENABLE_ASSUAN): Declare _gpgme_assuan_system_hooks,
_gpgme_assuan_malloc_hooks, _gpgme_assuan_log_cb.
* engine-gpgsm.c: Don't map assuan error codes. Use
assuan_release instead of assuan_disconnect.
(map_assuan_error): Remove function.
(gpgsm_new): Use new assuan context interface.
* engine-assuan.c: Use assuan_release instead of
assuan_disconnect.
(llass_new): Use new assuan context
interface.

2009-10-07 <wk@g10code.com>

* priv-io.h [W32]: Include windows.h instead of sys/socket.h.

2009-08-06 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Allow for no fingerprint.

* engine-gpgsm.c (gpgsm_sign): Hook up the status func for the
SIGNER command.
* gpgme.h.in (GPGME_STATUS_INV_SGNR, GPGME_STATUS_NO_SGNR): New.
* sign.c (op_data_t): Add fields IGNORE_INV_RECP and INV_SGNR_SEEN.
(_gpgme_op_sign_init_result): Factor code out to ...
(sign_init_result): .. new. Init new fields.
(sign_start): Use sign_init_result.
(_gpgme_sign_status_handler): Take care of the new INV_SGNR.
Return an error if no signature has been created.

2009-07-07 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (struct engine_gpgsm): Add fields
input_helper_data and input_helper_memory.
(close_notify_handler): Release these new fields.
(gpgsm_import): Implement the keyarray feature.

* engine-gpg.c (gpg_import): Actually return GPG_ERR_INV_VALUE.

*
engine-gpgsm.c (gpgsm_import): Return an error for unknown data
encodings.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* debug.h: Everywhere, use %p instead of 0x%x to print pointer.

[HAVE_STDINT_H]: Include <stdint.h>.
(_TRACE, TRACE, TRACE0, TRACE1, TRACE2, TRACE3, TRACE6): Cast tag
to (uintptr_t) before casting it to (void*) to silence GCC
warning.

* gpgme.h.in (_GPGME_DEPRECATED_OUTSIDE_GPGME): New macro.
* sign.c (_GPGME_IN_GPGME): Define it.
* keylist.c (_GPGME_IN_GPGME): Define it.

* debug.c (_gpgme_debug_begin, _gpgme_debug_add): Handle error in
vasprintf and asprintf.

* priv-io.h: Include <sys/socket.h>. Declare _gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (GPGME_CONF_PATHNAME): Revert last change, it's
back! (GPA still uses it...).

* gpgme.def: Fix stupid typo.
* w32-io.c (_gpgme_io_pipe): Add missing declaration.

* gpgme.h.in (GPGME_CONF_PATHNAME): Remove obsolete macro.

* w32-io.c (_gpgme_io_pipe): Allocate
reader/writer thread right
away.
(_gpgme_io_read, _gpgme_io_write, _gpgme_io_select)
(_gpgme_io_dup): Never allocate threads here.
(find_writer, find_reader): Check return value of thread creation
function.

* context.h (CTX_OP_DATA_MAGIC): New macro.
(struct ctx_op_data): New member MAGIC.
* op-support.c (_gpgme_op_data_lookup): Initialize magic.
* gpgme.c (gpgme_result_unref, gpgme_result_ref): Check magic.

2009-06-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_result_unref): Hot fix to release a lock.

* gpgme.c (result_ref_lock): New global variable.
(gpgme_result_ref, gpgme_result_unref): use it.

2009-06-16 Werner Koch <wk@g10code.com>

* version.c: Include stdlib.h.

* gpgme.h.in (gpgme_data_encoding_t): Add GPGME_DATA_ENCODING_URL,
GPGME_DATA_ENCODING_URLESC, GPGME_DATA_ENCODING_URL0.
* data.c (gpgme_data_set_encoding): Adjust for new values.
* engine-gpg.c (string_from_data): New.
(gpg_import): Implement --fetch-key feature.

* gpgme.h.in
(gpgme_op_export_keys_start, gpgme_op_export_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* export.c (gpgme_op_export_keys_start, gpgme_op_export_keys): New.
(export_keys_start): New.

* gpgme.h.in (gpgme_export_mode_t, GPGME_EXPORT_MODE_EXTERN): New.
(gpgme_op_export_start, gpgme_op_export, gpgme_op_export_ext_start)
(gpgme_op_export_ext): Change arg RESERVED to MODE of new
compatible type.
* export.c (gpgme_export_ext_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext): Ditto.
(export_start): Ditto.
* engine.c (_gpgme_engine_op_export): Ditto.
* engine-backend.h (struct engine_ops): Ditto.
* engine-gpgsm.c (gpgsm_export, gpgsm_export_ext): Ditto.
* engine-gpg.c (gpg_export, gpg_export_ext): Ditto. Implement
mode EXTERN.
(gpg_export, gpg_export_ext): Factor common code out to ..
(export_common): .. this.

* gpgme.h.in (gpgme_op_import_keys_start, gpgme_op_import_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* import.c (gpgme_op_import_keys_start,
gpgme_op_import_keys): New.
(_gpgme_op_import_keys_start): New.
* engine.c (_gpgme_engine_op_import): Add arg KEYARRAY.
* engine-backend.h (struct engine_ops): Ditto.
* engine-gpgsm.c (gpgsm_import): Ditto. Not functional.
* engine-gpg.c (gpg_import): Ditto. Implement it.

2009-06-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_result_ref, gpgme_result_unref): Add
prototypes.
* gpgme.def, libgpgme.vers (gpgme_result_ref, gpgme_result_unref):
Add these.
* context.h (struct ctx_op_data): Add member "references".
* gpgme.c (gpgme_result_ref, gpgme_result_unref): New functions.
(_gpgme_release_result): Use gpgme_result_unref.
* op-support.c (_gpgme_op_data_lookup): Initialize references.

2009-06-12 Werner Koch <wk@g10code.com>

* gpgme-w32spawn.c (translate_get_from_file): Parse optional spawn
flags. Add new arg R_FLAGS. Fix segv on file w/o LF.
(translate_handles): Add new arg R_FLAGS. Avoid possible segv.
(main): Pass flags for my_spawn.
(my_spawn):
Add arg FLAGS and implement AllowSetForegroundWindow.

* priv-io.h (IOSPAWN_FLAG_ALLOW_SET_FG): New.
* w32-io.c (_gpgme_io_spawn): Add arg FLAGS and implement it.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* posix-io.c (_gpgme_io_spawn): Add dummy arg FLAGS.
* engine-gpg.c (start): Call spawn with new flag.

* w32-util.c (_gpgme_allow_set_foregound_window): Rename to
_gpgme_allow_set_foreground_window. Change all callers.
* posix-util.c (_gpgme_allow_set_foreground_window): Ditto.

2009-06-10 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_allow_set_foregound_window): Add trace support.

2009-06-09 Werner Koch <wk@g10code.com>

* engine-gpg.c (gpg_io_event): Test for cmd.fd.

* version.c (gpgme_check_version_internal): Make result const.

* gpgme.c: Include priv-io.h.
(gpgme_io_read, gpgme_io_write): New.
* libgpgme.vers (GPGME_1.1): Add them.
* gpgme.def: Ditto.

* Makefile.am (main_sources): Remove gpgme.h.
(include_HEADERS):
Rename to nodist_include_HEADERS so that a
VPATH build won't use the distributed one.

* util.h (GPG_ERR_NOT_OPERATIONAL): Define.

2009-05-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_check_version_internal): New prototype.
(gpgme_check_version): New macro, overriding function of the same
name.
* libgpgme.vers, gpgme.def: Add gpgme_check_version_internal.o

* context.h (_gpgme_selftest): New variable declaration.
* version.c: Include "context.h".
(gpgme_check_version): Set _gpgme_selftest on success.
(gpgme_check_version_internal): New function.
* gpgme.c (_gpgme_selftest): Define it.
(gpgme_new): Check the selftest result.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_encrypt_flags_t): Add
GPGME_ENCRYPT_NO_ENCRYPT_TO.
* engine-gpg.c (gpg_encrypt): Pass --no-encrypt-to to gpg if
GPGME_ENCRYPT_NO_ENCRYPT_TO flag is set.

2009-05-14 Werner Koch <wk@g10code.com>

* gpgme.h.in (gpgme_status_code_t):
Explicitly initialize for
better maintainability and to help debugging.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in: Add compile time check for _FILE_OFFSET_BITS.

2009-04-15 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_socket, _gpgme_io_connect): New functions.
* w32-io.c (_gpgme_io_connect): Fix stupid error.

2009-04-08 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (giochannel_table): New members used, fd, socket.
(find_channel): Drop CREATE argument.
(new_dummy_channel_from_fd, new_channel_from_fd)
(new_channel_from_socket): New functions.
(_gpgm_io_fd2str): Implement for sockets.
(_gpgme_io_write, _gpgme_io_read): Translate EAGAIN errors
correctly.
(_gpgme_io_pipe): Fix for new channel bookkeeping.
(_gpgme_io_close, _gpgme_io_dup): Likewise.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
* w32-io.c (MAX_READERS, MAX_WRITERS): Bump up to 40.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
* w32-qt-io.cpp
(_gpgme_io_socket, _gpgme_io_connect): New stubs.
* version.c [HAVE_W32_SYSTEM]: Include "windows.h.
(do_subsystem_inits) [HAVE_W32_SYSTEM]: Call WSAStartup.
* engine-assuan.c (llass_status_handler): Ignore EAGAIN errors.

2009-03-18 Werner Koch <wk@g10code.com>

 * gpgme.h.in (GPGME_KEYLIST_MODE_EPHEMERAL): New.
 * engine-gpgsm.c (gpgsm_keylist): Send new option.

2009-03-13 Werner Koch <wk@g10code.com>

 * gpgme-config.in: Make sure locale is set to C.

2009-02-24 Werner Koch <wk@g10code.com>

 * gpgme.h.in (struct _gpgme_op_assuan_result): New.
 (gpgme_assuan_result_t): New.
 (gpgme_op_assuan_result): Change return type.
 (struct _gpgme_assuan_sendfnc_ctx)
 (gpgme_assuan_sendfnc_ctx_t, gpgme_assuan_sendfnc_t):Remove.
 (gpgme_assuan_inquire_cb_t): Changed.
 * opassuan.c (op_data_t): Make use of a result structure.
 (gpgme_op_assuan_result): Change return type.
 (opassuan_start): Use result structure.
 (result_cb): Ditto.
 * engine-assuan.c (struct _gpgme_assuan_sendfnc_ctx):
 Remove.
 (inquire_cb_sendfnc): Remove.
 (inquire_cb): Change for new callback scheme. Not yet finished.
 (llass_status_handler): Allow sending a CANCEL from the inquire CB.

2009-02-04 Werner Koch <wk@g10code.com>

 * w32-glib-io.c (_gpgme_io_spawn): Make ARGV argument const to
 match prototype.
 * w32-qt-io.cpp (_gpgme_io_spawn): Ditto.

2009-02-03 Werner Koch <wk@g10code.com>

 * gpgme.h.in (struct _gpgme_subkey): Add fields IS_CARDKEY and
 CARD_NUMBER..
 * key.c (gpgme_key_unref): Release field CARD_NUMBER.
 * keylist.c (keylist_colon_handler): Factor common code out to ...
 (parse_sec_field15): New. Set card number.

2009-01-26 Werner Koch <wk@g10code.com>

 * opassuan.c, dirinfo.c, engine-assuan.c: New.
 * Makefile.am: Add them.
 * engine-backend.h: Add _gpgme_engine_ops_assuan.
 (struct engine_ops): Add field OPASSUAN_TRANSACT. Update all

engine intializers.
* Makefile.am (gpgsm_components): Add engine-assuan.c.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_ASSUAN.
(gpgme_assuan_data_cb_t,
gpgme_assuan_sendfnc_ctx_t)
(gpgme_assuan_inquire_cb_t, gpgme_assuan_status_cb_t): New.
(gpgme_op_assuan_transact_start, gpgme_op_assuan_transact): New.
* gpgme.c (gpgme_get_protocol_name): Ditto.
(gpgme_set_protocol): Support it.
* engine.c (gpgme_get_engine_info): Ditto.
(engine_ops): Register it.
(_gpgme_engine_op_assuan_transact): New.
* libgpgme.vers (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* gpgme.def (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* engine-backend.h (struct engine_ops): Add GET_HOME_DIR and
initialize to NULL for all engines.
* engine.c (engine_get_home_dir): New.
(gpgme_get_engine_info): Use it.
(_gpgme_set_engine_info): Use it.
* engine.h (engine_assuan_result_cb_t): New.
* context.h (ctx_op_data_id_t): Add OPDATA_ASSUAN.

* util.h (GPG_ERR_UNFINISHED): Define if not yet defined.

* version.c (gpgme_check_version): Protect trace arg against NULL.

2009-01-19 Werner
Koch <wk@g10code.com>

* rungpg.c: Rename to engine-gpg.c
* Makefile.am (main_sources): Ditto.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (status-table.h): Use $(builddir) to find gpgme.h.

2008-11-18 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Always initialize I/O
subsystem. Fixes regression from 2007-08-02.

* decrypt.c (_gpgme_decrypt_status_handler): Use
_gpgme_map_gnupg_error to parse the error code for decrypt.algorithm.

2008-10-30 Marcus Brinkmann <marcus@g10code.de>

* wait-private.c (_gpgme_wait_on_condition): Remove unused
variable IDX.
* wait-global.c: Include ops.h to silence gcc warning.
(_gpgme_wait_global_event_cb): Pass error value directly.
* wait-user.c: Include ops.h to silence gcc warning.

* posix-io.c (_gpgme_io_spawn): Make ARGV argument const to
silence gcc warning. Cast argument to execv to silence warning.
* w32-io.c (_gpgme_io_spawn): Likewise.
* priv-io.h (_gpgme_io_spawn): Likewise for
prototype.

2008-10-24 Werner Koch <wk@g10code.com>

* rungpg.c (gpg_keylist_preprocess): Escape backslashes too.

2008-10-23 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist_preprocess): Convert percent escaped
string to C coded string.

2008-10-20 Werner Koch <wk@g10code.com>

* Makefile.am (EXTRA_DIST): Add gpgme.h.in.

* gpgme.h: Rename to gpgme.h.in.
* gpgme.h.in (GPGME_VERSION): Use autoconf substitution.

* posix-io.c: Include sys/uio.h. Fixes bug #818.

2008-10-18 Marcus Brinkmann <marcus@g10code.com>

* w32-util.c (find_program_in_registry): Don't define.
(_gpgme_get_gpg_path, _gpgme_get_gpgsm_path)
(_gpgme_get_gpgconf_path): Do not check for fooProgram in the
registry anymore. It is now no longer possible to overwrite the
default location in that way.

2008-10-17 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_fd2str): Use "%d" and not "%ld" to work
around a bug in mingw32.

2008-09-23 Marcus Brinkmann <marcus@g10code.com>

*
gpgme.c (gpgme_sig_notation_clear): Clear CTX->sig_notations.
Submitted by "Daniel Mueller" <daniel@danm.de>

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (gpg_new): Don't use errno with ttyname_r.

2008-08-11 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (gpg_cancel): Remove cmd fd before status fd.
 * gpgme.c (_gpgme_cancel_with_err): New function.
(gpgme_cancel): Reimplement in terms of _gpgme_cancel_with_err.
 * wait-private.c (_gpgme_wait_on_condition): Use
_gpgme_cancel_with_err.
 * wait-user.c (_gpgme_user_io_cb_handler): Likewise.
 * wait-global.c (_gpgme_wait_global_event_cb, gpgme_wait): Likewise.

2008-08-08 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (command_handler): Remove I/O callback on error, too.

2008-06-29 Marcus Brinkmann <marcus@g10code.com>

 * gpgme.c (gpgme_cancel_async): Remove unused variable.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

 * libgpgme.vers: Add gpgme_cancel_async.
 * gpgme.def: Likewise.

 * context.h:
Include "sema.h".
(struct gpgme_context): New members lock and canceled.
 * gpgme.c (gpgme_new): Initialize lock.
(gpgme_release): Destroy lock.
(gpgme_cancel_async): New function.
 * op-support.c (_gpgme_op_reset): Reset the canceled flag.
 * wait-global.c (gpgme_wait): Check cancel flag before processing
any I/O callbacks.
 * wait-private.c (_gpgme_wait_on_condition): Likewise.
 * wait-user.c (_gpgme_user_io_cb_handler): Likewise.

2008-06-26 Werner Koch <wk@g10code.com>

 * w32-util.c (_gpgme_mkstemp): Replace sprint by stpcpy.
(mkstemp): Need to use GetSystemTimeAsFileTime for better
compatibility.

2008-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-w32spawn.c: New file.
* Makefile.am (libexec_PROGRAMS) [HAVE_W32_SYSTEM]: New variable
with gpgme-w32spawn.
* engine-gpgsm.c (gpgsm_new): Use server translated handles.
(gpgsm_set_locale): Return early if locale value is NULL.
* util.h (_gpgme_mkstemp)
(_gpgme_get_w32spawn_path) [HAVE_W32_SYSTEM]: New function
prototypes.
*
w32-util.c: Include <stdint.h>, <sys/stat.h> and <unistd.h>.
(letters, mkstemp, _gpgme_mkstemp, _gpgme_get_w32spawn_path): New
functions.
* rungpg.c (gpg_decrypt, gpg_encrypt, gpg_encrypt_sign)
(gpg_genkey, gpg_import, gpg_verify, gpg_sign): Pass data over
special filename FD rather than stdin.
(struct arg_and_data_s): Add member ARG_LOCP.
(struct fd_data_map_s): Add member ARG_LOC.
(struct engine_gpg): Add member ARG_LOC to status and colon.
(_add_arg, add_arg_with_locp): New function.
(add_arg_ext): Reimplement in terms of _add_arg.
(gpg_new): Remember argument location for status FD.
(build_argv): Set argument location if requested. Also set
argument location of fd_data_map for data items.
(start): Adjust caller of _gpgme_io_spawn.
* priv-io.h (struct spawn_fd_item_s): Add members peer_name and
arg_loc.
(_gpgme_io_spawn): Remove parent fd list argument.
* posix-io.c (get_max_fds): New function.
(_gpgme_io_dup): Add tracing.
(_gpgme_io_spawn):
Remove parent fd list. Change meaning of child
fd list to contain all child fds that should be inherited. Close
all other file descriptors after fork.
* w32-io.c, w32-glib-io.c, w32-qt-io.c(_gpgme_io_spawn): Remove
parent fd list. Change meaning of child fd list to contain all
child fds that should be inherited. Do not inherit any file
descriptors, but DuplicateHandle them. Spawn process through
wrapper process. Provide wrapper process with a temporary file
containing handle translation data. Return translated handle
names.
* w32-io.c (reader): Add more tracing output.
(_gpgme_io_read): Likewise.
* engine-gpgconf.c (gpgconf_read): Adjust caller of
_gpgme_io_spawn.
* version.c (_gpgme_get_program_version): Likewise.

2008-06-20 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Change ARGV initialization for
compatibility with old compilers. Fix amount of memmove. Fix
CR removal.

2008-06-19 Werner Koch <wk@g10code.com>

* gpgme.h (GPGME_CONF_PATHNAME):
Replace by GPGME_CONF_FILENAME,
change all callers and provide compatibility macro.
(gpgme_conf_type_t): Add complex types 34..37.
* engine-gpgconf.c (gpgconf_parse_option, arg_to_data)
(_gpgme_conf_arg_new, _gpgme_conf_arg_release): Add new types.

2008-06-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_parse_option): Fix comma detection.

2008-05-09 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Do not pass empty lines to the
callback.

2008-05-07 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_write): Change argv[0] to a
self-explaining string. Needs a proper fix, though.

* rungpg.c (gpg_keylist, gpg_keylist_ext): Factor common code out
to ..
(gpg_build_keylist_options): .. new. Allow combination of extern
and intern mode.
(gpg_new): DFT_TTYNAME is an array, thus check the first character.

2008-05-06 Werner Koch <wk@g10code.com>

* version.c (extract_version_string): New.
(_gpgme_get_program_version):
Use it to allow for suffixes in the
version line.

2008-04-28 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Fixed segv. Avoid memmove for
each line.

2008-04-22 Marcus Brinkmann <marcus@g10code.de>

* w32-qt-io.cpp, kdpipeiodevice.cpp: New versions from Frank

Osterfeld, implement blocking select.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read, gpgme_data_write): Retry on EINTR.

2008-03-06 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_add_sig): Terminate UID in case SRC is NULL.
Reported by Marc Mutz.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (release_op_data): Release OPD->result.recipients.
* encrypt.c (release_op_data): Release invalid_recipient.

2008-02-15 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_read): Fix end-of-line handline.

2008-02-14 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_spawn): Add arg R_PID to return the pid.
* posix-io.c
(_gpgme_io_spawn): Ditto.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* priv-io.h (_gpgme_io_spawn): Adjust prototyp and change all callers.
* rungpg.c (start): Call _gpgme_allow_set_foregound_window.

* w32-util.c (_gpgme_allow_set_foregound_window): New.
* posix-util.c (_gpgme_allow_set_foregound_window): New.
* engine-gpgsm.c (default_inq_cb): New.
(gpgsm_new) [W32]: Enable pinentry notifications.
(status_handler): Handle inquiries.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version by Frank Osterfeld, fixes race
condition.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_input_enc): Rename to ...
(map_data_enc): ... this. Also change all callers.
(gpgsm_encrypt, gpgsm_export, gpgsm_export_ext, gpgsm_genkey)
(gpgsm_sign): Set encoding for output.

2008-01-28 Werner Koch <wk@g10code.com>

* keylist.c (gpgme_get_key): Skip duplicated keys. Fixes bug 876.

2008-01-14
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_config_load_cb): Fix program_name
field.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

* engine-gpgconf.c (gpgconf_config_load_cb2): Handle the flag
NO_ARG_DESC.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgconf_components): New variable.
(main_sources): Add gpgconf.c.
* gpgme.h (gpgme_protocol_t): New protocol GPGME_PROTOCOL_GPGCONF.
(gpgme_conf_level_t, gpgme_conf_type_t, gpgme_conf_arg_t)
(gpgme_conf_opt_t, gpgme_conf_comp_t, gpgme_conf_arg_new)
(gpgme_conf_arg_release, gpgme_conf_opt_change)
(gpgme_conf_release, gpgme_op_conf_load, gpgme_op_conf_save): New
types.
* gpgconf.c, engine-gpgconf.c: New files.
* engine.h: (_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New prototypes.
* op-support.c (_gpgme_op_reset): Ignore not implemented locale
function.
* posix-util.c (_gpgme_get_gpgconf_path): New
function.
* w32-util.c (_gpgme_get_gpgconf_path): New function.
* engine-gpgsm.c:
(_gpgme_engine_ops_gpgsm): Add stubs for conf_load and conf_save.
* rungpg.c:
(_gpgme_engine_ops_gpg): Add stubs for conf_load and conf_save.
* gpgme.def: Add new gpgconf related interfaces.
* libgpgme.vers: Likewise.
* util.h (_gpgme_get_gpgconf_path): New prototype.
* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_GPGCONF.
* engine-backend.h (_gpgme_engine_ops_gpgconf): New prototype.
(struct engine_ops): Add members for conf_load and conf_save.
* engine.c (engine_ops): Add _gpgme_engine_ops_gpgconf.
(_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New functions.

(gpgme_get_engine_info): Allow protocol GPGME_PROTOCOL_GPGCONF.

2007-11-28 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Search
for installation directory. Remove old fallback default.
(find_program_in_inst_dir): New function.

2007-11-26 Werner Koch <wk@g10code.com>

*
engine-gpgsm.c (struct engine_gpgsm): Add field INLINE_DATA and
always reset it before calling start.
(gpgsm_new): Clear it.
(status_handler): Implement it.
(gpgsm_getauditlog) [USE_DESCRIPTOR_PASSING]: Use INLINE_DATA.

2007-11-23 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Implement a no-reset flag.
* getauditlog.c (getauditlog_start): Use that flag.

2007-11-20 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Add new reason code 11.

2007-11-22 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_op_getauditlog_start, gpgme_op_getauditlog): New.
* libgpgme.vers: Ditto.
* gpgme.def: Ditto.
* getauditlog.c: New.
* engine-backend.h (struct engine_ops): Add member GETAUDITLOG.
* engine-gpgsm.c (gpgsm_getauditlog): New.
(_gpgme_engine_ops_gpgsm): Insert new function.
(gpgsm_new): Try to enable audit log support.
* rungpg.c (_gpgme_engine_ops_gpg): Insert dummy entry.

2007-11-12 Marcus Brinkmann <marcus@g10code.de>

*
kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-11 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-09 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld and Marc Mutz.

2007-10-05 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, w32-qt-io.cpp: New versions from Frank Osterfeld.

2007-10-04 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.h, kdpipeiodevice.cpp, kdpipeiodevice.moc, w32-qt-io.cpp: New versions from Frank Osterfeld.

2007-10-02 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, kdpipeiodevice.moc: New versions.
* w32-qt-io.cpp (_gpgme_io_fd2str): Print actual_fd if available.
(_gpgme_io_dup): Only acquire a reference, do not actually dup.
Submitted by Frank Osterfeld.

* priv-io.h, engine-gpgsm.c: Add comments.
* w32-qt-io.cpp (_gpgme_io_select): Remove code handling frozen FDs.
* w32-glib-io.c (_gpgme_io_close):
Always dereference the channel,
even if not primary.
(_gpgme_io_dup): Acquire a reference. Replace unused
implementation by assertion.

2007-09-28 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (iocb_data_t): Add SERVER_FD_STR.
(gpgsm_new): Set it.
(gpgsm_set_fd): Use it.

* w32-glib-io.c (find_channel): Add a new primary flag.
(_gpgme_io_close): Close channel only if primary.
(_gpgme_io_dup): Put newfd into the table as shallow copy.

* priv-io.h (struct io_select_fd_s): Remove member FROZEN.
* w32-io.c (_gpgme_io_select): Ditto.
* w32-glib-io.c (_gpgme_io_select): Ditto.

* posix-io.c (_gpgme_io_select): Ditto.
* rungpg.c (read_status): Ditto.
* wait.c (fd_table_put): Ditto.

* rungpg.c (gpg_io_event): Add tracing.

(start): Use gpg_io_event for sending the start event.
* engine-gpgsm.c (gpgsm_io_event): Add tracing.
(start): Use gpgsm_io_event for sending the start event.
* wait.c (_gpgme_add_io_cb, _gpgme_run_io_cb): Add tracing.

2007-09-28 Marcus Brinkmann
<marcus@g10code.de>

* kdpipeiodevice.moc, w32-qt-io.cpp, kdpipeiodevice.cpp: New
versions from Frank Osterfeld.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_spawn),
w32-qt-io.cpp (_gpgme_io_spawn), w32-io.c (_gpgme_io_spawn): Close
the process handle, return 0.

* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_UNKNOWN.
* gpgme.c (gpgme_get_protocol_name): Implement support for
GPGME_PROTOCOL_UNKNOWN.

* kdpipeiodevice.h: Fix last change.

* w32-glib-io.c (_gpgme_io_pipe), w32-qt-io.c (_gpgme_io_pipe),
w32-io.c (_gpgme_io_pipe), posix-io.c (_gpgme_io_pipe): Fix debug
output.

2007-09-25 Marcus Brinkmann <marcus@g10code.de>

* conversion.c, keylist.c: Include <sys/types.h>.

* kdpipeiodevice.h: Use namespace _gpgme_.
* kdpipeiodevice.cpp: Use namespace _gpgme_.
[Q_OS_WIN32 && NOMINMAX]: Do not define NOMINMAX again.
* w32-qt-io.cpp: Change namespace of KDPipeIODevice to
gpgme::KDPipeIODevice.

2007-09-17 Werner Koch <wk@g10code.com>

*
rungpg.c (gpg_new): Make robust against undefined ttyname or
ttytype.

2007-09-14 Werner Koch <wk@g10code.com>

* data-mem.c (gpgme_data_release_and_get_mem): Fix tracing bug.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_release): Call gpgme_sig_notation_clear.

2007-09-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_new): Handle return value of _gpgme_getenv (fixes
small memory leak).

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_qt_la_SOURCES): Move
moc_kdpipeiodevice.cpp to EXTRA_DIST, as this is only included by
another file (it's more like a header file than a cpp file, but
automake doesn't know that).

* w32-qt-io.cpp (_gpgme_io_spawn): Fix several cast errors and typos.
* w32-io.c (_gpgme_io_write): Use TRACE_SYSRES instead of TRACE_SYS.
(libgpgme_qt_la_LIBADD): Add QT4_CORE_LIBS, not QT4_CORE_LIB.

* kdpipeiodevice.h, kdpipeiodevice.cpp, moc_kdpipeiodevice.cpp,
kdpipeiodevice.moc, w32-qt-io.c:
New files.
* Makefile.am (ltlib_gpgme_extra): Rename to ltlib_gpgme_glib.
(ltlib_gpgme_qt): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_qt).
(libgpgme_qt_la_SOURCES): New variable.
(AM_CPPFLAGS): Add @QT4_CORE_INCLUDES@
(AM_CFLAGS): Add @QT4_CORE_CFLAGS@.
(libgpgme_qt_la_LDFLAGS, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_qt_la_LIBADD): New variables.

* sema.h (struct critsect_s): Rename "private" to "priv" to make
C++ users happy. Change users.
* posix-sema.c (_gpgme_sema_cs_enter, _gpgme_sema_cs_leave)
(_gpgme_sema_cs_destroy): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_enter)
(_gpgme_sema_cs_leave, _gpgme_sema_cs_destroy): Likewise.
* w32-glib-io.c (gpgme_get_giochannel): Change return type to
void*.
(gpgme_get_fdptr): New function.
* w32-io.c (gpgme_get_fdptr): New function
* gpgme.def: Add gpgme_get_fdptr.

2007-08-22 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_write): Return early if COUNT is zero.
(writer): Remove superfluous

check.

2007-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Move include of gpg-error.h out of extern "C".

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Add member CHAIN_MODEL.
* verify.c (parse_trust): Set Chain_MODEL.

2007-08-02 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_spawn): Use DETACHED_PROCESS flag.
* w32-io.c (_gpgme_io_spawn): Ditto.
(_gpgme_io_write): Map ERROR_NO_DATA to EPIPE.
* debug.c (_gpgme_debug): Enable assuan logging.
(_gpgme_debug_subsystem_init): New.
* version.c (do_subsystem_inits): Disable assuan logging and
initialize the debug system.
(gpgme_check_version): Do not trace before the subsystems are
initialized.

2007-07-17 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Include <errno.h> and "debug.h".
(_gpgme_debug): Save and restore ERRNO.
(TOHEX): New macro.
(_gpgme_debug_buffer): New function.
* conversion.c, data-compat.c, data-mem.c, data.c, engine-gpgsm.c,
gpgme.c,
keylist.c, posix-io.c, rungpg.c, sign.c, version.c,
w32-io.c, wait.c: Replace DEBUG macros by TRACE_* variants. In
most of these files, add many more tracepoints.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (status_handler): Do not send BYE here.

* w32-io.c (struct reader_context_s, struct writer_context_s): New
members REFCOUNT.
(create_reader, create_writer): Initialize C->refcount to 1.
(destroy_reader, destroy_writer): Only destroy if C->refcount
drops to 0.
(find_reader, find_writer, kill_reader, kill_writer): Beautify.
* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.

* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Reverting to version 2007-07-10.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_read, user_write, user_seek): Set errno and
return -1 instead returning the error code directly.
* data-compat.c (old_user_seek):
Likewise.
* gpgme.c (gpgme_sig_notation_add): Return error properly.

* Revert the "close_notify_handler" returns int stuff. Always
close in the _gpgme_io_close implementations.
* engine-gpgsm.c (status_handler): Try to terminate the connection
in case of error.
* w32-io.c (_gpgme_io_read): Return C->error_code in ERRNO.
(_gpgme_io_write): Likewise.

* priv-io.h (_gpgme_io_set_close_notify): Change type of HANDLER
to _gpgme_close_notify_handler.
(_gpgme_close_notify_handler): New type.
(_gpgme_io_dup): Remove prototype.
* posix-io.c (notify_table, _gpgme_io_set_close_notify): Change
type of HANDLER to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-io.c (notify_table, _gpgme_io_set_close_notify,
_gpgme_io_close): Change type of HANDLER to
_gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-glib-io.c
(_gpgme_io_dup): Remove function.
(_gpgme_io_set_close_notify, notify_table): Change type of HANDLER
to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
* rungpg.c (close_notify_handler): Change return type to int,
return 1.
* engine-gpgsm.c (close_notify_handler): Change return type to
int, return 0 for status FD and 1 for all other FDs.
(start): Do not duplicate the status FD.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Replace implicit rule by suffix rule. Add
SUFFIXES for that.

2007-07-12 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits) [W32]: Make sure that the socket
system has been started.

2007-07-10 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.
* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Use _gpgme_dup() instead of dup().

2007-07-08
 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c [HAVE_W32_SYSTEM]: Enable the bunch of the file.
* funopen.c (funopen): Rename to _gpgme_funopen.

2007-04-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Fix error handling for ttyname_r.
* rungpg.c (gpg_new): Likewise.
Submitted by Stephen Tether.

2007-02-26 Werner Koch <wk@g10code.com>

* verify.c (op_data_t): New element PLAINTEXT_SEEN.
(_gpgme_verify_status_handler): Return an error if more than one
plaintext has been seen.
(parse_error): New arg SET_STATUS. Also detect it based on an
ERROR status (gpg > 1.4.6).

2007-01-26 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Fixed stupid quoting bug.
* w32-glib-io.c (build_commandline): Ditto.

* rungpg.c (gpg_set_locale): Avoid dangling pointer after free.

* gpgme-config.in: New options --get-gpg and --get-gpgsm.

2007-01-18 Marcus Brinkmann <marcus@g10code.de>

* data.h (_gpgme_data_get_fd): Add prototype.
(gpgme_data_get_fd_cb):
New type.
(struct _gpgme_data_cbs): New member get_fd.
* data.c (_gpgme_data_get_fd): New function.

* data-fd.c (fd_get_fd): New function.
(fd_cbs): Add fd_get_fd.
* data-stream.c (stream_get_fd): New function.
(stream_cbs): Add stream_get_fd.
* data-mem.c (mem_cbs): Add NULL for get_fd callback.
* data-user.c (user_cbs): Likewise.
* engine-gpgsm.c (gpgsm_set_fd) [USE_DESCRIPTOR_PASSING]: Try to
short-cut by passing the data descriptor directly.

2007-01-17 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (build_commandline): Quote all command line arguments.
* w32-glib-io.c (build_commandline): Likewise.

2007-01-10 Werner Koch <wk@g10code.com>

* ttyname_r.c (ttyname_r) [W32]: Return a dummy name.

2007-01-08 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Do assuan init only if building
with Assuan.
* setenv.c: Include assuan-def.h only if building with Assuan
support.

* op-support.c (_gpgme_op_reset): Set LC_MESSAGES only if
if
defined.
* engine-gpgsm.c (gpgsm_set_locale): Ditto.
* rungpg.c (gpg_set_locale): Ditto.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_protocol): Shut down the engine when
switching protocols.
(gpgme_ctx_set_engine_info): Likewise for engine info.
* engine.h (_gpgme_engine_reset): New function prototype.
* engine.c (_gpgme_engine_reset): New function.
* engine-backend.h (struct engine_ops): New member RESET.
* rungpg.c (_gpgme_engine_ops_gpg): Add NULL for reset function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm)
[USE_DESCRIPTOR_PASSING]: Add gpgsm_reset for reset.
(_gpgme_engine_ops_gpgsm) [!USE_DESCRIPTOR_PASSING]: Add NULL for
reset function.
(gpgsm_reset) [USE_DESCRIPTOR_PASSING]: New function.
* op-support.c (_gpgme_op_reset): Try to use the engine's reset
function if available.
* engine-gpgsm.c (gpgsm_new): Move code to dup status_fd to ...

(start): ... here.
* posix-io.c (_gpgme_io_recvmsg, _gpgme_io_sendmsg): New functions.

*
engine.h (_gpgme_engine_new): Remove arguments lc_ctype and
lc_messages from prototype.
(_gpgme_engine_set_locale): New prototype.
* engine.c (_gpgme_engine_set_locale): New function.
* op-support.c (_gpgme_op_reset): Call _gpgme_engine_set_locale.
* engine-backend.h (struct engine_ops): Add new member SET_LOCALE.
Remove arguments lc_messages and lc_ctype from member NEW.
* engine-gpgsm.c (struct engine_gpgsm): New members lc_ctype_set
and lc_messages_set.
(gpgsm_new): Remove lc_messages and lc_ctype
arguments.
(gpgsm_set_locale): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_set_locale.
* rungpg.c (struct engine_gpg): Add new members lc_messages and
lc_ctype.
(gpg_release): Release lc_messages and lc_ctype if set.
(gpg_new): Remove lc_messages and lc_ctype arguments.
(gpg_set_locale): New function.
(_gpgme_engine_ops_gpg): Add gpg_set_locale.
(add_arg): Implement in terms of:
(add_arg_ext): New function.
(start): Set lc-messages and lc-ctype arguments here.

2006-12-03
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct engine_gpgsm): Move members
input_fd_server, output_fd_server, message_fd_server to ...
(iocb_data): ... here (as server_fd).
(close_notify_handler): Reset tags as well.
(gpgsm_new): Implement support for descriptor
passing.
(fd_type_t): New type.
(gpgsm_clear_fd): New function. Use it instead of _gpgsm_io_close
for unused communication channels.
(gpgsm_set_fd): Rewritten to support descriptor passing. All
relevant callers adjusted as well (previously of _gpgme_io_close).

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* version.c: Include "assuan.h".
(do_subsystem_inits): Call assuan_set_assuan_err_source.

2006-12-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_real_la_SOURCES): Rename to main_sources.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
libgpgme_glib_la_SOURCES, libgpgme_pth_la_SOURCES): Add
$(main_sources).
(libgpgme_la_DEPENDENCIES, libgpgme_la_LIBADD,
libgpgme_pthread_la_DEPENDENCIES,
libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_DEPENDENCIES, libgpgme_pth_la_LIBADD,
libgpgme_glib_la_DEPENDENCIES, libgpgme_glib_la_LIBADD): Remove
libgpgme-real.la.
(noinst_LTLIBRARIES): Removed.
(libgpgme_glib_la_CFLAGS, libgpgme_pth_la_CFLAGS): Removed.
(AM_CFLAGS): New variable.

2006-11-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Replace AssuanError with gpg_error_t and
ASSUAN_CONTEXT with assuan_context_t.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Check return value of
assuan_pipe_connect.

* rungpg.c: Include <unistd.h>.
(gpg_new): Support --display, --ttyname, --ttytype, --lc-ctype and
--lc-messages. Fixes issue 734.

2006-10-24 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (gpgme_op_trustlist_next): Return error if OPD is
NULL.

2006-10-23 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Unlock CTX_LIST_LOCK while calling
_gpgme_engine_io_event().

*
keylist.c (gpgme_op_keylist_next): Return error if OPD is NULL.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (gpgme_data_release_and_get_mem): Release the data
object properly.

2006-09-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_colon_handler): Move debug output after
initialising KEY.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options): Add NETLIBS.
* Makefile.am (libgpgme_la_LIBADD, libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_LIBADD, libgpgme_glib_la_LIBADD): Add NETLIBS.

* rungpg.c (read_status): Fix comparison disguising as an
assignment.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_locale): Remove conditional on
HAVE_W32_SYSTEM, and just check for LC_MESSAGES.

2006-07-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): Strip potential carriage return.
* genkey.c (get_key_parameter): Skip potential carriage return.
* version.c (_gpgme_get_program_version):
Strip potential carriage
return.

* data.c (gpgme_data_set_file_name): Allow to clear the file name
by passing NULL.

2006-06-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Also clone the engine info.

2006-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (cflags_pth): Revert accidental removal of
pthread support with last change.

2006-02-28 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (O_BINARY) [!O_BINARY]: New macro.
(_gpgme_io_pipe): Open pipes in binary mode.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

* engine.c (gpgme_engine_check_version): Reimplemented to allow
checking the version correctly even after changing the engine
information. Bug reported by Stphane Corthsy.

* rungpg.c (read_colon_line): Invoke colon preprocess handler if
it is set.
(colon_preprocessor_t): New type.
(struct engine_gpg): New member colon.preprocess_fnc.
(gpg_keylist_preprocess): New function.
* keylist.c
(keylist_colon_handler): Allow short key IDs.

2006-02-15 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (create_writer): Make C->have_data a manually reset
event.
(writer): Move code from end of if block to beginning, so it
is also run the first time.
(_gpgme_io_write): Move assert check after error check. Reset
the is_empty event, and also do it eagerly.
(_gpgme_io_select): Unconditionally wait for the is_empty event.

2006-01-26 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_conf_int): New.
* posix-util.c (_gpgme_get_conf_int): New.
* w32-io.c (get_desired_thread_priority): New.
(create_reader, create_writer): Use it here.

2006-01-04 Werner Koch <wk@g10code.com>

* debug.h (_gpgme_debug_srcname): New. Use it with the debug macros.

* w32-glib-io.c (_gpgme_io_set_nonblocking): Add debug
statements. Disable error return for failed nonblocking call.

2006-01-03 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_close): Only close fd if there
is no
channel for it.

2005-12-31 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (find_channel): Set channel to unbuffered.
(_gpgme_io_select): Fix debug output.

2005-12-23 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Append field PKA_ADDRESS.
* verify.c (release_op_data, _gpgme_verify_status_handler): Set

this field.

2005-12-20 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_status_code_t): Added GPGME_STATUS_PKA_TRUST_BAD
and GPGME_STATUS_PKA_TRUST_GOOD.
(struct _gpgme_signature): New field pka_trust.
* verify.c (_gpgme_verify_status_handler): Set pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

* keylist.c (keylist_colon_handler): Store fingerprints of the
subkeys. Reset the secret flag of subkeys for stub secret keys.
(NR_FIELDS): Bumped up to 16

2005-11-27 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Use new_file_name in
engine_get_version invocation. Reported by Stphane Corthsy.

2005-11-24
 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_fd2str): Remove debug printf.

2005-11-18 Werner Koch <wk@g10code.com>

* w32-glib-io.c: Include glib.h before windows to avoid a symbol
shadowing warning.
(find_channel): Better use g_io_channel_win32_new_fd instead of
the autodetection function g_io_channel_unix_new.
(_gpgme_io_select): Rewritten. It is now a fully working select
implementation.

2005-11-18 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_fd2str): New prototype.
* posix-io.c (_gpgme_io_fd2str): New function.
* w32-io.c (_gpgme_io_fd2str): New function.
* rungpg.c: Use this new function.
* w32-glib-io.c (_gpgme_io_fd2str): Rewrote the file handle code
again. Two's company, three's the musketeers.

* w32-glib-io.c: Rewrote the file handle code. We don't create
system fds for every handle (doesn't work for inherited handles),
but we create pseudo fds in a private namespace that designate a
handle and potentially

a giochannel.

2005-11-18 Werner Koch <wk@g10code.com>

* versioninfo.rc.in: Set file version to LT-version + Svn-revision.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c: New file.
* gpgme.def (gpgme_get_giochannel): Add symbol.
* Makefile.am (system_components) [HAVE_DOSISH_SYSTEM]: Remove
w32-io.c.
(ltlib_gpgme_extra): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_extra).
(system_components_not_extra): New variable.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
(libgpgme_pth_la_SOURCES): Add $(system_components_not_extra).
(libgpgme_glib_la_LDFLAGS, libgpgme_glib_la_DEPENDENCIES,
(libgpgme_glib_la_LIBADD, libgpgme_glib_la_CFLAGS)
[BUILD_W32_GLIB]: New variables.
* gpgme-config.in (glib): New option.
* gpgme.m4 (AM_PATH_GPGME_GLIB): New macro.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* w32-io.c (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* posix-io.c (_gpgme_io_kill):
Removed.
(_gpgme_io_waitpid): Declare static.

2005-10-24 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Don't minimize window, hide it.

2005-10-21 Werner Koch <wk@g10code.com>

* Makefile.am: Fixed cut+paste problem

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Build versioninfo.lo, not versioninfo.o. Also, fix
the whole mess.

2005-10-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_edit): Don't add a key argument if in card edit
mode.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme.dll gpgme.dll.a): Use $(srcdir) for
gpgme.def.

* gpgme.h (gpgme_free): New prototype.
* data-mem.c (gpgme_free): New function.
* libgpgme.vers (GPGME_1.1): Add gpgme_free.
* gpgme.def: Add gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_decode_percent_string): Add new argument BINARY
to prototype.
* verify.c (parse_notation): Likewise for invocation.
* conversion.c (_gpgme_decode_percent_string):
Likewise to
declaration. If set, do not replace '\0' characters with a
printable string.
* gpgme.h (struct _gpgme_key_sig): New field notations.
* ops.h (_gpgme_parse_notation): New prototype.
* sig-notation.c (_gpgme_parse_notation): New function.
* key.c (gpgme_key_unref): Free all signature notations.
* keylist.c (op_data_t): New member tmp_keysig.
(finish_key): Clear OPD->tmp_keysig.
* gpgme.c (gpgme_set_keylist_mode): Remove check.
* rungpg.c (gpg_keylist): Support listing signature notations.
(gpg_keylist_ext): Likewise.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* engine.h (_gpgme_set_engine_info): Add prototype.
* engine-backend.h (struct engine_ops): Change return type of
get_file_name() to const char * to silence gcc warning.
* engine.c (engine_get_file_name): Change return type to const
char * to silence gcc warning.
(gpgme_get_engine_info): Use transitional variable to go from
const char * to char * to silence gcc warning.
(_gpgme_set_engine_info):
Likewise.
* engine-gpgsm.c (struct engine_gpgsm): Change type of LINE to
char * to silence gcc warning.
(gpgsm_new): Make ARGV a pointer to const char.
(status_handler): Change type of SRC, END, DST, ALINE and NEWLINE
to char * to silence gcc warning.

* gpgme.def: Add gpgme_data_set_file_name,

gpgme_data_get_file_name, gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* libgpgme.vers: Add gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* Makefile.am (libgpgme_real_la_SOURCES): Add sig-notation.c.
* context.h (struct gpgme_context): New field sig_notations.
* gpgme.h (struct _gpgme_sig_notation): New member value_len and
critical.
(GPGME_SIG_NOTATION_CRITICAL): New symbol.
(gpgme_sig_notation_flags_t): New type.
(gpgme_sig_notation_add, gpgme_sig_notation_clear,
gpgme_sig_notation_get): New prototypes.
* ops.h (_gpgme_sig_notation_create, _gpgme_sig_notation_free):
New prototypes.
*
sig-notation.c (_gpgme_sig_notation_free): New file.
* verify.c (parse_notation): Use support functions.
(release_op_data): Likewise.
* rungpg.c (append_args_from_sig_notations): New function.
(gpg_encrypt_sign, gpg_sign): Call it.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* data.h (struct gpgme_data): New member file_name.
* data.c (gpgme_data_set_filename): New function.
(_gpgme_data_release): Free DH->filename if necessary.
(gpgme_data_get_filename): New function.
* rungpg.c (gpg_encrypt): Set filename option.
(gpg_encrypt_sign): Likewise.
(gpg_sign): Likewise.
* libgpgme.vers (GPGME_1.1): Add gpgme_data_set_file_name and
gpgme_data_get_file_name.

* decrpyt.c, verify.c, gpgme.h: Replace plaintext_filename with
file_name.

2005-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key): Add field is_qualified.
(struct _gpgme_subkey): Likewise.
* keylist.c (set_subkey_capability, set_mainkey_capability): Set
field is_qualified.

2005-09-23
Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): Removed use of environment variable
again.

(create_reader, create_writer): Set thread priority higher.

2005-09-19 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): New environment variable to change
the size of the pipe buffer.

2005-09-13 Werner Koch <wk@g10code.com>

* ath.c: Changes to make it work under W32.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Set to ath.h and ath.c.
(ath_pth_src, ath_pthread_src): Removed.
(w32_o_files): Replace ath-compat.o with ath.o.
(libgpgme_pth_la_CFLAGS): New variable.
* ath-compat.c, ath-pthread-compat.c, ath-pth-compat.c: Removed.
* ath.h (ath_pthread_available, ath_pth_available): Removed.
(ath_init) [!_ATH_EXT_SYM_PREFIX]: Do not define macro.
(struct ath_ops, ath_init) [_ATH_COMPAT]: Removed.
(_ATH_COMPAT): Macro removed.
* posix-sema.c (_gpgme_sema_subsystem_init): Do not call
_gpgme_ath_init.

2005-09-12
 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (release_op_data): Do not free opd->tmp_uid.

2005-09-07 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Quote argv[0].

2005-08-26 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (command_handler): Use _gpgme_io_write instead of write.

* edit.c (command_handler): Do not depend on PROCESSED being
available.

* engine.h (engine_command_handler_t): Add new argument processed.
* ops.h (_gpgme_passphrase_command_handler_internal): Rename
prototype to ...
(_gpgme_passphrase_command_handler): ... this one.
* passphrase.c (_gpgme_passphrase_command_handler_internal):
Rename to ...
(_gpgme_passphrase_command_handler): ... this one.

* edit.c (command_handler): Add new argument processed. Remove
local variable with the same name. Always return processed as
true.
* rungpg.c (command_handler): Send a newline character if the
handler did not.

2005-08-26 Werner Koch <wk@g10code.com>

* w32-util.c (read_w32_registry_string):
Updated from code used by
GnuPG. This allows for expanding strings and features the
implicit fallback key.
(w32_shgetfolderpath, find_program_at_standard_place): New.
(_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): With no registry
entry, locate the programs at the standard place.
(dlopen, dlsym, dlclose): New, so that we can keep on using what
we are accustomed to.

* debug.c (debug_init): Use PATHSEP_C so that under W32 a
semicolon is used which allows us to create files with drive
letters.

* w32-io.c (_gpgme_io_read, _gpgme_io_write): Print content in
debug mode too.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_PLAINTEXT.
(struct _gpgme_op_decrypt_result): New member plaintext_filename.
(struct _gpgme_op_verify_result): Likewise.
* ops.h (_gpgme_parse_plaintext): Add prototype.
* op-support.c (_gpgme_parse_plaintext): New function.
* decrypt.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_decrypt_status_handler):
Handle GPGME_STATUS_PLAINTEXT.
* verify.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_verify_status_handler): Handle GPGME_STATUS_PLAINTEXT.

2005-08-08 Werner Koch <wk@g10code.com>

* util.h (stpcpy): Renamed to ..
(_gpgme_stpcpy): .. this and made inline. This avoids duplicate
definitions when linking statically.
* stpcpy.c: Removed.

2005-08-19 Werner Koch <wk@g10code.com>

* gpgme.def: New.
* versioninfo.rc.in: New.
* Makefile.am: Adds support for building a W32 DLL.

* ttyname_r.c (ttyname_r) [W32]: Return error.
* ath-compat.c [W32]: select and co are not yet supported; return
error.
* data-stream.c (stream_seek): Use ftell if ftello is not available.

2005-07-26 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Allow key IDs.

2005-06-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Only call GPGME_CONFIG if found.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.h (struct _gpgme_signature): New members pubkey_algo and
hash_algo.
* verify.c (parse_valid_sig): Parse pubkey and hash algo numbers.
(parse_new_sig): Parse pubkey, hash algo and timestamp for ERRSIG.

(_gpgme_decrypt_status_handler): Fix last change.

* gpgme.h (struct _gpgme_recipient): New structure.
(gpgme_recipient_t): New type.
(struct _gpgme_op_decrypt_result): Add member recipients.
* decrypt.c (op_data_t): New member last_recipient_p.
(_gpgme_op_decrypt_init_result): Initialize last_recipient_p.
(parse_enc_to): New function.
(_gpgme_decrypt_status_handler): Handle status ENC_TO and
NO_SECKEY.

* wait-global.c (gpgme_wait): Break out of the fd processing loop
after an error.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-06-02 Marcus Brinkmann <marcus@g10code.de>

* wait.h (_gpgme_run_io_cb): New prototype.
* wait.c (_gpgme_run_io_cb): New function.
* wait-global.c (gpgme_wait): Call it.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.
*

wait-private.c (_gpgme_wait_on_condition): Likewise.

2005-06-02 Werner Koch <wk@g10code.com>

* passphrase.c (_gpgme_passphrase_status_handler): Take care of
GPGME_STATUS_NEED_PASSPHRASE_PIN.
(_gpgme_passphrase_command_handler_internal): Also act on the key
"passphrase.pin.ask".

* gpgme.h: Added status codes GPGME_STATUS_SIG_SUBPACKET,
GPGME_STATUS_NEED_PASSPHRASE_PIN, GPGME_STATUS_SC_OP_FAILURE,
GPGME_STATUS_SC_OP_SUCCESS, GPGME_STATUS_CARDCTRL,
GPGME_STATUS_BACKUP_KEY_CREATED.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* data-user.c: Include <errno.h>.

2005-05-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set the CTX->include_certs default to the
default.

2005-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_select): Fix loop increment.

2005-05-05 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_release): Only call user hook if provided.
(user_seek): Return EBADF if no user hook is provided.
(user_read):
Likewise.
(user_write): Likewise.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_INCLUDE_CERTS_DEFAULT): New macro.
* engine-gpgsm.c (gpgsm_sign): Send the include-certs option after
the reset, just for cleanliness, and do not sent it at all if the
default is requested.
* gpgme.c (gpgme_set_include_certs): Allow to use
GPGME_INCLUDE_CERTS_DEFAULT.

2005-04-21 Werner Koch <wk@g10code.com>

* verify.c (calc_sig_summary): Set the key revoked bit.

2005-04-14 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Use LI->ctx when checking a context
in the list, not the user-provided CTX.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

* wait-global.c (gpgme_wait): If no context is found, and we
should not hang, set *status to 0 and return NULL.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* data.h (EOPNOTSUPP) [_WIN32]: Remove definition.
* data.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]:
Remove definition.
(gpgme_data_read, gpgme_data_write, gpgme_data_seek): Return
ENOSYS instead EOPNOTSUPP.
* data-compat.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]: Remove definition.
(gpgme_error_to_errno): Map GPG_ERR_NOT_SUPPORTED
to ENOSYS.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* io.h: Rename to ...
* priv-io.h: ... this.
* Makefile.am (libgpgme_real_la_SOURCES): Change io.h to priv-io.h.
* data.c, engine-gpgsm.c, posix-io.c, rungpg.c, version.c,
w32-io.c, wait-private.c, wait-global.c, wait-user.c, wait.c:
Change all includes of "io.h" to "priv-io.h"

2005-03-09 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Do not
cast away type checks.

* io.h [W32]: Do not include stdio.h. If it is needed do it at
the right place.

* data.h [W32]: Removed kludge for EOPNOTSUP.
* data.c, data-compat.c [W32]: Explicitly test for it here.

Replaced use of _WIN32 by HAVE_W32_SYSTEM except for public header
files.

2005-03-07
Timo Schulz <twoaday@g10code.de>

* gpgme.h: [_WIN32] Removed ssize_t typedef.

* ath.h: [_WIN32] Added some (dummy) types.
* io.h: [_WIN32] include stdio.h.
* data.h: [_WIN32] Define EOPNOTSUPP.
* w32-io.c [_WIN32] (_gpgme_io_subsystem_init): New.
* gpgme.c [_WIN32] (gpgme_set_locale): Disabled.

2004-12-12 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Fix assertion.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* util.h [HAVE_CONFIG_H && HAVE_TTYNAME_R] (ttyname_r): Define
prototype.
* ttyname_r.c: New file.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* putc_unlocked.c, funopen.c: I just claim copyright on these
files and change their license to LGPL, because they are totally
trivial wrapper functions.
* isascii.c: Change copyright notice to the one from ctype/ctype.h
in the GNU C Library (CVS Head 2004-10-10), where isascii is
defined as a macro doing exactly the same as the
function in this
file.
* memrchr.c: Update from the GNU C Library (CVS Head 2001-07-06).
* stpcpy.c: Update from the GNU C Library (CVS Head 2004-10-10).
* ath.c, ath-compat.c, ath.h, ath-pth.c, ath-pth-compat.c,
ath-pthread.c, ath-pthread-compat.c, context.h, conversion.c,
data.c, data-compat.c, data-fd.c, data.h, data-mem.c,
data-stream.c, data-user.c, debug.c, debug.h, decrypt.c,
decrypt-verify.c, delete.c, edit.c, encrypt.c, encrypt-sign.c,
engine-backend.h, engine.c, engine-gpgsm.c, engine.h, error.c,
export.c, genkey.c, get-env.c, gpgme.c, gpgme.h, import.c, io.h,
key.c, keylist.c, mkstatus, Makefile.am, ops.h, op-support.c,
passphrase.c, posix-io.c, posix-sema.c, posix-util.c, progress.c,
rungpg.c, sema.h, sign.c, signers.c, trust-item.c, trustlist.c,
util.h, verify.c, version.c, w32-io.c, w32-sema.c, w32-util.c,
wait.c, wait-global.c, wait.h, wait-private.c, wait-user.c: Change
license to LGPL.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers
(GPGME_1.1): New version.
* engine-backend.h (struct engine_ops): Add argument FILE_NAME to
member get_version(). Add arguments FILE_NAME and HOME_DIR to

member new(). Change return type of get_file_name and get_version
to char *.
* engine-gpgsm.c (gpgsm_get_version): Change return type to char
pointer. Do not cache result.
(gpgsm_new): Add file_name and home_dir argument, and use them
instead of the defaults, if set.
* rungpg.c (struct engine_gpg): New member file_name.
(gpg_get_version): Change return type to char pointer, and do not
cache result.
(gpg_release): Free gpg->file_name.
(gpg_new): Take new arguments file_name and home_dir. Set the
--homedir argument if HOME_DIR is not NULL. Set gpg->file_name.
(start): Use gpg->file_name instead _gpgme_get_gpg_path, if set.
* engine.h (_gpgme_engine_info_copy, _gpgme_engine_info_release):
New prototypes.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info.
* engine.c: Include <assert.h>.
(gpgme_get_engine_info):
Set *INFO within the lock. Move
ENGINE_INFO and ENGINE_INFO_LOCK to ....
(engine_info, engine_info_lock): ... here. New static variables.
(engine_get_version): Add file_name argument to
get_version invocation. Change return type to char pointer.
(gpgme_engine_check_version): Rewritten to free() the return value
of engine_get_version after using it.
(_gpgme_engine_info_release): New function.
(gpgme_get_engine_info): Rewritten.
(_gpgme_engine_info_copy): New function.
(_gpgme_set_engine_info): New function.
(gpgme_set_engine_info): New function.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info, and use that.
* gpgme.h (struct _gpgme_engine_info): Change type of file_name
and version to char * (remove the const). New member home_dir.
(gpgme_set_engine_info, gpgme_ctx_get_engine_info,
gpgme_ctx_set_engine_info): New prototypes.
* context.h (struct gpgme_context): New member engine_info.
* gpgme.c (gpgme_new): Allocate CTX->engine_info.
(gpgme_release):
Deallocate CTX->engine_info.
(gpgme_ctx_get_engine_info, gpgme_ctx_set_engine_info): New
functions.
* op-support.c (_gpgme_op_reset): Look for correct engine info and
pass it to _gpgme_engine_new.
* version.c (gpgme_check_version): Adjust to
_gpgme_compare_versions returning an int.
(_gpgme_compare_versions): Return an int value, not a const char

pointer.
* ops.h (_gpgme_compare_versions): Same for prototype.

2004-10-03 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_trust): If no reason is provided, set
SIG->validity_reason to 0.
(calc_sig_summary): Set GPGME_SIGSUM_CRL_TOO_OLD if appropriate.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Return 0 if ERR is 0.
(start): Call map_assuan_error on return value of
assuan_write_line.

2004-10-05 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_data_lookup): Use char pointer for
pointer arithmetic.

2004-09-30 Marcus Brinkmann
<marcus@g10code.de>

* gpgme.m4: Implement the --api-version check.

* rungpg.c (read_status): Move the polling of the output data pipe
to just before removing the command fd, from just before adding
it. This avoids buffering problems.

* data.c (_gpgme_data_inbound_handler): Use _gpgme_io_read, not
read, to improve debug output.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_IMPORT_NEW, GPGME_IMPORT_UID, GPGME_IMPORT_SIG,
GPGME_IMPORT_SUBKEY, GPGME_IMPORT_SECRET,
(GPGME_KEYLIST_MODE_LOCAL, GPGME_KEYLIST_MODERN_EXTERN,
GPGME_KEYLIST_MODE_SIGS, GPGME_KEYLIST_MODE_VALIDATE): Change from
enum to macros.
(gpgme_keylist_mode_t): Define as unsigned int.
(gpgme_key_t): Change type of keylist_mode to
gpgme_keylist_mode_t.

2004-09-23 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_outbound_handler): Close the file descriptor
if we get an EPIPE.

* data-stream.c (stream_seek): Call ftello and return the current
offset.
* data.h (struct
gpgme_data): Change type of data.mem.offset to
off_t.
* data.c (gpgme_data_seek): Check dh->cbs->seek callback, not read
callback. If SEEK_CUR, adjust the offset by the pending buffer
size. Clear pending buffer on success.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Add copyright notice.

2004-08-18 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Always run the
status handler.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-sk-comment, not --no-comment.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Make sure tail points to the
byte following the uid.
(_gpgme_key_add_sig): Likewise. Don't use calloc, but malloc and
memset.

2004-06-02 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: Remove C-style comment, which is not supported by
older binutils.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options):
Support --api-version.

* libgpgme.vers: List all gpgme symbols under version GPGME_1.0.

* decrypt.c (_gpgme_decrypt_status_handler): Fix last change.
* verify.c (parse_error): Likewise.

* verify.c (parse_error): Do not skip location of where token.

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_REVKEYSIG.

* verify.c (_gpgme_verify_status_handler): Add handling of
GPGME_STATUS_REVKEYSIG.
(parse_trust): Likewise.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_decrypt_result): New fields
wrong_key_usage and _unused.
* decrypt.c (_gpgme_decrypt_status_handler): Don't skip over
character after a matched string, as in a protocol error this
could skip over the trailing binary zero.
Handle decrypt.keyusage error notifications.

* gpgme.h (struct _gpgme_key): New member keylist_mode.
* keylist.c (keylist_colon_handler): Set the keylist_mode of KEY.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_signature):
Change member WRONG_KEY_USAGE
to unsigned int. Same for member _unused.

* keylist.c (set_mainkey_trust_info): Rewritten.
(set_subkey_capability): Handle 'd' (disabled).
(set_mainkey_capability): Rewritten.

2004-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Quote first argument to AC_DEFUN.

2004-04-21 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_unref): Allow passing NULL like free does.
The rule of least surprise.

2004-04-15 Werner Koch <wk@gnupg.org>

* verify.c (prepare_new_sig, _gpgme_verify_status_handler): Remove
unused result.signatures items.

* keylist.c (gpgme_get_key): Return an error if FPR is NULL.

2004-04-08 Werner Koch <wk@gnupg.org>

* verify.c (_gpgme_verify_status_handler): Ignore the error status
if we can't process it.
* decrypt-verify.c (decrypt_verify_status_handler): Backed out
yesterday's hack. It is not any longer required.

2004-04-07 Werner Koch <wk@gnupg.org>

* decrypt-verify.c (decrypt_verify_status_handler):
Hack to cope
with meaningless error codes from the verify status function.

2004-04-05 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_STATUS_NEWSIG.

* verify.c (parse_error): Compare only the last part of the where
token.
(prepare_new_sig): New.
(parse_new_sig): Use prepare_new_sig when required.
(_gpgme_verify_status_handler): Handle STATUS_NEWSIG.

* engine-gpgsm.c (gpgsm_keylist_ext): Send with-validation
option. Fixed pattern construction.
(status_handler): Add debugging output.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect _only_ tty related code with
isatty(). Submitted by Bernhard Herzog.

2004-03-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect all tty related code with
isatty().

* rungpg.c (gpg_cancel): Set GPG->fd_data_map to NULL after
releasing it.
* engine-gpgsm.c (gpgsm_cancel): Only call assuan_disconnect if
GPGSM->assuan_ctx is not NULL. Set it to NULL afterwards.

2004-03-07
 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Do not emit include and lib directory for
prefix "/usr" or "".

2004-03-03 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (gpgsm_export_ext): Properly insert a space
between patterns.

2004-02-18 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Ignore setting of --prefix.

2004-02-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_cancel): New function.
(gpg_release): Call it here.
(_gpgme_engine_ops_gpg): Add it here.
* engine-gpgsm.c (gpgsm_cancel): Fix last change.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_cancel): New function.
* engine-backend.h (struct engine_ops): New member cancel.
* engine.h (_gpgme_engine_cancel): New prototype.
* engine.c (_gpgme_engine_cancel): New function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Add new member cancel.
(gpgsm_cancel): New function.
(gpgsm_release): Use it.
* rungpg.c (_gpgme_engine_ops_gpg): Add new member cancel.

2004-02-17
 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_KEYLIST_MODE_VALIDATE.
* engine-gpgsm.c (gpgsm_keylist): Send this to gpgsm.

2004-02-15 Werner Koch <wk@gnupg.org>

* memrchr.c (memrchr): Fixed implementation. Problem pointed out
by Adriaan de Groot.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-comment, not --comment "".

* data-compat.c (gpgme_data_new_from_filepart): Call fseeko if
available.
* data-stream.c (stream_seek): Likewise.

2004-01-16 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_map_gnupg_error): Handle numerical codes as
used by GnuPG 1.9.x

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key_sig): Fix comment on REVOKED.

2004-01-12 Werner Koch <wk@gnupg.org>

* sign.c: Include util.h for prototype of _gpgme_parse_timestamp.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (_GPGME_D_CLASS): Revert this change.
(struct _gpgme_key_sig): For C++ compilers,
rename class
member to _obsolete_class. Add new member sig_class.
(struct _gpgme_new_signature): Same here.
* key.c (gpgme_key_sig_get_ulong_attr): Use CERTSIG->sig_class,
not CERTSIG->class.
* keylist.c (keylist_colon_handler): Likewise for KEYSIG, but keep
setting KEYSIG->class, too. Rename variable CLASS to SIG_CLASS.
* sign.c (parse_sig_created): Set SIG->sig_class.

2003-12-22 Werner Koch <wk@gnupg.org>

* gpgme.h (_GPGME_D_CLASS): Kludge for C++ compatibility without
changing the C API.

2003-11-19 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_parse_timestamp): New.
(atoi_1, atoi_2, atoi_4): New.
* keylist.c (parse_timestamp): Removed. Changed all callers to use
the new function.
* verify.c (parse_valid_sig): Ditto. Repalced the errno check.
* sign.c (parse_sig_created): Ditto.

2003-10-31 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Detect ISO 8601 timestamps and try
to convert them.

2003-10-10 Marcus Brinkmann <marcus@g10code.de>

*
genkey.c (get_key_parameter): Make a copy of the key parameters.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* data-compat.c: Include <sys/time.h> before <sys/stat.h> for
broken systems.

* engine-gpgsm.c (map_assuan_error): If ERR is -1, return sensible
error.

* io.h (_gpgme_io_subsystem_init): New prototype.
* posix-io.c (_gpgme_io_subsystem_init): Add function.
(_gpgme_io_spawn): Do not fixup signal handler here.
* version.c (do_subsystem_inits): Call _gpgme_io_subsystem_init.

* debug.c (debug_init): Drop const qualifier from E.

* ath.h (struct ath_ops): Make ADDR argument of CONNECT prototype
const.
(ath_connect): Make ADDR argument const.
* ath-pthread.c (ath_connect): Likewise.
* ath-pth.c (ath_connect): Likewise.
* ath-compat.c (ath_connect): Likewise.
* ath.c (ath_connect): Likewise.

* ath.h [HAVE_SYS_SELECT_H]: Include <sys/select.h> for fd_set.
[!HAVE_SYS_SELECT_H]: Include <sys/time.h>.

*
conversion.c (_gpgme_hextobyte): Drop "unsigned" from type of
SRC argument.
* util.h (_gpgme_hextobyte): Likewise for prototype.

* gpgme.h: Remove trailing comma in enum.

* rungpg.c: Do not include <time.h>, <sys/time.h>, <sys/types.h>,
<signal.h>, <fcntl.h>, or "unistd.h".

2003-10-02 Marcus Brinkmann <marcus@g10code.de>

* engine-backend.h (struct engine_ops): Add argument TYPE.
* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* rungpg.c (gpg_edit): Likewise. Use it.
* edit.c (edit_start): Likewise. Pass it on.
(gpgme_op_edit_start, gpgme_op_edit): Likewise.
(gpgme_op_card_edit_start, gpgme_op_card_edit): New functions.

2003-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpg_strerror_r): Change prototype to match
gpg_strerror_r change.
* error.c (gpg_strerror_r): Likewise, also update implementation.

* gpgme.c (gpgme_hash_algo_name): Change name of RMD160 to

RIPEMD160, name of TIGER to TIGER192, name of CRC32-RFC1510 to CRC32RFC1510,
and name of CRC24-RFC2440 to CRC24RFC2440.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_set_locale.

* gpgme.h: Define macro _GPGME_INLINE depending on the compiler characteristics and use that instead __inline__.

* context.h (struct gpgme_context): New members lc_ctype and lc_messages.
* gpgme.c: Include <locale.h>.
(def_lc_lock, def_lc_ctype, def_lc_messages): New static variables.
(gpgme_set_locale): New function.
* engine.c (_gpgme_engine_new): Add arguments lc_ctype and lc_messages.
* engine.h (_gpgme_engine_new): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.
* rungpg.c (gpg_new): Likewise.
* engine-backend.h (struct engine_ops): Likewise to NEW.
* op-support.c (_gpgme_op_reset): Likewise to invocation of _gpgme_engine_new.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_strerror_r): New prototype.
* error.c (gpgme_strerror_r): New function.

* get-env.c: New file.
* util.h (_gpgme_getenv):
Add prototype.
* Makefile.am (libgpgme_real_la_SOURCES): Add get-env.c.
* rungpg.c (build_argv): Use _gpgme_getenv.
* debug.c (debug_init): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.
(gpgsm_new): Use ttyname_r.
* w32-io.c (_gpgme_io_spawn): Disable debugging for now.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Use $libdir, not @libdir@, for the echo command.

* gpgme-config.in: Rewritten.
* gpgme.m4: Rewritten.

2003-08-19 Marcus Brinkmann <marcus@g10code.de>

The ath files (ath.h, ath.c, ath-pth.c, ath-pthread.c,
ath-compat.c, ath-pth-compat.c and ath-pthread-compat.c) have been
updated to have better thread support, and the Makefile.am was
changed to reflect that.

* util.h [!HAVE_FOPENCOOKIE]: Remove fopencookie declaration.
* engine-gpgsm.c (gpgsm_assuan_simple_command): Set ERR to return
value of status_fnc.
* rungpg.c (start): Return SAVED_ERRNO, not errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (start):
Use saved_errno instead errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* funopen.c, putc_unlocked.c, isascii.c, memrchr.c: New files.
* fopencookie.c: File removed.

2003-08-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Put gpg-error related flags after gpgme's.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_new_signature): Rename member CLASS to
_OBSOLETE_CLASS, add member CLASS with type unsigned int.
* sign.c (parse_sig_created): Also set SIG->_unused_class for
backward compatibility.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix status parsing case.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_subkey): Add flag CAN_AUTHENTICATE.
Lower _UNUSED to 23 bits.
(struct _gpgme_key): Likewise.
* keylist.c (set_mainkey_capability): Support 'a' and 'A'.
(set_subkey_capability): Support 'a'.

* keylist.c (gpgme_get_key): Check if there is more than

one key
listed, and return GPG_ERR_AMBIGUOUS_NAME in that case.

* util.h (_gpgme_decode_c_string): Change type of LEN argument to
size_t.
(_gpgme_decode_percent_string): Likewise.
* conversion.c (_gpgme_decode_c_string): Likewise.
(_gpgme_decode_percent_string): Likewise.
(_gpgme_map_gnupg_error): Change type of I to unsigned int.
* signers.c (gpgme_signers_clear): Likewise.
(gpgme_signers_enum): New unsigned variable SEQNO, set to SEQ.
Use SEQNO instead SEQ.
* wait.c (fd_table_put): Change type of I and J to unsigned int.
* wait-global.c (_gpgme_wait_global_event_cb): Change type of IDX
to unsigned int.
(gpgme_wait): Change type of I and IDX to unsigned int.
* wait-private.c (_gpgme_wait_on_condition): Change type of IDX
and I to unsigned int.
* posix-io.c (_gpgme_io_close): Cast return value of macro DIM to
int to suppress gcc warning.
(_gpgme_io_set_close_notify): Likewise.
(_gpgme_io_select): Change type of I to unsigned int.
* engine.c (gpgme_get_engine_info):
Change type of PROTO to
unsigned int.
* wait-user.c (_gpgme_user_io_cb_handler): Change type of IDX and
I to unsigned int.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c (decrypt_verify_status_handler): Expand silly
and wrong expression.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* encrypt.c (encrypt_sym_status_handler): Likewise.
* sign.c (sign_status_handler): Likewise.
* verify.c (verify_status_handler): Likewise.
* decrypt.c (decrypt_status_handler): Likewise.

* engine.c (gpgme_get_engine_info): Initialize NULL.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (gpg_error_libs): Quote GPG_ERROR_CFLAGS and
GPG_ERROR_LIBS when setting the corresponding variables.
Reported by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (set_recipients): Move declaration of NEWLEN to
the beginning of the block.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (mem_write):
Copy original buffer content.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_user_ids_release, gpgme_user_ids_append): Remove
prototypes.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): Add @GPG_ERROR_CFLAGS@.
* gpgme-config.in (gpg_error_libs, gpg_error_cflags): New variables.
Print them.

* op-support.c (_gpgme_parse_inv_userid): Rename to
_gpgme_parse_inv_recp and change to new datatype.
* ops.h (_gpgme_parse_inv_key): Fix prototype.
* gpgme.h (struct _gpgme_invalid_user_id): Rename to
__gpgme_invalid_key. Rename field ID to KEY.
(gpgme_invalid_user_id_t): Rename to gpgme_invalid_key_t.
(struct _gpgme_op_encrypt_result): Here, too.
(struct _gpgme_op_sign_result): Likewise.
* encrypt.c (struct op_data): Likewise.
(release_op_data): Likewise.
* sign.c (struct op_data): Likewise.
(release_op_data): Likewise.

* posix-io.c (_gpgme_io_read): Save errno across debug calls.
(_gpgme_io_write): Likewise.
(_gpgme_io_pipe):
Likewise.
(_gpgme_io_select): Likewise.

* rungpg.c (struct engine_gpg): Remove arg_error.
(add_arg): Don't set arg_error.
(add_data): Likewise.
(start): Don't check arg_error.
(gpg_new): Check return value of add_arg.
* verify.c (parse_notation): Free allocated memory at error.

2003-06-05 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* Makefile.am (EXTRA_DIST): Remove mkerrors.
(BUILT_SOURCES): Remove errors.c.
(MOSTLYCLEANFILES): Likewise.
(libgpgme_la_SOURCES): Likewise. Add error.c.
(errors.c): Remove target.
* mkerrors: File removed.
* error.c: New file.

* gpgme.h (gpgme_error_t): Change to type gpg_error_t.
(gpgme_err_code_t, gpgme_err_source_t): New types.
(gpgme_err_code, gpgme_err_source, gpgme_error, gpgme_err_make):
New static inline functions.
(gpgme_strsource, gpgme_err_code_from_errno,
gpgme_err_code_to_errno, gpgme_err_make_from_errno,
gpgme_error_from_errno): New prototypes.

2003-05-29 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_export_start): Change second arg to const char *.
(gpgme_op_export): Likewise.
(gpgme_op_export_ext_start): New prototype.
(gpgme_op_export_ext): Likewise.
* engine.h: Likewise for _gpgme_engine_op_export and
_gpgme_engine_op_export_ext.
* engine-backend.h (struct engine_ops): Change second argument of
prototype of export to const char *, and add reserved int as
third argument. Add prototype for export_ext.
* engine.c (_gpgme_engine_op_export_ext): New function.
(_gpgme_engine_op_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
* rungpg.c (gpg_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpg_export_ext): New function.
(gpg_keylist_ext): Break loop at error.
(_gpgme_engine_ops_gpg): Add gpg_export_ext.
* engine-gpgsm.c (gpgsm_export): Change second argument of
prototype of export to const
char *, and add reserved int as
third argument.
(gpgsm_export_ext): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_export_ext.
* export.c (export_start): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpgme_op_export_start): Likewise.
(export_ext_start): New function.
(gpgme_op_export_ext_start): Likewise.

(gpgme_op_export_ext): Likewise.

* gpgme.h (gpgme_keylist_mode_t): New type for anonymous enum.
(gpgme_sigsum_t): New type for anonymous enum.

* encrypt-sign.c (encrypt_sign_start): Check for errors earlier,
and return an error if RECP is not set.

* Makefile.am (libgpgme_la_SOURCES): Remove user-id.c.
* user-id.c: Remove file.
* ops.h: Remove prototype for _gpgme_user_ids_all_valid.
* gpgme.h (gpgme_encrypt_flags_t): New type.
(gpgme_op_encrypt_start): Change second parameter to type
gpgme_key_t[], and add third parameter.
(gpgme_op_encrypt): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign):
Likewise.
* encrypt.c (encrypt_start): Likewise.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt): Likewise. Pass flags to engine.
* encrypt-sign.c (encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
* engine-backend.h (struct engine_ops): Likewise for prototypes of
encrypt and encrypt_sign.
* engine.h: Likewise for prototypes of _gpgme_engine_op_encrypt
and _gpgme_engine_op_encrypt_sign.
* engine.c (_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Check flags for always trust option.
* engine-gpgsm.c (gpgsm_encrypt): Likewise.
(set_recipients): Rewritten to use keys instead user IDs.
* rungpg.c (append_args_from_recipients): Rewritten to use keys
instead user IDs.
* encrypt.c (_gpgme_encrypt_status_handler): Change errors
returned to GPGME_Invalid_Key and GPGME_General_Error.

2003-05-28
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Rename GpgsmObject to engine_gpgsm_t.
(struct gpgsm_object_s): Rename to struct engine_gpgsm.
* rungpg.c: Rename GpgObject to engine_gpg_t.
(struct gpg_object_s): Rename to struct engine_gpg.

* context.h (struct gpgme_context): Change EngineObject to
engine_object_t.
(enum ctx_op_data_type): Rename to ctx_op_data_id_t.
(ctx_op_data_t): New type.
(struct gpgme_context): Use it.
* ops.h (_gpgme_op_data_lookup): Use new type name.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* engine.c: Rename EngineObject to engine_t in the file. Also
EngineStatusHandler to engine_status_handler_t,
EngineCommandHandler to engine_command_handler_t and
EngineColonLineHandler to engine_colon_line_handler.
* rungpg.c (start): Likewise.
* engine-gpgsm.c: Likewise.
* engine-backend.h (struct engine_ops): Likewise
* engine.h (struct engine_object_s): Rename to struct engine.
(EngineObject): Rename to
engine_t. Also everywhere else in the
file.
(EngineStatusHandler): Rename to engine_status_handler_t.
(EngineColonLineHandler): Rename to engine_colon_line_handler_t.
(EngineCommandHandler): Rename to engine_command_handler_t.

* engine-gpgsm.c (gpgsm_export): Fix bug in last change.

* Makefile.am (libgpgme_la_SOURCES): Remove recipient.c, add
user-id.c.
* gpgme.h (gpgme_recipients_t): Removed.
(gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name,
gpgme_recipients_add_name_with_validity, gpgme_recipients_count,
gpgme_recipients_enum_open, gpgme_recipients_enum_read,
gpgme_recipients_enum_close): Removed.
(gpgme_op_encrypt, gpgme_op_encrypt_start, gpgme_op_encrypt_sign,
gpgme_op_encrypt_sign_start, gpgme_op_export_start,
gpgme_op_export): Change second argument to gpgme_user_id_t.
(gpgme_user_ids_release): New prototype.
(gpgme_user_ids_append): Likewise.
* ops.h (_gpgme_recipients_all_valid): Remove.
(_gpgme_user_ids_all_valid): Add.
* context.h
(struct gpgme_recipients): Removed.
* user-id.c: New file.
* recipient.c: Removed file.
* rungpg.c (append_args_from_recipients): Change last arg to
gpgme_user_id_t. Reimplement.
(gpg_encrypt): Change second arg to gpgme_user_id_t.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise. Rewrite user ID list code.

* engine.c (_gpgme_engine_op_encrypt): Change second arg to
gpgme_user_id_t.
(_gpgme_engine_op_encrypt_sign): Likewise.
(_gpgme_engine_op_export): Likewise.
* engine.h (_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export): Likewise.
* engine-gpgsm.c (set_recipients): Likewise. Rewrite loop code.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
* engine-backend.h (struct engine_ops): Likewise for members
ENCRYPT, ENCRYPT_SIGN and EXPORT.
* export.c (export_start, gpgme_op_export_start, gpgme_op_export):
Likewise.
* encrypt.c (encrypt_start): Likewise. Don't check for count of
recipients.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt):
Likewise.
* encrypt-sign.c (encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_import_result): Add skipped_new_keys.
* import.c (parse_import_res): Add skipped_new_keys parser.

* op-support.c (_gpgme_parse_inv_userid): Add missing break
statements.
* encrypt.c (gpgme_op_encrypt): Use gpgme_error_t instead of int.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* encrypt.c (gpgme_op_encrypt_result): Use intermediate variable
HOOK to avoid compiler warning. Don't ask, you don't want to know.
(_gpgme_encrypt_status_handler): Likewise.
(_gpgme_op_encrypt_init_result): Likewise.
* decrypt.c (gpgme_op_decrypt_result): Likewise.
(_gpgme_decrypt_status_handler): Likewise.
(_gpgme_op_decrypt_init_result): Likewise.
* verify.c (gpgme_op_verify_result): Likewise.
(_gpgme_verify_status_handler): Likewise.
(_gpgme_op_verify_init_result):
Likewise.
* edit.c (edit_status_handler): Likewise.
(command_handler): Likewise.
(edit_start): Likewise.
* genkey.c (gpgme_op_genkey_result): Likewise.

(genkey_status_handler): Likewise.
(genkey_start): Likewise.
* import.c (gpgme_op_import_result): Likewise.
(import_status_handler): Likewise.
(_gpgme_op_import_start): Likewise.
* trustlist.c (gpgme_op_trustlist_next): Likewise.
(_gpgme_op_trustlist_event_cb): Likewise.
(gpgme_op_trustlist_start): Likewise.
* keylist.c (gpgme_op_keylist_result): Likewise.
(keylist_colon_handler): Likewise.
(keylist_status_handler): Likewise.
(_gpgme_op_keylist_event_cb): Likewise.
(gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): Likewise.
* sign.c (gpgme_op_sign_result): Likewise.
(_gpgme_sign_status_handler): Likewise.
(_gpgme_op_sign_init_result):
Likewise.

* passphrase.c (_gpgme_passphrase_command_handler_internal): Fix
access to pointer type.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* engine.h (EngineCommandHandler): Change last argument to int fd.
* gpgme.h (gpgme_passphrase_cb_t): Rewritten to take parts of the
description and fd.
(gpgme_edit_cb_t): Change last argument to int fd.
* ops.h (_gpgme_passphrase_command_handler_internal): New prototype.
* passphrase.c: Include <assert.h>.
(op_data_t): Rename userid_hint to uid_hint, remove last_pw_handle.
(release_op_data): Check values before calling free.
(_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): New function.
(_gpgme_passphrase_command_handler): Rewritten.
* edit.c (edit_status_handler): Pass -1 as fd argument.
(command_handler): Update prototype. New variable processed. Use
it to store return value of
_gpgme_passphrase_command_handler_internal which is now used
instead _gpgme_passphrase_command_handler.
Use it also to check
if we should call the user's edit function. Pass fd to user's
edit function.
* rungpg.c (struct gpg_object_s): Change type of cmd.cb_data to
void *.

(gpg_release): Check value before calling free. Do not release
cmd.cb_data.
(command_cb): Function removed.
(command_handler): New function. Thus we don't use a data object
for command handler stuff anymore, but handle it directly. This
allows proper error reporting (cancel of passphrase requests, for
example). Also all callbacks work via direct writes to the file
descriptor (so that passphrases are not kept in insecure memory).
(gpg_set_command_handler): Rewritten to use even more ugly hacks.
(read_status): Check cmd.keyword before calling free. Install
command_handler as the I/O callback handler with GPG as private
data.

* rungpg.c (gpg_new): Add --enable-progress-filter to gpg
invocation.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Rename to
decrypt_verify_start.
(gpgme_op_decrypt_verify_start):
Call decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* verify.c (verify_status_handler): New function that also calls
progress status handler.
(_gpgme_op_verify_start): Set status handler to verify_status_handler.
Rename to (verify_start).
(gpgme_op_verify_start): Call verify_start.
(gpgme_op_verify): Likewise.
* encrypt.c (encrypt_status_handler): New function.
(_gpgme_encrypt_sym_status_handler): Call progress status handler.
Make static. Rename to encrypt_sym_status_handler.
(encrypt_start): Set status handler to encrypt_sym_status_handler
or encrypt_status_handler.
* sign.c (sign_status_handler): New function.
(sign_start): Set status handler to sign_status_handler.
* decrypt.c (decrypt_status_handler): New function that also calls
progress status handler.
(decrypt_start): Set status handler to decrypt_status_handler.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler):
Call
_gpgme_progress_status_handler.

* conversion.c (_gpgme_decode_c_string): Add missing break
statement.

* recipient.c (gpgme_recipients_add_name_with_validity): Add one
to buffer to allocate.

2003-05-19 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix ERRSIG case.
Submitted by Benjamin Lee <benjaminlee@users.sf.net>.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: The following types are renamed. The old name is kept
as a deprecated typedef.
(GpgmeCtx): Rename to gpgme_ctx_t.
(GpgmeData): Rename to gpgme_data_t.
(GpgmeRecipients): Rename to gpgme_recipients_t.
(GpgmeError): Rename to gpgme_error_t.
(GpgmeDataEncoding): Rename to gpgme_data_encoding_t.
(GpgmePubKeyAlgo): Rename to gpgme_pubkey_algo_t.
(GpgmeHashAlgo): Rename to gpgme_hash_algo_t.
(GpgmeSigStat): Rename to gpgme_sig_stat_t.
(GpgmeSigMode): Rename to gpgme_sig_mode_t.
(GpgmeAttr): Rename to gpgme_attr_t.
(GpgmeValidity): Rename to gpgme_validity_t.
(GpgmeProtocol):
Rename to gpgme_protocol_t.
(GpgmeStatusCode): Rename to gpgme_status_code_t.
(GpgmeEngineInfo): Rename to gpgme_engine_info_t.
(GpgmeSubkey): Rename to gpgme_subkey_t.
(GpgmeKeySig): Rename to gpgme_keysig_t.
(GpgmeUserID): Rename to gpgme_user_id_t.
(GpgmePassphraseCb): Rename to gpgme_passphrase_cb_t.
(GpgmeProgressCb): Rename to gpgme_progress_cb_t.
(GpgmeEditCb): Rename to gpgme_edit_cb_t.
(GpgmeIOCb): Rename to gpgme_io_cb_t.
(GpgmeRegisterIOCb): Rename to gpgme_register_io_cb_t.
(GpgmeRemoveIOCb): Rename to gpgme_remove_io_cb_t.
(GpgmeEventIO): Rename to gpgme_event_io_t.
(GpgmeEventIOCb): Rename to gpgme_event_io_cb_t.
(GpgmeIOCbs): Rename to gpgme_io_cbs.
(gpgme_io_cbs_t): New type.
(GpgmeDataReadCb): Rename to gpgme_data_read_cb_t.
(GpgmeDataWriteCb): Rename to gpgme_data_write_cb_t.
(GpgmeDataSeekCb): Rename to gpgme_data_seek_cb_t.
(GpgmeDataReleaseCb): Rename to gpgme_data_release_cb_t.
(GpgmeDataCbs): Rename to gpgme_data_cbs.
(gpgme_data_cbs_t):
New type.
(GpgmeInvalidUserID): Rename to gpgme_invalid_user_id_t.
(GpgmeEncryptResult): Rename to gpgme_encrypt_result_t.
(GpgmeDecryptResult): Rename to gpgme_decrypt_result_t.
(GpgmeNewSignature): Rename to gpgme_new_signature_t.
(GpgmeSignResult): Rename to gpgme_sign_result_t.

(GpgmeSigNotation): Rename to gpgme_sig_notation_t.
(GpgmeSignature): Rename to gpgme_signature_t.
(GpgmeVerifyResult): Rename to gpgme_verify_result_t.
(GpgmeImportStatus): Rename to gpgme_import_status_t.
(GpgmeImportResult): Rename to gpgme_import_result_t.
(GpgmeGenKeyResult): Rename to gpgme_genkey_result_t.
(GpgmeKeyListResult): Rename to gpgme_keylist_result_t.
(GpgmeTrustItem): Rename to gpgme_trust_item_t.
* gpgme.h (gpgme_deprecated_error_t): New type, swallowing macros
GPGME_No_Recipients, GPGME_Invalid_Recipient and
GPGME_No_Passphrase.
* data.h (struct gpgme_data_s): Rename to struct gpgme_data.
* context.h (struct gpgme_context_s): Rename to struct
gpgme_context.
(struct
gpgme_recipients_s): Rename to gpgme_recipients.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (finish_key): Clear OPD->tmp_uid.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Return GPGME_No_Data
for NODATA status without signatures.

2003-05-05 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Use decoded string to parse user id.
(_gpgme_key_add_sig): Likewise.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): Remove member op_info.

* key.c (_gpgme_key_add_sig): Initialize SIG->uid.

* gpgme.h (GpgmeError): Add deprecated values for
GPGME_Invalid_Type and GPGME_Invalid_Mode.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_op_info): Remove prototype.
* ops.h (_gpgme_set_op_info,
_gpgme_data_release_and_return_string, _gpgme_data_get_as_string,
_gpgme_data_append, _gpgme_data_append_string,
_gpgme_data_append_string_for_xml,

_gpgme_data_append_for_xml,
_gpgme_data_append_percentstring_for_xml): Likewise.
(_gpgme_progress_status_handler): Change first arg to void *.
* progress.c (_gpgme_progress_status_handler): Likewise.
* conversion.c: Do not include <string.h>, <errno.h>, <ctype.h>,
and <sys/types.h>, but <string.h>.
(_gpgme_data_append): Remove function.
(_gpgme_data_append_string): Likewise.
(_gpgme_data_append_for_xml): Likewise.
(_gpgme_data_append_string_for_xml): Likewise.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data-mem.c (_gpgme_data_get_as_string): Likewise.
(_gpgme_data_release_and_return_string): Likewise.
* gpgme.c (gpgme_get_op_info): Likewise.
(_gpgme_set_op_info): Likewise.

* gpgme.h (struct _gpgme_key): New structure.
(GpgmeKey): Define using _gpgme_key.
(struct _gpgme_subkey): New structure.
(GpgmeSubKey): New type.
(struct _gpgme_key_sig): New structure.
(GpgmeKeySig): New type.
(struct _gpgme_user_id): New structure.
(GpgmeUserID):
New type.
(struct _gpgme_op_keylist_result): New structure.
(GpgmeKeyListResult): New type.
(gpgme_op_keylist_result): New function.
(gpgme_key_get_as_xml): Remove prototype.
* context.h (struct gpgme_context_s): Remove members tmp_key,
tmp_uid, key_cond and key_queue.
(struct key_queue_item_s): Remove structure.
(struct user_id_s): Remove structure.
(struct gpgme_recipients_s): Replace with simple
GpgmeUserID list.
* gpgme.c (gpgme_release): Do not release CTX->tmp_key.
* ops.h (_gpgme_key_add_subkey, _gpgme_key_append_name,
_gpgme_key_add_sig, _gpgme_trust_item_new): New prototypes.
* rungpg.c (command_cb): Return GpgmeError instead int.
New variable ERR. Use it to hold return value of cmd handler.
(gpg_delete): Access fingerprint of key directly.
(append_args_from_signers): Likewise.
(gpg_edit): Likewise.
(append_args_from_recipients): Use GpgmeUserID for recipient list.
* engine-gpgsm.c: Do not include "key.h".
(gpgsm_delete): Access fingerprint of key
directly.
(gpgsm_sign): Likewise.

(set_recipients): Use GpgmeUserID for recipients. Invert invalid
user ID flag.
* key.h: File removed.
* key.c: Completely reworked to use exposed GpgmeKey data types.
* keylist.c: Likewise.
* recipient.c: Completely reworked to use GpgmeUserID.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_key): Remove force_update argument.
* key-cache.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove key-cache.c.
* ops.h (_gpgme_key_cache_add, _gpgme_key_cache_get): Remove
prototypes.
* keylist.c (_gpgme_op_keylist_event_cb): Don't call
_gpgme_key_cache_add.
(gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Remove last argument to
gpgme_get_key invocation.

* gpgme.h (struct _gpgme_trust_item): New structure.
(GpgmeTrustItem): New type.
(gpgme_trust_item_ref, gpgme_trust_item_unref): New prototypes.
* context.h (struct trust_queue_item_s): Remove structure.
(struct gpgme_context_s): Remove trust_queue
member.
* Makefile.am (libgpgme_la_SOURCES): Add trust-item.c.
* trust-item.c: New file.
* trustlist.c: Do not include <stdio.h> or <time.h>, but
"gpgme.h".
(struct trust_queue_item_s): Change to new type op_data_t.
(trust_status_handler): Change first argument to void *.
(trust_colon_handler): Likewise.
(_gpgme_op_trustlist_event_cb): Use op_data_t type.
(gpgme_op_trustlist_start): Use op_data_t and rework error
handling.
(gpgme_op_trustlist_next): Use op_data_t.
(gpgme_trust_item_release): Remove function.
(gpgme_trust_item_get_string_attr): Likewise.
(gpgme_trust_item_get_int_attr): Likewise.

* verify.c (calc_sig_summary): Do not set GPGME_SIGSUM_SYS_ERROR
for bad signatures.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* context.h: Remove OPDATA_VERIFY_COLLECTING.
(struct gpgme_context_s): Remove member notation.

* gpgme.h: Make enum for GPGME_KEYLIST_MODE_* values.

* gpgme.h (struct _gpgme_sig_notation): New structure.
(GpgmeSigNotation): New
type.
(struct _gpgme_signature): New structure.
(GpgmeSignature): New type.
(struct _gpgme_op_verify_result): New structure.
(GpgmeVerifyResult): New type.
(gpgme_op_verify_result): New prototype.
(gpgme_get_notation): Remove prototype.
* ops.h (_gpgme_op_verify_init_result): New prototype.
(_gpgme_verify_status_handler): Change first argument to void *.
* util.h (_gpgme_decode_percent_string, _gpgme_map_gnupg_error):
New prototypes.
* conversion.c (_gpgme_decode_percent_string): New function.
(gnupg_errors): New static global.
(_gpgme_map_gnupg_error): New function.
* gpgme.c (gpgme_release): Don't release CTX->notation.
(gpgme_get_notation): Remove function.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Call
_gpgme_op_verify_init_result.
* verify.c: Do not include <stdio.h>, <assert.h> and "key.h", but
do include "gpgme.h".
(struct verify_result): Replace with ...
(op_data_t): ... this type.
(release_verify_result): Remove function.
(release_op_data):
New function.
(is_token): Remove function.
(skip_token): Remove function.
(copy_token): Remove function.
(gpgme_op_verify_result): New function.
(calc_sig_summary): Rewritten.
(finish_sig): Remove function.
(parse_new_sig): New function.
(parse_valid_sig): New function.
(parse_notation): New function.
(parse_trust): New function.
(parse_error): New function.
(_gpgme_verify_status_handler): Rewritten. Change first argument
to void *.
(_gpgme_op_verify_start): Rework error handling. Call
_gpgme_op_verify_init_result.
(gpgme_op_verify): Do not release or clear CTX->notation.
(gpgme_get_sig_status): Rewritten.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.

(gpgme_get_sig_key): Likewise.

* gpgme.h (struct _gpgme_op_decrypt_result): New structure.
(GpgmeDecryptResult): New type.
(gpgme_op_decrypt_result): New prototype.
* ops.h (_gpgme_op_decrypt_init_result): New prototype.
(_gpgme_decrypt_status_handler): Fix prototype.
(_gpgme_decrypt_start):
Remove prototype.
* decrypt-verify.c: Do not include <stdio.h>, <stdlib.h>,
<string.h> and <assert.h>, "util.h" and "context.h", but
"gpgme.h".
(decrypt_verify_status_handler): Change first argument to void *,
and rework error handling.
(_gpgme_op_decrypt_verify_start): New function.
(gpgme_op_decrypt_verify_start): Rewrite using
_gpgme_op_decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* decrypt.c: Include <string.h>, "gpgme.h" and "util.h".
(struct decrypt_result): Change to typedef op_data_t, rewritten.
(is_token): Remove function.
(release_op_data): New function.
(skip_token): Remove function.
(gpgme_op_decrypt_result): New function.
(_gpgme_decrypt_status_handler): Change first argument to void *.
Rework error handling.
(_gpgme_decrypt_start): Rename to ...
(decrypt_start): ... this. Call _gpgme_op_decrypt_init_result.
(_gpgme_op_decrypt_init_result): New function.
(gpgme_op_decrypt_start): Use decrypt_start.
(gpgme_op_decrypt): Likewise.

2003-04-27
Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c: Do not include <stddef.h>, <stdio.h>,
<stdlib.h>, <string.h>, <assert.h> and "util.h", but "gpgme.h".
(_gpgme_op_encrypt_sign_start): Rename to ...
(encrypt_sign_start): ... this.
(gpgme_op_encrypt_sign_start): Use encrypt_sign_start, not
_gpgme_op_encrypt_sign_start.
(gpgme_op_encrypt_sign): Likewise.

* gpgme.h (GpgmeEncryptResult): New data type.
(gpgme_op_encrypt_result): New prototype.
* ops.h (_gpgme_op_encrypt_init_result): New prototype.
(_gpgme_op_encrypt_status_handler): Fix prototype.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call

_gpgme_op_encrypt_init_result.
* encrypt.c: Do not include <stdio.h>, <assert.h>, "util.h" and
"wait.h". Include <errno.h> and "gpgme.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct encrypt_result): Rename to ...
(op_data_t): ... new data type. Rewrite for user result data.
(append_xml_encinfo): Remove function.
(release_op_data): New function.
(gpgme_op_encrypt_result):
New function.
(_gpgme_op_encrypt_status_handler): Change first argument to void *.
Rewrite result parsing.
(_gpgme_op_encrypt_sym_status_handler): Change first argument to
void *.
(_gpgme_op_encrypt_init_result): New function.
(_gpgme_op_encrypt_start): Rename to ...
(encrypt_start): ... this.
(gpgme_op_encrypt_start): Use encrypt_start, not
gpgme_op_encrypt_start.
(gpgme_op_encrypt): Likewise.

* gpgme.h (GpgmePubKeyAlgo, GpgmeHashAlgo, GpgmeInvalidUserID,
GpgmeNewSignature, GpgmeSignResult): New data types.
(gpgme_op_sign_result, gpgme_pubkey_algo_name,
gpgme_hash_algo_name): New prototypes.
* gpgme.c (gpgme_pubkey_algo_name): New function.
(gpgme_hash_algo_name): Likewise.
* ops.h (_gpgme_parse_inv_userid, _gpgme_op_sign_init_result): New
prototype.
(_gpgme_op_sign_status_handler): Fix prototype.
* op-support.c: Include <errno.h> and <string.h>.
(_gpgme_parse_inv_userid): New function.
* sign.c: Include <errno.h> and "gpgme.h", but
not <stdio.h>,
<assert.h> and "util.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct sign_result): Change to op_data_t type and rework it.
(release_sign_result): Rename to ...
(release_op_data): ... this and rewrite it.
(append_xml_info): Remove function.
(gpgme_op_sign_result): New function.
(parse_sig_created): New function.
(_gpgme_sign_status_handler): Change first argument to void *.
Rewrite the function to use the new result structure and functions.
(_gpgme_op_sign_init_result): New function.
(_gpgme_op_sign_start): Rename to ...
(sign_start): ... this. Call _gpgme_op_sign_init_result.
(gpgme_op_sign_start): Use sign_start instead _gpgme_op_sign_start.

(gpgme_op_sign): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call
_gpgme_op_sign_init_result.

* delete.c: Include <errno.h> and "gpgme.h", but not "util.h" or
"key.h".
(enum delete_problem): Move into function delete_status_handler.
(delete_status_handler): Change first argument to void *. Parse
delete
problem with strtol instead atoi. Return better error
values.
(_gpgme_op_delete_start): Rename to ...
(delete_start): ... this. Rework error handling.
(gpgme_op_delete_start): Use delete_start instead
_gpgme_op_delete_start.
(gpgme_op_delete): Likewise.
* gpgme.h (GpgmeDataType): Removed.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Change GPGME_IMPORT_PRIVATE to GPGME_IMPORT_SECRET.
* import.c (parse_import_res): Parse unchanged field.

* gpgme.h: New enum for GPGME_IMPORT_NEW, GPGME_IMPORT_UID,
GPGME_IMPORT_SIG, GPGME_IMPORT_SUBKEY, GPGME_IMPORT_PRIVATE.
(GpgmeError): GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key added
as new error codes.
(struct _gpgme_import_status): New structure.
(GpgmeImportStatus): New type.
(struct _gpgme_op_import_result): New structure.
(GpgmeImportResult): New type.
(gpgme_op_import_result): New function.
* import.c: Include <errno.h> and "gpgme.h", but not "util.h".
(struct import_result): Change to type op_data_t.
(release_import_result): Rename to ...
(release_op_data): ... this.
(append_xml_impinfo): Function removed.
(gpgme_op_import_result): New function.
(parse_import): New function.
(parse_import_res): Likewise.
(import_status_handler): Change first argument to void *. Rewrite
to use new functions.

(_gpgme_op_import_start): Rework error handling.

* edit.c: Do not include <assert.h>, "util.h", but "gpgme.h".
(edit_resut): Change to typedef for op_data_t.
(edit_status_handler): Change first argument to void *.
Rework error handling.
(command_handler): Rework error handling.
(_gpgme_op_edit_start): Rename to ...
(edit_start): ... this. Rework
error handling.
(gpgme_op_edit_start): Rewrite using edit_start.
(gpgme_op_edit): Likewise.

* ops.h (_gpgme_passphrase_start): Remove prototype.
* passphrase.c: Do not include <assert.h>, "util.h" or
"debug.h", but "gpgme.h".
(struct passphrase_result): Change to typedef for op_data_t.
(release_passphrase_result): Rename to release_op_data.
(_gpgme_passphrase_status_handler): Change first argument to void *.
Use new op_data_t type.
(_gpgme_passphrase_command_handler): Use new op_data_t type.
(_gpgme_passphrase_start): Remove function.
* decrypt.c (_gpgme_decrypt_start): Rewrite error handling. Do
not call _gpgme_passphrase_start, but install command handler.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.

* context.h (struct gpgme_context_s): Remove member initialized,
use_cms and help_data_1. Add member protocol. Make use_armor and
use_textmode bit flags.
 Make keylist_mode, include_certs,
signers_len and signers_size unsigned.
* gpgme.c (gpgme_new): Initialize CTX->protocol.
(gpgme_set_protocol): Do not check CTX. Use CTX->protocol.
(gpgme_get_protocol): Likewise.
(gpgme_release): Do not release CTX->help_data_1.
* op-support.c (_gpgme_op_reset): Use CTX->protocol.

* wait-private.c (_gpgme_wait_private_event_cb): Remove variable CTX.

* data.c: Do not include <assert.h>, but "gpgme.h".
(_gpgme_data_inbound_handler): Expand _gpgme_data_append, because
it will go. Do not assert DH.
(_gpgme_data_outbound_handler): Do not assert DH.

* export.c: Do not include <stdlib.h>, "debug.h" and "util.h", but
"gpgme.h".

(export_status_handler): Change type of first argument to void *.
(_gpgme_op_export_start): Rename to ...
(export_start): ... this. Rework error handling.
(gpgme_op_export_start): Rewritten to use export_start instead
_gpgme_op_export_start.
(gpgme_op_export): Likewise.

* gpgme.h (GpgmeError): Add GPGME_Busy,
GPGME_No_Request.
(GPGME_No_Recipients, GPGME_Invalid_Recipient,
GPGME_No_Passphrase): New macros.

* key.c (gpgme_key_get_string_attr): Fix validity attribute.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_genkey_result): New structure.
(GpgmeGenKeyResult): New type.
(gpgme_op_genkey): Drop last argument.
(gpgme_op_genkey_result): New function.
* genkey.c: Do not include "util.h", but "gpgme.h".
(struct genkey_result): Replace with ...
(op_data_t): ... this new type.
(release_genkey_result): Replace with ...
(release_op_data): ... this new function.
(gpgme_op_genkey_result): New function.
(genkey_status_handler): Rewritten using new op_data_t type.
(get_key_parameter): New function.
(_gpgme_op_genkey_start): Renamed to
(genkey_start): ... this and rewritten.
(gpgme_op_genkey_start): Use genkey_start instead
_gpgme_op_genkey_start.
(gpgme_op_genkey): Rewritten. Remove FPR argument.

* context.h (struct gpgme_context_s): Remove member
verbosity.
* gpgme.c (gpgme_new): Do not set member verbosity.
* engine.h (_gpgme_engine_set_verbosity): Remove prototype.
* engine.c (_gpgme_engine_set_verbosity): Remove function.
* engine-backend.h (struct engine_ops): Remove set_verbosity.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Remove set_verbosity member.
* rungpg.c (_gpgme_engine_ops_gpg): Likewise.
(gpg_set_verbosity): Remove function.
* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_set_verbosity.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.

* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start):
Likewise.

* Makefile.am (libgpgme_la_SOURCES): Add key-cache.c.
* key.c (key_cache_initialized, key_cache_size,
key_cache_max_chain_length,): Removed.
(struct key_cache_item_s, key_cache_lock, key_cache,
key_cache_unused_items, hash_key, _gpgme_key_cache_add,
_gpgme_key_cache_get, gpgme_get_key): Moved to ...
* key-cache.c: ... here. New file.
* key.h (_gpgme_key_cache_init): Remove prototypes.
(_gpgme_key_cache_add,_gpgme_key_cache_get): Move to ...
* ops.h: ... here.
* version.c: Do not include "key.h".
(do_subsystem_inits): Do not call _gpgme_key_cache_init.

* mkstatus: Strip trailing comma.
* gpgme.h (GpgmeStatus): Pretty print.

* gpgme.h (GpgmeError): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* passphrase.c (_gpgme_passphrase_status_handler): Use
GPGME_Bad_Passphrase instead GPGME_No_Passphrase.

* gpgme.h (GpgmeError): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
* encrypt.c (_gpgme_encrypt_status_handler):
Use GPGME_No_UserID
instead GPGME_No_Recipients and GPGME_Invalid_UserID instead
GPGME_Invalid_Recipient.
(_gpgme_op_encrypt_start): Likewise.

* gpgme.h (GpgmeError): Remove GPGME_Busy and GPGME_No_Request.
* wait-user.c (_gpgme_wait_user_event_cb): Don't clear CTX->pending.
* wait-private.c (_gpgme_wait_private_event_cb): Likewise.
* wait-global.c (gpgme_wait): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_get_sig_status): Don't check pending flag.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.

(gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_reset): Likewise.
* trustlist.c (gpgme_op_trustlist_start): Don't clear pending flag.
(gpgme_op_trustlist_next): Don't check or clear pending flag.
(gpgme_op_trustlist_end): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* context.h (struct gpgme_context_s): Remove member PENDING.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* delete.c (_gpgme_op_delete_start):
Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* key.c (gpgme_get_key): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
(gpgme_op_keylist_end): Likewise.
* data-compat.c (gpgme_error_to_errno): Don't convert EBUSY.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type to return GpgmeError,
and add argument for returning the result string.
(gpgme_cancel): Remove prototype.
* gpgme.c (gpgme_cancel): Remove function.
* context.h (struct gpgme_context_s): Remove member cancel.
* passphrase.c (_gpgme_passphrase_command_handler): Call the
passphrase callback in the new way.

2003-01-30
Marcus Brinkmann <marcus@g10code.de>

* edit.c (_gpgme_edit_status_handler): Call the progress status
handler.

2003-02-05 Marcus Brinkmann <marcus@g10code.de>

* wait-user.c (_gpgme_wait_user_remove_io_cb): Move check for no
I/O handlers left to ...
(_gpgme_user_io_cb_handler): ... here.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (trustlist_colon_handler): Release ITEM if name

could not be allocated.
(gpgme_trust_item_release): Only release name if it is allocated.
Reported by Marc Mutz <Marc.Mutz@uni-bielefeld.de>.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): If he status handler returns an error,
return it.
(status_handler): If read_status fails, just return the error.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (start): Handle all errors, not only most of
them.
(xtoi_1, xtoi_2): Remove macro.
(status_handler): Replace use of xtoi_2 with _gpgme_hextobyte.

2003-02-01 Marcus
Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Replace
ASSUAN_Bad_Certificate_Path with ASSUAN_Bad_Certificate_Chain.
(gpgsm_new): Use assuan_pipe_connect instead assuan_pipe_connect2.

* util.h (DIMof): Remove macro.

* ops.h (_gpgme_op_event_cb, _gpgme_op_event_cb_user,
_gpgme_data_unread): Prototypes removed.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove types.h.
* io.h (struct spawn_fd_item_s): Do not include "types.h".
* key.h: Likewise.
* context.h: Likewise.
* cengine-gpgsm.h: Likewise.
* engine.h: Include "gpgme.h" instead "types.h". Add prototypes
for EngineStatusHandler, EngineColonLineHandler and
EngineCommandHandler.
(_gpgme_engine_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler):
Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* engine-backend.h: Include "engine.h" instead "types.h".

(struct engine_ops): Change Gpgme*Handler parameters in members
set_command_handler, set_colon_line_handler and set_status_handler
to Engine*Handler.
* engine.c (_gpgme_engine_set_status_handler): Change parameter
type from GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler): Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* rungpg.c (struct gpg_object_s): Change type of member status.fnc
from GpgmeStatusHandler to EngineStatusHandler. Change type of
member colon.fnc from GpgmeColonLineHandler to
EngineColonLineHandler. Change type of member cmd.fnc from
GpgmeCommandHandler to EngineCommandHandler.
* engine-gpgsm.c (struct gpgsm_object_s): Likewise.
* rungpg.c
(gpg_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
* engine-gpgsm.c (gpgsm_set_status_handler): Likewise.
(assuan_simple_command): Likewise.
* rungpg.c (gpg_set_colon_line_handler): Change parameter type
from GpgmeColonLineHandler to EngineColonLineHandler.
* engine-gpgsm.c (gpgsm_set_colon_line_handler): Likewise.
* rungpg.c (gpg_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.

* engine-gpgsm.c (status_handler): Do not close status fd at end
of function.

* ops.h (_gpgme_op_data_lookup): Add prototype.
* op-support.c: Include <stdlib.h>.
(_gpgme_op_data_lookup): New function.
* decrypt.c (_gpgme_release_decrypt_result): Function removed.
(struct decrypt_result_s): Rename to ...
(struct decrypt_resul): ... this.
(DecryptResult): New type.
(_gpgme_decrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* sign.c
(_gpgme_release_sign_result): Function removed.
(release_sign_result): New function.
(struct sign_result_s): Rename to ...
(struct sign_result): ... this.
(SignResult): New type.
(_gpgme_sign_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.

* encrypt.c (struct encrypt_result_s): Rename to ...
(struct encrypt_result): ... this.
(_gpgme_release_encrypt_result): Function removed.
(release_encrypt_result): New function.
(_gpgme_encrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* verify.c (struct verify_result_s): Rename to ...
(struct verify_result): ... this. Remove member next.
(VerifyResult): New type.
(_gpgme_release_verify_result): Function removed.
(release_verify_result): New function.
(finish_sig): Change first argument to type VerifyResult. Diddle
the type of the op_data structure.
(add_notation): Change first argument
to type VerifyResult.
(_gpgme_verify_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* passphrase.c (struct passphrase_result_s): Rename to ...
(struct passphrase_result): ... this. Remove member next.
(PassphraseResult): New type.
(_gpgme_release_passphrase_result): Function removed.
(release_passphrase_result): New function.
(_gpgme_passphrase_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(_gpgme_passphrase_command_handler): Likewise.
* keylist.c (struct keylist_result_s): Rename to ...
(struct keylist_result): ... this. Remove member next.
(KeylistResult): New type.
(_gpgme_release_keylist_result): Function removed.
(release_keylist_result): New function.
(keylist_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* edit.c (struct edit_result_s): Rename to ...
(struct
edit_result): ... this. Remove member next.
(EditResult): New type.
(_gpgme_release_edit_result): Function removed.
(release_edit_result): New function.
(edit_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(command_handler): Likewise.
* types.h (DecryptResult, SignResult, EncryptResult,
PassphraseResult, ImportResult, DeleteResult, GenKeyResult,

KeylistResult, EditResult): Types removed.
* ops.h: Don't include "types.h", but "gpgme.h" and "context.h".
(test_and_allocate_result): Remove macro.
(_gpgme_release_decrypt_result): Remove prototype.
(_gpgme_decrypt_result): Remove prototype.
(_gpgme_release_sign_result): Remove prototype.
(_gpgme_release_encrypt_result): Remove prototype.
(_gpgme_release_passphrase_result): Remove prototype.
(_gpgme_release_import_result): Remove prototype.
(_gpgme_release_delete_result): Remove prototype.
(_gpgme_release_genkey_result): Remove prototype.
(_gpgme_release_keylist_result):
Remove prototype.
(_gpgme_release_edit_result): Remove prototype.
(_gpgme_release_verify_result): Remove prototype.
* gpgme.c (_gpgme_release_result): Rewritten.
* context.h (enum ctx_op_data_type): New enum.
(struct ctx_op_data): New structure.
(struct gpgme_context_s): Replace the member result with a member
op_data.
(fail_on_pending_request): Remove macro.
* op-support.c (_gpgme_op_reset): Expand macro
fail_on_pending_request.
* util.h: Don't include "types.h" or "debug.h", but include "gpgme.h".

2003-01-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_engine_ops_gpg): Remove gpg_start.
(gpg_start): Rename to ...
(start): ... this function. Change arguments to GpgObject.
(gpg_decrypt): Call start.
(gpg_edit): Likewise.
(gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise.
(gpg_import): Likewise.
(gpg_keylist): Likewise.
(gpg_keylist_ext): Likewise.
(gpg_trustlist): Likewise.
(gpg_verify): Likewise.

*
engine-gpgsm.c (_gpgme_engine_ops_encrypt): Remove gpgsm_start.
(gpgsm_start): Rename to ...
(struct gpgsm_object_s): Remove member command.
(gpgsm_release): Don't free command.
(start): ... this function. Change arguments to GpgsmObject and
const char *.

(gpgsm_decrypt): Call start.
(gpgsm_delete): Likewise.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
(gpgsm_genkey): Likewise.
(gpgsm_import): Likewise.
(gpgsm_keylist): Likewise.
(gpgsm_keylist_ext): Likewise.
(gpgsm_verify): Likewise.

* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_start.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start):
* encrypt-sign.c (_gpgme_op_encrypt_sign_start):
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_start):
Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* trustlist.c (gpgme_op_trustlist_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* engine-backend.h (struct engine_ops): Remove member start.

* engine.h (_gpgme_engine_start): Remove prototype.
* engine.c (_gpgme_engine_start): Remove function.

2003-01-19 Miguel Coca <mcoca@gnu.org>

* w32-io.c (_gpgme_io_select): Add missing argument in calls to
DEBUG_BEGIN.
* w32-util.c: Include "sema.h".
(find_program_in_registry): Change DEBUG1 to DEBUG2, fixes compilation
error.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* types.h: Remove byte and ulong types.
* util.h (_gpgme_hextobyte): Change prototype to unsigned char
instead byte.
* conversion.c (_gpgme_hextobyte): Change argument to unsigned
char instead byte.
(_gpgme_decode_c_string): Likewise, and beautify. Also support a
few more escaped characters. Be more strict about buffer size.

(_gpgme_data_append_percentstring_for_xml): Change
type of SRC,
BUF and DST to unsigned char instead byte.
* progress.c (_gpgme_progress_status_handler): Use unsigned char
instead byte.
* debug.c (trim_spaces): Likewise.

* util.h (mk_error): Remove macro.
* conversion.c, data.c, data-compat.c, decrypt.c, delete.c,
edit.c, encrypt.c, encrypt-sign.c, engine.c, engine-gpgsm.c,
export.c, genkey.c, gpgme.c, import.c, key.c, keylist.c,
passphrase.c, progress.c, recipient.c, rungpg.c, sign.c,
signers.c, trustlist.c, verify.c, wait.c, wait-global.c,
wait-private (literally everywhere): Expand the mk_error macro.

* context.h (wait_on_request_or_fail): Remove macro.

* context.h (gpgme_context_s): Remove member ERROR.
* types.h (GpgmeStatusHandler): Change return type to GpgmeError.
(GpgmeCommandHandler): Change return type to GpgmeError and add
new argument RESULT.
* gpgme.h (GpgmeIOCb): Change return type to GpgmeError.
(GpgmeEventIO): New event GPGME_EVENT_START.
(GpgmeIdleFunc): Remove type.
(gpgme_register_idle): Remove
prototype.
* data.c: Include <assert.h>.
(_gpgme_data_inbound_handler): Change return type to GpgmeError.
Return any error instead ignoring it, don't close file descriptor
on error.
(_gpgme_data_outbound_handler): Likewise.
* decrypt.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(_gpgme_decrypt_status_handler): Change return type to GpgmeError.
Return error instead setting ctx->error. Return success at end of
function.
(gpgme_op_decrypt): Don't work around the old kludge anymore.
* decrypt-verify.c (decrypt_verify_status_handler): Change return
type to GpgmeError. Return possible errors.
* delete.c: Do not include <stdio.h>, <string.h>, <time.h> and
<assert.h>.
(delete_status_handler): Change return type to GpgmeError. Return
error instead setting ctx->error. Return success at end of
function.
* edit.c: Do not include <stdio.h> and <string.h>.
(_gpgme_edit_status_handler): Change type to GpgmeError,
make static and rename to ...
(edit_status_handler):

... this. Return error directly.
(command_handler): Change return type to GpgmeError, add result
argument. Return error directly.
* encrypt.c (status_handler_finish): Remove function.
(_gpgme_encrypt_status_handler): Change return type to GpgmeError.
Return error directly.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (close_notify_handler): Do not signal done event
anymore.
(status_handler): Change return type to GpgmeError. Diddle things
around a bit to return errors directly.
(start): Send start event.
* export.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(export_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* genkey.c: Do not include <stdio.h> and <assert.h>.
(genkey_status_handler): Change return type to GpgmeError. Don't
check ctx->error. Return errors directly.
* gpgme.c (_gpgme_release_result): Do not initialize ctx->error.
(_gpgme_op_event_cb):
Function removed.
(_gpgme_op_event_cb_user): Likewise.
* import.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(import_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* keylist.c (keylist_colon_handler, keylist_status_handler, finish_key):
Change return type to GpgmeError, return error directly.
* Makefile (libgpgme_la_SOURCES): Add wait-global.c,
wait-private.c and wait-user.c
* ops.h (test_and_allocate_result): Return error instead setting
ctx->error.
(_gpgme_data_inbound_handler, _gpgme_data_outbound_handler,
_gpgme_verify_status_handler, _gpgme_decrypt_status_handler,
_gpgme_sign_status_handler, _gpgme_encrypt_staus_handler,
_gpgme_passphrase_status_handler, _gpgme_progress_status_handler):
Change return type to GpgmeError.
(_gpgme_passphease_command_handler): Change return type to
GpgmeError and add new argument RESULT.
* op-support.c: Use new callback functions, and change private
data to ctx everywhere.
* passphrase.c
(_gpgme_passphrase_status_handler): Change return
type to GpgmeError, return error directly.
(_gpgme_passphrase_command_handler): Change return type to
GpgmeError, add result argument. Return results accordingly.
* progress.c (_gpgme_progress_status_handler): Change return type
to GpgmeError, return errors directly.

* rungpg.c (status_handler): Change return type to GpgmeError.
Return error directly.
(close_notify_handler): Don't send done event.
(colon_line_handler): Change return type to GpgmeError, return
errors directly.
* rungpg.c (start): Send start event.
* sign.c (_gpgme_sign_status_handler): Change return type to
GpgmeError, return errors directly.
* trustlist.c (trustlist_status_handler): Change return type to
GpgmeError. Return 0.
(trustlist_colon_handler): Change return type GpgmeError. Return
errors directly.
* verify.c (add_notation): Change return type to GpgmeError,
return errors directly.
(_gpgme_verify_status_handler): Likewise.
* wait.h
(struct fd_table): Remove lock member.
(struct wait_item_s): Moved here from wait.c.
(struct tag): New structure.
(_gpgme_wait_event_cb): Remove prototype.
(_gpgme_wait_private_event_cb, _gpgme_wait_global_event_cb,
_gpgme_wait_user_add_io_cb, _gpgme_wait_user_remove_io_cb,
_gpgme_wait_user_event_io_cb): New prototypes.
* wait.c: Don't include <stdio.h>.
(ftd_global, ctx_done_list, ctx_done_list_size,
ctx_done_list_length, ctx_done_list_lock, idle_function): Remove
global variable.
(gpgme_register_idle, do_select, _gpgme_wait_event_cb): Remove
function.
(gpgme_wait): Move to file wait-global.c.
(_gpgme_add_io_cb): Take ctx as private argument, initialize ctx
member in wait item and tag.
(_gpgme_remove_io_cb): Take ctx from tag. Don't use FDT lock.
(_gpgme_wait_one, _gpgme_wait_on_condition): Move to
wait-private.c.
(gpgme_fd_table_init): Don't initialize FDT->lock.
(gpgme_fd_table_deinit): Don't destroy FDT->lock.
(_gpgme_fd_table_put): Make static and rename to
...
(fd_table_put): ... this function. Don't use FDT->lock.
(struct wait_item_s): Move to wait.h.
* wait-global.c: New file.
* wait-private.c: New file.
* wait-user.c: New file.

* key.c (gpgme_key_sig_get_string_attr): Use validity_to_string
instead otrust_to_string to calculate validity.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h (EngineObject): Move typedef to ...
* engine.h: ... here.
* types.h (GpgObject): Move typedef to ...
* rungpg.c: ... here.
* types.h (GpgsmObject): Move typedef to ...
* engine-gpgsm.c: ... here.

* util.h (return_if_fail, return_null_if_fail,
return_val_if_fail): Remove macro.
* gpgme.c (gpgme_cancel): Don't use return_if_fail.
* key.c (gpgme_key_ref): Likewise.
* signers.c (gpgme_signers_enum): Likewise.
(gpgme_signers_clear): Likewise.

* engine-backend.h (struct engine_ops): Rename get_path to
get_file_name.
* gpgme.h (struct _gpgme_engine_info): Rename member path to
file_name.
* version.c: Do not include <stdio.h>,
<stdlib.h>, context.h and
util.h. Other clean ups.
(parse_version_number): Protect more seriously against
overflow.
(gpgme_get_engine_info): Move to ...
* engine.c (gpgme_get_engine_info): ... here.
(_gpgme_engine_get_info): Function removed.
(_gpgme_engine_get_path): Make static and rename to ...
(engine_get_file_name): .. this.
(_gpgme_engine_get_version): Make static and rename to ...
(engine_get_version): ... this.
(_gpgme_engine_get_req_version): Make static and rename to ...
(engine_get_req_version): ... this.
* engine.h (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_req_version, _gpgme_engine_get_info.): Remove
prototypes.

* gpgme.h (enum GpgmeProtocol): Remove GPGME_PROTOCOL_AUTO.
* gpgme.c (gpgme_set_protocol): Don't handle GPGME_PROTOCOL_AUTO.
(gpgme_get_protocol_name): New function.

* engine-backend.h (struct engine_ops): New member
get_req_version, remove member check_version.
* engine.h (_gpgme_Engine_get_version): New prototype.
*
rungpg.c (gpg_get_req_version): New function.
(gpg_check_version): Function removed.

(_gpgme_engine_ops_gpg): Add gpg_get_req_version, remove
gpg_check_version.
* engine-gpgsm.c (gpgsm_get_req_version): New function.
(gpgsm_check_version): Function removed.
(_gpgme_engine_ops_gpgsm): Add gpgsm_get_req_version, remove
gpgsm_check_version.
* engine.c: Include ops.h.
(_gpgme_engine_get_req_version): New function.
(gpgme_engine_check_version): Rewritten.
* version.c (gpgme_get_engine_info): Rewritten.
* gpgme.h (gpgme_engine_info): New structure.
(GpgmeEngineInfo): New type.

2003-01-06 Werner Koch <wk@gnupg.org>

* keylist.c (set_mainkey_capability): Handle 'd' and 'D' used
since gpg 1.3 to denote disabled keys.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c: Include <string.h>.
* engine.c: Likewise.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_DEPENDENCIES): Correct bug in last change.

2002-12-24 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_verify, gpgme_op_decrypt_verify): Drop R_STAT
argument.
* decrypt-verify.c (gpgme_op_decrypt_verify): Drop R_STAT
argument.
* verify.c (gpgme_op_verify): Drop R_STAT argument.
(_gpgme_intersect_stati): Function removed.
* ops.h (_gpgme_intersect_stati): Remove prototype.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: New file.
* Makefile.am (EXTRA_DIST): Add libgpgme.vers.
(libgpgme_version_script_cmd): New variable.
(libgpgme_la_LDFLAGS): Add libgpgme_version_script_cmd here.
(libgpgme_la_DEPENDENCIES): New variable.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (gpgme_key_get_string_attr): Don't accept GPGME_ATTR_IS_SECRET.
(otrust_to_string): New function.
(gpgme_key_get_as_xml): Use it.
(validity_to_string): New function.
(gpgme_key_get_string_attr): Beautify using above functions.
(gpgme_key_get_ulong_attr): Likewise.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c
(mem_release): Fix gcc warning.
* data-user.c (user_release): Likewise.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* data.h (gpgme_data_release_cb): Change return type to void.
(gpgme_data_read_cb): Change return type to ssize_t.
* data.c (gpgme_data_read): Likewise.
* data-stream.c (stream_read): Likewise.
* data-fd.c (fd_read): Likewise.
* data-mem.c (mem_read): Likewise.
(mem_release): Change return type to void.
* data-user.c (user_read): Change return type to ssize_t.
(user_release): Change return type to void.
* data-compat.c (old_user_read): Change return type to ssize_t.
* gpgme.h (GpgmeDataReadCb): Likewise.
(gpgme_data_read): Likewise.
(GpgmeDataSeekCb): Change return type to off_t.

2002-12-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_get_key.
* key.c (gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Rewrite using gpgme_get_key.

* gpgme.h: Add prototypes for new interfaces
gpgme_key_sig_get_string_attr
and gpgme_key_get_ulong_attr.
(enum GpgmeAttr): New attribute GPGME_ATTR_SIG_CLASS.
* gpgme.c (gpgme_set_keylist_mode): Allow GPGME_KEYLIST_MODE_SIGS.
* key.h (struct certsig_s): New members ALGO, NAME_PART,
EMAIL_PART, COMMENT_PART, NAME, SIG_STAT and SIG_CLASS.

* conversion.c (_gpgme_decode_c_string): Add new parameter LEN.
Use that to determine if allocation is desired or not.
* util.h: Adjust prototype of _gpgme_decode_c_string.
* keylist.c (keylist_colon_handler): Adjust caller of
_gpgme_decode_c_string.

* key.h (struct gpgme_key_s): New member last_uid.
* key.c (_gpgme_key_append_name): Rewritten using
_gpgme_decode_c_string and the last_uid pointer.
(my_isdigit): Macro removed.
(ALLOC_CHUNK): Likewise.
* keylist.c (set_userid_flags): Use last_uid member of KEY.

* context.h (struct user_id_s): New member last_certsig.
* key.h: Add prototype for _gpgme_key_add_certsig.
* key.c (_gpgme_key_add_certsig): New function.
(set_user_id_part): Move function
before _gpgme_key_add_certsig.
(parse_user_id): Change first argument to SRC, add new arguments
NAME, EMAIL and COMMENT. Change code to use these arguments
instead going through UID. Move function before
_gpgme_add_certsig.
(parse_x509_user_id): Likewise.
(_gpgme_key_append_name): Adjust arguments to parse_x509_user_id
and parse_user_id invocation.
(one_certsig_as_xml): New function.
(one_uid_as_xml): Print signatures.
* context.h (struct gpgme_context_s): New member TMP_UID.
* keylist.c (keylist_colon_handler): Rewritten, implement "sig"
record entries.

* key.c (get_certsig): New function.
(gpgme_key_sig_get_string_attr): Likewise.
(gpgme_key_sig_get_ulong_attr): Likewise.

* keylist.c: Include <ctype.h>.
(my_isdigit): Macro removed.
(set_mainkey_trust_info): Use isdigit, not my_isdigit.
(set_userid_flags): Likewise.
(set_subkey_trust_info): Likewise.
(set_ownertrust): Likewise.
(finish_key): Move function up a bit and remove prototype.

* rungpg.c (gpg_keylist_ext):
Correct precedence of signature
listing mode.
(gpg_keylist_ext): Implement signature listing mode.

2002-11-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not set parent fds to -1.
* posix-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead close
for parent fds.

* w32-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead
CloseHandle for parent fds.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h [_MSC_VER]: Define ssize_t as long.

2002-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Save the result of a first
setlocale before doing another setlocale.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c: Some beautyfication.

* verify.c (_gpgme_verify_status_handler): Treat
GPGME_STATUS_UNEXPECTED like GPGME_STATUS_NODATA.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* genkey.c: Only include <config.h> if [HAVE_CONFIG_H].
(struct
genkey_result_s): Add new member FPR.
(_gpgme_release_genkey_result): Free RESULT->fpr if set.
(genkey_status_handler): Extract the fingerprint from the status
line.
(gpgme_op_genkey): Add new argument FPR and return the fingerprint
in it.
* gpgme.h: Adjust prototype of gpgme_op_genkey.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist): Add --with-fingerprint to gpg invocation
twice, to get fingerprints on subkeys. Suggested by Timo Schulz
<twoaday@freakmail.de>.
(gpg_keylist_ext): Likewise.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* import.c (append_xml_impinfo): Use
_gpgme_data_append_string_for_xml rather than
_gpgme_data_append_string for the field content.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h, engine-gpgsm.h: File removed.
* engine-backend.h: New file.
* Makefile.am (gpgsm_components): New variable, set depending on
automake conditional HAVE_GPGSM.
(libgpgme_la_SOURCES):
Add engine-backend.h, remove rungpg.h and
engine-gpgsm.h. Replace engine-gpgsm.c with ${gpgsm_components}.
(status-table.h): Depend on gpgme.h, not rungpg.h.
* conversion.c: Include <stdlib.h>.
* engine-gpgsm.c: Do not set ENABLE_GPGSM here. Include
"engine-backend.h" instead "engine-gpgsm.h". Reorder some
functions and remove all function prototypes.
(_gpgme_gpgsm_get_version): Make static and rename to ...
(gpgsm_get_version): ... this.
(_gpgme_gpgsm_check_version): Make static and rename to ...
(gpgsm_check_version): ... this.
(_gpgme_gpgsm_new): Make static. Change argument type from
GpgsmObject * to void **. Call gpgsm_release instead
_gpgme_gpgsm_release.
(_gpgme_gpgsm_op_decrypt): Make static and rename to ...
(gpgsm_check_decrypt): ... this.
(_gpgme_gpgsm_op_delete): Make static and rename to ...
(gpgsm_check_delete): ... this.
(_gpgme_gpgsm_set_recipients): Make static and rename to ...
(gpgsm_check_set_recipients): ... this.
(_gpgme_gpgsm_op_encrypt):
Make static and rename to ...
(gpgsm_encrypt): ... this.
(_gpgme_gpgsm_op_export): Make static and rename to ...
(gpgsm_export): ... this.
(_gpgme_gpgsm_op_genkey): Make static and rename to ...
(gpgsm_genkey): ... this.
(_gpgme_gpgsm_op_import): Make static and rename to ...
(gpgsm_import): ... this.
(_gpgme_gpgsm_op_keylist): Make static and rename to ...
(gpgsm_keylist): ... this.
(_gpgme_gpgsm_op_keylist_ext): Make static and rename to ...
(gpgsm_keylist_ext): ... this.
(_gpgme_gpgsm_op_sign): Make static and rename to ...
(gpgsm_sign): ... this.
(_gpgme_gpgsm_op_trustlist): Make static and rename to ...
(gpgsm_trustlist): ... this.
(_gpgme_gpgsm_op_verify): Make static and rename to ...
(gpgsm_verify): ... this.
(gpgsm_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpgsm_set_status_handler): Make static and rename to ...
(gpgsm_set_status_handler): ... this.

(_gpgme_gpgsm_set_colon_line_handler): Make static
and rename to ...
(gpgsm_set_colon_line_handler): ... this.
(_gpgme_gpgsm_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpgsm_start): Make static and rename to ...
(gpgsm_start): ... this.
(_gpgme_gpgsm_set_io_cb): Make static and rename to ...
(gpgsm_set_io_cb): ... this.
(_gpgme_gpgsm_io_event): Make static and rename to ...
(gpgsm_io_event): ... this.
(struct _gpgme_engine_ops_gpgsm): New variable.
[!ENABLE_GPGSM]: Removed.
* engine.c: Do not include <time.h>, <sys/types.h>, <string.h>,
<assert.h>, "io.h", "rungpg.h" and "engine-gpgsm.h". Include
<stdlib.h> and "engine-backend.h".
(struct engine_object_s): Rewritten.
(engine_ops): New variable.
* engine.c (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_check_version, _gpgme_engine_new,
_gpgme_engine_release, _gpgme_engine_set_verbosity,
_gpgme_engine_set_status_handler,
_gpgme_engine_set_command_handler,
_gpgme_engine_set_colon_line_handler, _gpgme_engine_op_decrypt,
_gpgme_engine_op_delete,
_gpgme_engine_op_edit,
_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export, _gpgme_engine_op_genkey,
_gpgme_engine_op_import, _gpgme_engine_op_keylist,
_gpgme_engine_op_keylist_ext, _gpgme_engine_op_sign,
_gpgme_engine_op_trustlist, _gpgme_engine_op_verify,
_gpgme_engine_start, _gpgme_engine_set_io_cbs,
_gpgme_engine_io_event): Reimplement.
* engine.h: Fix a few comments and a variable name in a prototype.
* ops.h: Do not include "rungpg.h".
* passphrase.c: Include config.h only if [HAVE_CONFIG_H]. Do not
include "rungpg.h".
* recipient.c: Likewise.
* signers.c: Likewise.
* version.c: Likewise.
* rungpg.c: Likewise. Include "engine-backend.h". Reorder
functions and remove prototypes.
(_gpgme_gpg_get_version): Make static and rename to ...
(gpg_get_version): ... this.
(_gpgme_gpg_check_version): Make static and rename to ...
(gpg_check_version): ... this.
(_gpgme_gpg_new): Make static. Change argument type from
GpgObject

* to void **. Call gpg_release instead
_gpgme_gpg_release.
(_gpgme_gpg_op_decrypt): Make static and rename to ...
(gpg_check_decrypt): ... this.
(_gpgme_gpg_op_delete): Make static and rename to ...
(gpg_check_delete): ... this.
(_gpgme_gpg_set_recipients): Make static and rename to ...
(gpg_check_set_recipients): ... this.
(_gpgme_gpg_op_encrypt): Make static and rename to ...
(gpg_encrypt): ... this.
(_gpgme_gpg_op_export): Make static and rename to ...
(gpg_export): ... this.
(_gpgme_gpg_op_genkey): Make static and rename to ...
(gpg_genkey): ... this.
(_gpgme_gpg_op_import): Make static and rename to ...
(gpg_import): ... this.
(_gpgme_gpg_op_keylist): Make static and rename to ...
(gpg_keylist): ... this.
(_gpgme_gpg_op_keylist_ext): Make static and rename to ...
(gpg_keylist_ext): ... this.
(_gpgme_gpg_op_sign): Make static and rename to ...
(gpg_sign): ... this.
(_gpgme_gpg_op_trustlist): Make static and rename to ...
(gpg_trustlist): ... this.
(_gpgme_gpg_op_verify):
Make static and rename to ...
(gpg_verify): ... this.
(gpg_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpg_set_status_handler): Make static and rename to ...
(gpg_set_status_handler): ... this.
(_gpgme_gpg_set_colon_line_handler): Make static and rename to ...
(gpg_set_colon_line_handler): ... this.
(gpgme_gpg_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpg_start): Make static and rename to ...
(gpg_start): ... this.
(_gpgme_gpg_set_io_cb): Make static and rename to ...
(gpg_set_io_cb): ... this.
(_gpgme_gpg_io_event): Make static and rename to ...
(gpg_io_event): ... this.
(struct _gpgme_engine_ops_gpg): New variable.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify) [!ENABLE_GPGSM]: Add
missing argument.

2002-10-09 Marcus Brinkmann <marcus@g10code.de>

* data.h, data-user.c, data-stream.c, data-mem.c, data-fd.c,
data-compat.c: New file. Really check them in this time,
completes
2002-10-08 change.

* rungpg.h (GpgStatusHandler): Rename type to GpgmeStatusHandler
and move to ...
* types.h (GpgmeStatusHandler): ... here.
* rungpg.h (GpgColonLineHandler): Rename type to GpgmeColonLineHandler.
and move to ...
* types.h (GpgmeColonLineHandler): ... here.
* rungpg.h (GpgCommandHandler): Rename type to GpgmeCommandHandler.
and move to ...
* types.h (GpgmeCommandHandler): ... here.
* engine.h: Don't include "rungpg.h".
(_gpgme_engine_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* engine-gpgsm.h: Don't include "rungpg.h".
(_gpgme_gpgsm_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_colon_line_handler): Change type
of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
* engine-gpgsm.c: Do not include "rungpg.h".
(struct gpgsm_object_s): Change type of
status.fnc to GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler.
(gpgsm_assuan_simple_command): Change type of argument from
GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_status_handler): Likewise.
(_gpgme_gpgsm_set_colon_line_handler): Change type of argument from
GpgColonLineHandler to GpgmeColonLineHandler.
* rungpg.h (_gpgme_gpg_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* rungpg.c (struct gpg_object_s): Change type of status.fnc to
GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler. Change type of cmd.fnc

to
GpgmeCommandLineHandler.
(_gpgme_gpg_set_status_handler): Change type of argument FNC to
GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.
* engine.c (_gpgme_engine_set_status_handler): Change type of
argument FNC to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.

* rungpg.h (_gpgme_gpg_enable_pipemode): Remove prototype.
* rungpg.c (struct gpg_object_s): Remove PM.
(pipemode_cb): Prototype removed.
(add_pm_data): Function removed.
(_gpgme_gpg_enable_pipemode): Likewise.
(pipemode_copy): Likewise.
(pipemode_cb): Likewise.
(add_arg): Don't check for pipemode.
(add_data): Likewise.
(_gpgme_gpg_set_status_handler): Likewise.
(_gpgme_gpg_set_colon_line_handler):
Likewise.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_spawn): Likewise.
(_gpgme_gpg_spawn): Don't set PM.active.
(_gpgme_gpg_op_verify): Remove pipemode case.
* verify.c (_gpgme_op_verify_start): Remove pipemode case.

* rungpg.h (_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_add_pm_data, _gpgme_gpg_housecleaning,
_gpgme_gpg_set_simple_line_handler): Prototype removed.
(_gpgme_gpg_set_verbosity): New prototype.
* rungpg.c (_gpgme_gpg_add_data): Make static and rename to ...
(add_data): ... this.
(_gpgme_gpg_add_pm_data): Call add_data, not _gpgme_gpg_add_data.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,
_gpgme_gpg_op_verify): Likewise.
(_gpgme_gpg_add_pm_data): Rename to ...
(add_pm_data): ... this.
(_gpgme_gpg_op_verify): Call add_pm_data, not

_gpgme_gpg_add_pm_data.
(_gpgme_gpg_add_arg):
Make static and rename to ...
(add_arg): ... this.
(_gpgme_gpg_set_command_handler, _gpgme_gpg_new,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_delete,
_gpgme_append_gpg_args_from_signers, _gpgme_gpg_op_edit,
_gpgme_append_gpg_args_from_recipients, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_keylist,
_gpgme_gpg_op_keylist_ext, _gpgme_gpg_op_trustlist,
_gpgme_gpg_op_sign, _gpgme_gpg_op_verify): Use add_arg, not
_gpgme_gpg_add_arg.
(_gpgme_gpg_set_verbosity): New function.
(struct gpg_object_s): Remove member simple from colon.
(_gpgme_gpg_set_colon_line_handler): Don't initialize simple.
(_gpgme_gpg_set_simple_line_handler): Removed function.
(read_colon_line): Don't check the GPG->colon.simple.
* engine.c (_gpgme_engine_set_verbosity): Call
_gpgme_gpg_set_verbosity instead _gpgme_gpg_add_arg.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_malloc,
_gpgme_realloc, _gpgme_calloc,
_gpgme_strdup, _gpgme_free): Remove prototypes.
(xtrymalloc, xtrycalloc, xtryrealloc, xtrystrdup, xfree): Remove
macros.
* util.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove util.h.
* conversion.c (_gpgme_decode_c_string): Use malloc instead of
xtrymalloc, realloc instead of xtryrealloc, calloc instead of
xtrycalloc, free instead of xfree.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data.c (_gpgme_data_new, _gpgme_data_release): Likewise.
* data-compat.c (gpgme_data_new_from_filepart): Likewise.
* data-mem.c (mem_write, mem_release, gpgme_data_new_from_mem,
_gpgme_data_get_as_string): Likewise.
* debug.c (debug_init): Likewise.
* decrypt.c (_gpgme_release_decrypt_result): Likewise.
* delete.c (_gpgme_release_delete_result): Likewise.
* edit.c (_gpgme_release_edit_result, _gpgme_op_edit_start):
Likewise.
* encrypt.c (_gpgme_release_encrypt_result): Likewise.
* engine.c (_gpgme_engine_get_info, _gpgme_engine_new,
_gpgme_engine_release):
Likewise.
* engine-gpgsm.c (_gpgme_gpgsm_new, _gpgme_gpgsm_release,

_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,
gpgsm_set_recipients, _gpgme_gpgsm_op_encrypt,
_gpgme_gpgsm_op_export, _gpgme_gpgsm_op_genkey,
_gpgme_gpgsm_op_import, _gpgme_gpgsm_op_keylist,
_gpgme_gpgsm_op_keylist_ext, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_verify, gpgsm_status_handler): Likewise.
* genkey.c (_gpgme_release_genkey_result): Likewise.
* gpgme.c (gpgme_new, gpgme_release): Likewise.
* import.c (_gpgme_release_import_result): Likewise.
* key.c (_gpgme_key_cache_init, _gpgme_key_cache_add, key_new,
add_subkey, gpgme_key_release, _gpgme_key_append_name): Likewise.
* keylist.c (_gpgme_release_keylist_result, keylist_colon_handler,
_gpgme_op_keylist_event_cb, gpgme_op_keylist_next): Likewise.
* ops.h (test_and_allocate_result): Likewise.
* passphrase.c (_gpgme_release_passphrase_result,
_gpgme_passphrase_status_handler,
_gpgme_passphrase_command_handler): Likewise.
*
progress.c (_gpgme_progress_status_handler): Likewise.
* recipient.c (gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name_with_validity): Likewise.
* rungpg.c (_gpgme_gpg_new, _gpgme_gpg_release,
_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_set_colon_line_handler, free_argv, free_fd_data_map,
build_argv, _gpgme_gpg_spawn, read_status, read_colon_line):
Likewise.
* sign.c (_gpgme_release_sign_result): Likewise.
* signers.c (_gpgme_signers_add): Likewise.
* trustlist.c (trust_item_new, trustlist_colon_handler,
_gpgme_op_trustlist_event_cb, gpgme_op_trustlist_next,
gpgme_trustitem_release): Likewise.
* verify.c (_gpgme_release_verify_result, finish_sig): Likewise.
* version.c (gpgme_get_engine_info, _gpgme_get_program_version):
Likewise.
* w32-io.c (create_reader, create_writer, destroy_reader,
destroy_writer, build_commandline, _gpgme_io_spawn): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_destroy): Likewise.
* w32-util.c (read_w32_registry_string):
Likewise.
* wait.c (_gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_wait_event_cb, _gpgme_add_io_cb, _gpgme_remove_io_cb)
* data-compat.c: Include <stdlib.h>.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

New data object component:

* gpgme.h (GpgmeDataReadCb, GpgmeDataWriteCb, GpgmeDataSeekCb,

GpgmeDataReleaseCb): New types.
(struct GpgmeDataCbs): New structure.
(gpgme_data_read): Changed prototype to match that of read() closely.
(gpgme_data_write): Similar for write().
(gpgme_data_seek, gpgme_data_new_from_cbs, gpgme_data_new_from_fd,
gpgme_data_new_from_stream): New prototypes.
(gpgme_data_get_type, gpgme_check_engine): Prototype removed.

* Makefile.am (libgpgme_la_SOURCES): Add data.h, data-fd.c,
data-stream.c, data-mem.c, data-user.c and data-compat.c.
* data.c: Reimplemented from scratch.
* (data-compat.c, data-fd.c, data.h, data-mem.c, data-stream.c,
data-user.c): New file.
* context.h (struct gpgme_data_s): Removed.
* conversion.c:
Include <errno.h> and <sys/types.h>.
(_gpgme_data_append): New function.
* data.c (_gpgme_data_append_string): Move to ...
* conversion.c (_gpgme_data_append_string): ... here.
* data.c (_gpgme_data_append_for_xml): Move to ...
* conversion.c (_gpgme_data_append_for_xml): ... here.
* data.c (_gpgme_data_append_string_for_xml): Move to ...
* conversion.c (_gpgme_data_append_string_for_xml): ... here.
* data.c (_gpgme_data_append_percentstring_for_xml): Move to ...
* conversion.c (_gpgme_data_append_percentstring_for_xml): ... here.

* ops.h (_gpgme_data_get_mode, _gpgme_data_set_mode): Prototype
removed.
* types.h (GpgmeDataMode): Type removed.

* decrypt.c (_gpgme_decrypt_start): Don't check data type or mode.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
*
genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* encrypt.c (gpgme_op_encrypt): Remove hack that returns invalid
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.

* engine.c (_gpgme_engine_op_verify): Add new argument to
differentiate detached from normal signatures.
* engine.h (_gpgme_engine_op_verify): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise. Don't check
mode of data argument.
* engine-gpgsm.h (_gpgme_gpgsm_op_verify): Likewise for prototype.
* gpgme.h (gpgme_op_verify_start): Likewise for prototype.
(gpgme_op_verify): Likewise for prototype.
* rungpg.c (_gpgme_gpg_op_verify): Likewise.
* rungpg.h
(_gpgme_gpg_op_verify): Likewise for prototype.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_op_verify_start): Likewise.
(gpgme_op_verify): Likewise.

* rungpg.c (struct arg_and_data_s): New member INBOUND to hold
direction of data object.
(_gpgme_gpg_add_data): Add new argument INBOUND. Use it to
determine direction of data object.
(_gpgme_gpg_add_pm_data, _gpgme_gpg_set_command_handler,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,
_gpgme_gpg_op_verify): Add new argument to _gpgme_gpg_add_data
invocation.
(build_argv): Use new member INBOUND to determine direction of
file descriptor. Don't check the data type.
* rungpg.h (_gpgme_gpg_add_data): Add new argument to prototype.

* gpgme.c (gpgme_get_op_info): Don't call
_gpgme_data_get_as_string if CTX->op_info is NULL.

* version.c (gpgme_check_engine): Function removed.

2002-09-30
Werner Koch <wk@gnupg.org>

* keylist.c (keylist_colon_handler): Take care when printing a
NULL with the DEBUG.

* engine-gpgsm.c (struct gpgsm_object_s): New member ANY.
(gpgsm_status_handler): Run the colon function to indicate EOF.
(_gpgme_gpgsm_set_colon_line_handler): Better reset ANY here.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_hextobyte): Prevent superfluous

multiplication with base. Reported by Stphane Corthsy.

* keylist.c (gpgme_op_keylist_ext_start): Use private asynchronous
operation type in invocation of _gpgme_op_reset.

2002-09-20 Werner Koch <wk@gnupg.org>

* ath.c: Include sys/time.h if sys/select.h is not available.

2002-09-13 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_status_handler): Do not call finish_key() here.
(gpgme_op_keylist_ext_start): Set CTX->tmp_key to NULL.

2002-09-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Remove @LTLIBOBJS@ as we link
them
into gpgme unconditionally.
(libgpgme_la_LIBADD): Change @LIBOBJS@ into @LTLIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Use @LTLIBOBJS@ instead @LIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* debug.c (_gpgme_debug_add): Test *LINE, not LINE.
(_gpgme_debug_end): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_select): Don't use a non-constant struct
initializer.
* version.c (_gpgme_get_program_version): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_decode_c_string): Set DESTP before
modifying DEST.

* conversion.c (_gpgme_decode_c_string): Fix off by one error in
last change.
* rungpg.c (_gpgme_append_gpg_args_from_signers): Move before
_gpgme_op_edit so its prototype is known early on.

* conversion.c: New
file.
* util.h: Add prototypes for _gpgme_decode_c_string and
_gpgme_hextobyte.
* keylist.c (keylist_colon_handler): Call _gpgme_decode_c_string
on issuer name.
* Makefile.am (libgpgme_la_SOURCES): Add conversion.c
* key.c (_gpgme_key_append_name): Replace calls to hextobyte by
calls to _gpgme_hextobyte.
(hash_key): Likewise.

2002-09-01 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset): Set CTX->pending after calling
_gpgme_engine_release, as this will reset pending to zero in the
event done callback on cancelled operations.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Add args from signers.
Suggested by Miguel Coca <e970095@zipi.fi.upm.es>.

* rungpg.c (_gpgme_gpg_op_edit): Add bogus ctx argument.
* rungpg.h: Also to prototype.
* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.

2002-08-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign):
Implement signer
selection.
* vasprintf.c (va_copy): Define macro if not yet defined.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Reset
CTX->result.passphrase->no_passphrase if passphrase is given (good
or bad). Submitted by Jean DIRAISON <jean.diraison@free.fr>.

2002-08-28 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_spawn): Use a double-fork approach.
Return 0 on success, -1 on error.
* version.c (_gpgme_get_program_version): Don't wait for the child.
* engine.c (_gpgme_engine_housecleaning): Function removed.
(do_reaping): Likewise.

(_gpgme_engine_add_child_to_reap_list): Likewise.
(struct reap_s): Removed.
(reap_list): Likewise.
(reap_list_lock): Likewise.
* engine.h (_gpgme_engine_io_event): Remove prototypes for
_gpgme_engine_housecleaning and
_gpgme_engine_add_child_to_reap_list.
* rungpg.c (_gpgme_gpg_release): Don't add child to reap list.
(struct gpg_object_s): Remove
PID member.
(_gpgme_gpg_new): Don't initialize GPG->pid.
(_gpgme_gpg_spawn): Don't set GPG->pid.
* wait.c (run_idle): Removed.
(gpgme_wait): Run idle_function directly.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c (encrypt_sign_status_handler): Remove dead
variables encrypt_info and encrypt_info_len.
* trustlist.c (gpgme_op_trustlist_start): Set colon line handler.
* posix-sema.c (sema_fatal): Remove function.
All these reported by Stphane Corthsy.

2002-08-23 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Made --prefix work for --libs.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Update list of symbols that get a prefix: Rename the
ath_mutex_*_available symbols to ath_*_available.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* stpcpy.c: New file from gnulib.
* Makefile.am (assuan_libobjs): Remove jnlib.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_op_import_ext.
* import.c
(struct import_result_s): New member `nr_considered'.
Rename `any_imported' to `nr_imported'.
(import_status_handler): Increment nr_imported. Set nr_considered
if appropriate.
(gpgme_op_import_ext): New function.
(gpgme_op_import): Implement in terms of gpgme_op_import_ext.

2002-08-20 Werner Koch <wk@gnupg.org>

* gpgme.m4: Replaced with a new and faster version. This does not
anymore try to build test programs. If we really need test
programs, we should add an option to gpgme-config to do so.

* vasprintf.c (int_vasprintf): Hack to handle NULL passed for %s.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_set_op_info): Append data on subsequent calls.
* encrypt-sign.c (encrypt_sign_status_handler): Remove op_info
handling.

2002-08-19 Werner Koch <wk@gnupg.org>

* decrypt.c (is_token,skip_token): Duplicated from verify.c
(gpgme_op_decrypt): Hack to properly return Decryption_Failed..
(_gpgme_decrypt_status_handler): Create an operation info.

2002-08-14
Werner Koch <wk@gnupg.org>

* key.h (struct certsig_s): New. Use it in gpgme_key_s.
* key.c (gpgme_key_release): Release it. We need to add more code
of course.
(_gpgme_key_append_name): Use memset to initialize the struct.
* gpgme.h (GPGME_KEYLIST_MODE_SIGS): New.
* rungpg.c (_gpgme_gpg_op_keylist): Include sigs in listing depending
non the list mode.

* key.c (gpgme_key_get_string_attr): Use GPGME_ATTR_TYPE to return
information about the key type (PGP or X.509).
(gpgme_key_get_ulong_attr): Likewise.

* keylist.c (keylist_colon_handler): Include 1 in the check for
valid algorithms so that RSA is usable. Store the issuer name and
serial number also for "crs" records. Parse the expire date for
subkeys.
(set_userid_flags): Put them onto the last appended key.

2002-07-29 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Use --with-colons.

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read): For GPGME_DATA_TYPE_NONE,

return EOF
instead an error.

The following changes make it possible to flush an inbound data
pipe before invoking a command handler:

* posix-io.c (_gpgme_io_select): Accept new argument NONBLOCK to
_gpgme_io_select. Set timeout of 0 if this is set.
* w32-io.c (_gpgme_io_select): Likewise.
* io.h: Add new argument NONBLOCK to _gpgme_io_select prototype.
* wait.c (do_select): Add new argument to _gpgme_io_select
invocation.
* rungpg.h (_gpgme_gpg_set_command_handler): Add new argument
linked_data to prototype.
* engine.h (_gpgme_engine_set_command_handler): Likewise.
* engine.c (_gpgme_engine_set_command_handler): Likewise.
* passphrase.c (_gpgme_passphrase_start): Pass NULL as linked_data
argument to _gpgme_engine_set_command_handler.
* rungpg.c (struct gpg_object_s): New members linked_data and
linked_idx in CMD.
(_gpgme_gpg_new): Initialize those new members.
(_gpgme_gpg_set_command_handler): Accept new argument linked_data.
(build_argv): Handle linked_data
in the same hack as cb_data.
(read_status): If linked_data is in use, flush the pipe before
activating the command handler.
* gpgme.h: Add prototypes for gpgme_op_edit_start and
gpgme_op_edit.

The next changes export the status codes to the user:

* decrypt.c (_gpgme_decrypt_status_handler): Likewise, also prefix
all STATUS_ with GPGME_.
* delete.c (delete_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler): Likewise.
* encrypt.c (_gpgme_encrypt_status_handler): Likewise.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (parse_status): Likewise.
(gpgsm_status_handler): Likewise.
(gpgsm_set_recipients): Likewise.
* export.c (export_status_handler): Likewise.
* genkey.c (genkey_status_handler): Likewise.
* import.c (append_xml_impinfo): Likewise.
(import_status_handler): Likewise.
* keylist.c (keylist_status_handler): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler):

Likewise.
(command_handler): Likewise.
* progress.c (_gpgme_progress_status_handler): Likewise.
* sign.c (_gpgme_sign_status_handler): Likewise.
* trustlist.c (trustlist_status_handler): Likewise.
* verify.c (_gpgme_verify_status_handler): Likewise.
* gpgme.h (GpgmeEditCb): New type.
* rungpg.h (GpgStatusCode): Rename and move to ...
* gpgme.h (GpgmeStatusCode): ... this and here.
* Makefile.am (status-table.h): Run mkstatus on gpgme.h, not rungpg.h.
* mkstatus: Prefix STATUS with GPGME_.
* rungpg.h (GpgStatusHandler, GpgCommandHandler): Change type
accordingly.
* ops.h (_gpgme_verify_status_handler,
_gpgme_decrypt_status_handler, _gpgme_sign_status_handler,
_gpgme_encrypt_status_handler, _gpgme_passphrase_status_handler,
_gpgme_progress_status_handler): Likewise.
* rungpg.c (struct gpg_object_s): Likewise for CMD.code.

These changes add an edit operation to GPGME:

* context.h (struct gpgme_context_s): New member RESULT.edit. *
ops.h: Add prototype
for _gpgme_release_edit_result and
_gpgme_passphrase_command_handler.
* passphrase.c (command_handler): Make non-static and rename to ...
(_gpgme_passphrase_command_handler): ... this.
(_gpgme_passphrase_start): Use new name for command handler.
* types.h: Add EditResult type.
* gpgme.c (_gpgme_release_result): Release EDIT result.
* edit.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add edit.c.
(libgpgme_la_LDADD): Rename to libgpgme_la_LIBADD, and include
assuan_libobjs.
(assuan_libobjs): New variable, set this instead
libgpgme_la_LIBADD.
* engine.h (_gpgme_engine_op_edit): New prototype.
* engine.c (_gpgme_engine_op_edit): New function.
* rungpg.h (_gpgme_gpg_op_edit): New prototype.
* rungpg.c (_gpgme_gpg_op_edit): New function.

2002-07-27 Marcus Brinkmann <marcus@g10code.de>

* delete.c (delete_problem): New case ambiguous specification.
(delete_status_handler): Handle new case (poorly).

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c
(_gpgme_gpgsm_op_delete): Implement this.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_LDADD): Add @LIBOBJS@ for vasprintf and
fopencookie.
* vasprintf.c: Update to more recent libiberty version.
* debug.h: Replace #elsif with #elif.

Submitted by Stphane Corthsy:
* util.h (vasprintf): Correct prototype.
* encrypt-sign.c: Include <stddef.h>.
(encrypt_sign_status_handler): Change type of ENCRYPT_INFO_LEN to
size_t.
* ath-pthread.c: Include <stdlib.h>, not <malloc.h>.
* ath-pth.c: Likewise.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* wait.c (fdt_global): Make static. Reported by Stphane
Corthsy.

* rungpg.c (_gpgme_gpg_op_keylist_ext): Skip empty string
patterns. Reported by Stphane Corthsy.

* key.c (gpgme_key_get_as_xml): Add OTRUST attribute. Requested
by Stphane Corthsy.
(gpgme_key_get_string_attr): Add GPGME_ATTR_SIG_SUMMARY case to
silence gcc warning.

* rungpg.c (_gpgme_gpg_new): Always set utf8 as charset.

2002-07-03
 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_io_cbs): Deal with CTX being NULL.

* gpgme.c (_gpgme_op_event_cb_user): New function.
* op-support.c (_gpgme_op_reset): Support a new mode of operation
for private or user event loop. Use new user event callback
wrapper.
* trustlist.c (gpgme_op_trustlist_start): Use this new mode.
* keylist.c (gpgme_op_keylist_start): Likewise.

* rungpg.c (_gpgme_gpg_io_event): New function.
* rungpg.h (_gpgme_gpg_io_event): New prototype.
* engine-gpgsm.c (_gpgme_gpg_io_event): New function.

* engine-gpgsm.h (_gpgme_gpgsm_io_event): New prototype.
* engine.c (_gpgme_engine_io_event): New function.
* engine.h (_gpgme_engine_io_event): New prototype.
* keylist.c (finish_key): Call _gpgme_engine_io_event, and move
the real work for the default IO callback routines to ...
(_gpgme_op_keylist_event_cb): ... here. New function.
* trustlist.c (trustlist_colon_handler): Signal
GPGME_EVENT_NEXT_TRUSTITEM. Move queue
manipulation to ...
(_gpgme_op_trustlist_event_cb): ... here. New function.
* gpgme.c (_gpgme_op_event_cb): Call _gpgme_op_keylist_event_cb
and _gpgme_op_trustlist_event_cb when appropriate.
* ops.h (_gpgme_op_keylist_event_cb): New prototype.
(_gpgme_op_trustlist_event_cb): Likewise.
* op-support.c (_gpgme_op_reset): Add comment why we don't use the
user provided event handler directly.
* gpgme.h (GpgmeRegisterIOCb): Return GpgmeError value, and TAG in
a pointer argument.
* wait.c (_gpgme_add_io_cb): Likewise.
* wait.h (_gpgme_add_io_cb): Likewise for prototype.
* rungpg.c (_gpgme_gpg_add_io_cb): Call IO_CBS->add with new
argument. Fix up error handling.
* engine-gpgsm.c (_gpgme_gpgsm_add_io_cb): Call IO_CBS->add with
new argument, fix up error handling.

2002-07-03 Werner Koch <wk@gnupg.org>

* encrypt.c (status_handler_finish): New.
(_gpgme_encrypt_status_handler): Moved some code out to the new
function and call this function also in case we get into the
status
handler with an error which might happen due to a kludge in
engine-gpgsm.c

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg use synchronous mode).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Fix documentation of key attribute retrieval functions.

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* ops.h (_gpgme_wait_on_condition): Remove HANG argument from
prototype and change return type to GpgmeError.
(_gpgme_wait_one): New prototype.

* wait.c (gpgme_wait): Replace with the meat from
_gpgme_wait_on_condition here, and remove the support for
conditions.
(_gpgme_wait_on_condition): Remove HANG argument from prototype
and change return type to GpgmeError. Replace with meat from
_gpgme_wait_one and add support for conditions.
(_gpgme_wait_one): Just call _gpgme_wait_on_condition without
condition.
* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg
use synchronous mode).
(gpgme_op_keylist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.
* trustlist.c (gpgme_op_trustlist_start): Always use our own FD
table (eg use synchronous mode).
(gpgme_op_trustlist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.

2002-06-26 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (map_assuan_error): Map No_Data_Available to EOF.

* import.c (append_xml_impinfo): Kludge to print fingerprint
instead of keyid for use with gpgsm.
(import_status_handler): Set a flag to know whether any import
occurred.
(gpgme_op_import): Return -1 if no certificate ewas imported.

2002-06-25 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_io_cbs) [ENABLE_GPGSM]: Fixed
function arguments.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Only export the keys
listed in RECP.
* export.c (gpgme_op_export): If no data was returned,
return
GPGME_No_Recipients.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Implement.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return ERR.

(parse_status): New function.
(gpgsm_status_handler): Use parse_status.
(gpgsm_assuan_simple_command): Accept new arguments STATUS_FNC and
STATUS_FNC_VALUE and process status messages.
(gpgsm_set_recipients): Pass new arguments to gpgsm_assuan_simple_command.
(gpgsm_set_fd): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_remove_io_cb): Unlock FDT->lock.

2002-06-20 Werner Koch <wk@gnupg.org>

* rungpg.c (build_argv): Ignore GPG_AGENT_INFO if set but empty.

* verify.c (calc_sig_summary): Set bad policy for wrong key usage.
(skip_token): New.
(_gpgme_verify_status_handler): Watch out
for wrong key usage.
(gpgme_get_sig_string_attr): Hack to return info on the key
usage. Does now make use of the former RESERVED argument which
has been renamed to WHATIDX.
(gpgme_get_sig_ulong_attr): Renamed RESERVED to WHATIDX.

2002-06-14 Marcus Brinkmann <marcus@g10code.de>

* wait.c (do_select): Return -1 on error, and 0 if nothing to run.
(_gpgme_wait_one): Only set HANG to zero if do_select returned an
error, or there are no more file descriptors to wait on.
(_gpgme_wait_on_condition): Ignore return value from do_select for
now.

2002-06-13 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify): Make sure that we never access an
uninitialized result structure.

2002-06-12 Werner Koch <wk@gnupg.org>

* keylist.c (struct keylist_result_s): New.
(_gpgme_release_keylist_result): Release it here
(keylist_status_handler): Handle truncated.
(append_xml_keylistinfo): New.
* gpgme.c (_gpgme_release_result): and use it here.
* types.h: Declare the new type here.

*
context.h (struct gpgme_context_s): Use it here.

2002-06-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Close status_cb.fd.
(_gpgme_gpgsm_new): Duplicate status file descriptor, so we can
use our own close notification mechanism without interfering with
assuan.

2002-06-11 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_SIG_SUMMARY and the GPGME_SIGSUM_
constants.
* verify.c (calc_sig_summary): New.
(gpgme_get_sig_ulong_attr): And use it here.

2002-06-10 Werner Koch <wk@gnupg.org>

* rungpg.h: Add new status codes TRUNCATED and ERROR.
* verify.c (is_token, copy_token): New.
(_gpgme_verify_status_handler): Use copy_token, handle the new
ERROR status and store the errorcode used withgpgsm and trust
status codes.
* gpgme.h: New attribute ERRTOK.
* key.c (gpgme_key_get_string_attr): Add dummy case for it.
(gpgme_get_sig_string_attr): Use it here to return the last error.

2002-06-10 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c (_gpgme_gpgsm_start): Move the code that sets the
close notification for the status fd to ...
(_gpgme_gpgsm_new): ... here.
* wait.h: Include "sema.h". Remove prototypes of
_gpgme_remove_proc_from_wait_queue and
_gpgme_register_pipe_handler. Add prototypes of
_gpgme_fd_table_init, _gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_add_io_cb, _gpgme_remove_io_cb, _gpgme_wait_event_cb and
_gpgme_wait_one..
* wait.c: Remove global variables PROC_QUEUE, PROC_QUEUE_LOCK,
FD_TABLE_SIZE, FD_TABLE, FD_TABLE_LOCK. New global variables
FDT_GLOBAL, CTX_DONE_LIST, CTX_DONE_LIST_SIZE,
CTX_DONE_LIST_LENGTH and CTX_DONE_LIST_LOCK. Remove struct
proc_s. Replace struct wait_item_s.
(_gpgme_fd_table_init): New function.
(_gpgme_fd_table_deinit): Likewise.
(_gpgme_fd_table_put): Likewise.

(set_process_done): Remove function.
(do_select): Take argument FDT. Use that to decide which fds to
select on.
(_gpgme_remove_proc_from_wait_queue): Remove function.
(_gpgme_wait_event_cb):
New function.
(_gpgme_wait_one): Likewise.
(_gpgme_register_pipe_hanldler): Remove function.
(_gpgme_add_io_cb): New function.
(_gpgme_remove_io_cb): Likewise.
(_gpgme_freeze_fd): Remove function.
(_gpgme_thaw_fd): Remove function.
* rungpg.c (struct fd_data_map_s): Add new member TAG.
(struct gpg_object_s): Likewise for STATUS and COLON. Add member
IDX to CMD. Add new member IO_CBS.
(close_notify_handler): New variables POSSIBLY_DONE and NOT_DONE.
For each I/O callback, check if it should be unregistered. If all
callbacks have been unregistered, trigger GPGME_EVENT_DONE.
Remove member RUNNING.
(_gpgme_gpg_new): Initialize new members.
(_gpgme_gpg_release): Check PID not RUNNING. Don't call
_gpgme_remove_proc_from_wait_queue. Close GPG->CMD.FD if set.
(build_argv): Store away the index instead the file descriptor for
CMD.
(_gpgme_gpg_add_io_cb): New function.
(_gpgme_gpg_spawn): Use _gpgme_gpg_add_io_cb to register IO
callbacks.
(gpg_status_handler):
Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(read_status): Use _gpgme_gpg_add_io_cb instead _gpgme_thaw_fd.
Use IO_CBS->remove instead _gpgme_freeze_fd.
(gpg_colon_line_handler): Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(command_cb): Use IO_CBS->remove instead _gpgme_freeze_fd.
(_gpgme_gpg_set_io_cbs): New function.
* rungpg.h (_gpgme_gpg_set_io_cbs): Prototype for
_gpgme_gpg_set_io_cbs.
* gpgme.h (GpgmeIOCb): New type.
(GpgmeRegisterIOCb): Likewise.
(GpgmeRemoveIOCb): Likewise.
(GpgmeEventIO): Likewise.
(GpgmeEventIOCb): Likewise.
(struct GpgmeIOCbs): New structure to hold I/O callbacks.
(gpgme_set_op_io_cbs): New prototype.
(gpgme_get_op_io_cbs): Likewise.
* ops.h: New prototype for _gpgme_op_event_cb. Remove prototypes
for _gpgme_freeze_fd and _gpgme_thaw_fd. Remove PID argument from

_gpgme_data_inbound_handler and _gpgme_data_outbound_handler
prototype.
Add prototype for _gpgme_op_reset.
Add synchronous argument to _gpgme_decrypt_start prototype.
* io.h: Beautification.
* gpgme.c: Include "wait.h".
(gpgme_new): Initialize FDT.
(gpgme_set_io_cbs): New function.
(gpgme_get_io_cbs): Likewise.
(_gpgme_op_event_cb): Likewise.
* data.c (_gpgme_data_inbound_handler): Change return type to
void. Drop PID argument. Close FD on error and EOF.
(write_mem_data): Don't close FD here ...
(write_cb_data): ... or here ...
(_gpgme_data_outbound_handler): ... but here. Change return type
to void. Drop PID argument.
* context.h: Include "wait.h".
(struct gpgme_context_s): New members FDT and IO_CBS.
* op-support.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add op-support.c.
* ops.h: Add prototype for _gpgme_op_reset().
* decrypt.c (_gpgme_decrypt_start): New argument SYNCHRONOUS. Use
_gpgme_op_reset.
(gpgme_op_decrypt_start): Add synchronous argument.
(gpgme_op_decrypt): Likewise. Use _gpgme_wait_one instead
gpgme_wait.
*
delete.c (gpgme_op_delete_start): Rename to ...
(_gpgme_op_delete_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_delete_start): Just a wrapper around
_gpgme_op_delete_start now.
(gpgme_op_delete): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt.c: Include "wait.h".
(ggpgme_op_encrypt_start): Rename to ...
(_gpgme_op_encrypt_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_start): Just a wrapper around
_gpgme_op_encrypt_start now.
(gpgme_op_encrypt): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt_sign.c (gpgme_op_encrypt_sign_start): Rename to ...
(_gpgme_op_encrypt_sign_start): ... this. New argument
SYNCHRONOUS. Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_sign_start): Just a wrapper around
_gpgme_op_encrypt_sign_start now.
(gpgme_op_encrypt_sign): Add synchronous argument.

Use
_gpgme_wait_one instead gpgme_wait.
* export.c (gpgme_op_export_start): Rename to ...
(_gpgme_op_export_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_export_start): Just a wrapper around
_gpgme_op_export_start now.
(gpgme_op_export): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* genkey.c (gpgme_op_genkey_start): Rename to ...
(_gpgme_op_genkey_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_genkey_start): Just a wrapper around
_gpgme_op_genkey_start now.
(gpgme_op_genkey): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* import.c (gpgme_op_import_start): Rename to ...
(_gpgme_op_import_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_import_start): Just a wrapper around
_gpgme_op_import_start now.
(gpgme_op_import): Add synchronous argument. Use _gpgme_wait_one
instead
gpgme_wait.
* keylist.c (gpgme_op_keylist_start): Use _gpgme_op_reset.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (gpgme_op_sign_start): Rename to ...
(_gpgme_op_sign_start): ... this. New argument SYNCHRONOUS. Use
_gpgme_op_reset. Make function static.
(gpgme_op_sign_start): Just a wrapper around _gpgme_op_sign_start
now.
(gpgme_op_sign): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* trustlist.c (gpgme_op_trustlist_start): Use _gpgme_op_reset.
* verify.c (gpgme_op_verify_start): Rename to ...
(_gpgme_op_verify_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_verify_start): Just a wrapper around
_gpgme_op_verify_start now.
(gpgme_op_verify): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* engine-gpgsm.c (iocb_data_t): New type.
(struct gpgsm_object_s): New member status_cb. Replace input_fd
and input_data with input_cb. Replace output_fd and output_data
with
output_cb. Replace message_fd and message_data with
message_cb. New member io_cbs.
(_gpgme_gpgsm_new): Initialize all new members (and drop the old

ones).
(close_notify_handler): New variable POSSIBLY_DONE. For each I/O
callback, check if it should be unregistered. If all callbacks
have been unregistered, trigger GPGME_EVENT_DONE.
(_gpgme_gpgsm_release): Remove variable PID. Use new variable
names to close the file descriptors.
(_gpgme_gpgsm_op_decrypt): Use new variable names,
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise.
(gpgsm_status_handler): Drop argument PID. Change return type to
void. Close status pipe before returning because of EOF or error.
(_gpgme_gpgsm_add_io_cb): New function.
(_gpgme_gpgsm_start): Use _gpgme_gpgsm_add_io_cb to register
callback
function.
(_gpgme_gpgsm_set_io_cbs): New function.
* engine-gpgsm.h: New prototype for _gpgme_gpgsm_set_io_cbs.
* engine.c (_gpgme_engine_set_io_cbs): New function.
* engine.h: New prototype for _gpgme_engine_set_io_cbs.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Remove mutex.h.

2002-06-03 Marcus Brinkmann <marcus@g10code.de>

* key.c: Include <ctype.h>.
(_gpgme_key_append_name): Skip one more char when
processing escaped char. Submitted by Marc Mutz <mutz@kde.org>.
Handle hexadecimal encodings. Also reported by Marc. Thanks!

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Enable the _gpgme_ prefix. Fix all those prefix macros.
* posix-sema.c: Use that prefix here.
* posix-io.c: Include "ath.h".
(_gpgme_io_read): Use _gpgme_ath_read instead read.
(_gpgme_io_write): Use _gpgme_ath_write instead write.
(_gpgme_io_waitpid): Use _gpgme_ath_waitpid instead waitpid.
(_gpgme_io_select): Use _gpgme_ath_select
instead select.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (ath_components): New variable.
(ath_components_pthread): Likewise.
(ath_components_pth): Likewise.
(system_components): Add ath_componentes.

* ath.h: New file.
* ath.c: Likewise.
* ath-pthread.c: Likewise.
* ath-pth.c: Likewise.
* posix-sema.c (_gpgme_sema_cs_enter): Rework to use the ATH
interface.
* mutex.h: Remove file.

2002-05-30 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_string_attr): Return NULL when asking for
an issuer with IDX > 0. We don't support altIssuerNames for now.

2002-05-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Aehmm, added
missing variable definition. Oohh - Marcus was faster.

2002-05-22 Marcus Brinkmann <marcus@gnu.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Fix last change.

2002-05-21 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist)
(_gpgme_gpgsm_op_keylist_ext):
Pass the keylist mode to gpgsm.

2002-05-10 Werner Koch <wk@gnupg.org>

* key.h (gpgme_key_s): Add OTRUST.
* keylist.c (set_ownertrust): New.
(keylist_colon_handler): Get the ownertrust value
* key.c (gpgme_key_get_string_attr,gpgme_key_get_ulong_attr):
Return that value.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: New static variable GET_PATH_LOCK.
(_gpgme_get_gpg_path): Remove superfluous NULL initializer.
Take lock while determining path.
(_gpgme_get_gpgsm_path): Likewise.

* version.c (do_subsystem_inits): Set DONE to 1 after
initialization.
(gpgme_get_engine_info): New variable ENGINE_INFO_LOCK. Take lock
while determining engine info.
* rungpg.c (_gpgme_gpg_get_version): New variable
GPG_VERSION_LOCK. Take the lock while determining the program
version.
* posix-io.c: Include "sema.h".
(_gpgme_io_spawn): New variable FIXED_SIGNALS_LOCK. Take the lock
while fixing the signals.
(_gpgme_io_select): Make READFDS and WRITEFDS non-static.
*
key.c: Include "sema.h". New globals KEY_CACHE_LOCK and
KEY_REF_LOCK.
(capabilities_to_string): Make STRINGS very const.
(_gpgme_key_cache_add): Lock the key cache.
(_gpgme_key_cache_get): Likewise.
(gpgme_key_ref, gpgme_key_release): Lock the key_ref_lock.
* import.c (append_xml_impinfo): Make IMPORTED_FIELDS and
IMPORT_RES_FIELDS very const. Make FIELD and FIELD_NAME a little
const.
* engine.c (_gpgme_engine_get_info): New variable
ENGINE_INFO_LOCK. Take lock while determining engine info.
* engine-gpgsm.c: Include "sema.h".
(_gpgme_gpgsm_get_version): New variable GPGSM_VERSION_LOCK. Take
lock while getting program version.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* debug.h: New file.
* Makefile.am (libgpgme_la_SOURCES): Add debug.h.
* util.h: Removed all prototypes and declarations related to
debugging. Include "debug.h".

* debug.c (debug_level): Comment variable and remove superfluous
zero initializer.
(errfp): Likewise.
(_gpgme_debug_enabled):
Function removed.
(struct debug_control_s): Definition removed.
(_gpgme_debug_level): Function removed.
(_gpgme_debug_begin): Rewritten to use vasprintf. Accept a
pritnf-style format specification and a variable number of
arguments.
(_gpgme_debug_add): Rewritten using vasprintf. Expect that format
starts out with "%s" for simplicity.
(_gpgme_debug_end): Rewritten using vasprintf. Do not accept a
TEXT argument anymore.

* posix-io.c (_gpgme_io_select): Use new level argument for
DEBUG_BEGIN instead explicit if construct.

* debug.c (debug_init): Remove superfluous zero initializer,
remove volatile flag of INITIALIZED. Do not use the
double-checked locking algorithm, it is fundamentally flawed and
will empty your fridge (on a more serious note, despite the
volatile flag it doesn't give you the guarantee you would expect,
for example on a DEC Alpha or an SMP machine. The volatile only
serializes accesses to the volatile variable, but not to the other
variables).

2002-05-03
Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Redirect any gpgsm error
output to /dev/null.

* verify.c (gpgme_get_sig_key): Set the protocol of the listctx.
* gpgme.c (gpgme_get_protocol): New.

* data.c (gpgme_data_write): Changed type of BUFFER to void*.
(gpgme_data_read): Ditto.

* verify.c (_gpgme_verify_status_handler): Handle TRUST_* status
lines so that a claim can be made without looking up the key.
(gpgme_get_sig_string_attr): New.
(gpgme_get_sig_ulong_attr): New.

* gpgme.h (GpgmeAttr): Added GPGME_ATTR_SIG_STATUS.

* rungpg.h: Add new status codes from gpg 1.0.7 and formatted the
list to align with the status.h file from gnupg.

* gpgme.h (GpgmeSigStat): Add _GOOD_EXP and _GOOD_EXPKEY.
* verify.c (_gpgme_verify_status_handler, finish_sig): Handle
these new status codes. Store the expiration time

2002-04-27 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeData_Encoding): New.
* data.c (gpgme_data_get_encoding,gpgme_data_set_encoding):
New.
* engine-gpgsm.c (map_input_enc): New. Use it in all local
functions where the INPUT command gets send.

2002-04-27 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Close the output
descriptor only when we don't need it anymore. Close the message
descriptor if we don't need it.

2002-04-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_LIBADD): Use libtool libraries.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Call gpgme_data_release on
GPG->cmd.cb_data, not xfree.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set the display, ttyname,
ttytype, lc_ctype and lc_messages options in the server.

2002-04-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Add new error codes.

2002-04-23 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_ulong_attr): Swapped use of can_encrypt and
can_certify to return
the requested values.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_progress_cb): Allow either return parameter
to be NULL.
(gpgme_get_passphrase_cb): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_passphrase_cb): New function.
(gpgme_get_progress_cb): New function.
* gpgme.h: Add new prototypes for gpgme_get_passphrase_cb and
gpgme_get_progress_cb.

2002-03-28 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeAttr): Add values for issuer and chaining.
* key.h (gpgme_key_s): Add issuer and chaining elements for X509.
* keylist.c (keylist_colon_handler): Store them.
* key.c (gpgme_key_release): Free them.

(gpgme_key_get_as_xml,gpgme_key_get_string_attr): Print them.

2002-03-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_SOURCES): Add mutex.h

2002-03-21 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Make sure off_t and ssize_t are
defined.

2002-03-18 Marcus Brinkmann <marcus@g10code.de>

*
Makefile.am (system_components): New variable, set depending on
HAVE_DOSISH_SYSTEM.
(libgpgme_la_SOURCES): Use system_components. Remove `syshdr.h'.
* syshdr.h: File removed.

* posix-io.c: Remove !HAVE_DOSISH_SYSTEM safeguard. Clean up source.
* posix-sema.c: Likewise.
* posix-util.c: Likewise.

* w32-io.c: Remove HAVE_DOSISH_SYSTEM safeguard.
* w32-sema.c: Likewise.
* w32-util.c: Likewise.

* posix-io.c: Include `unistd.h', do not include `syshdr.h'.
* posix-sema.c: Likewise.
* w32-io.c: Include `io.h', do not include `syshdr.h'
* w32-sema.c: Likewise.
* w32-util.c: Likewise.
* data.c: Do not include `syshdr.h'.
* wait.c: Likewise.
* wait.h: Code cleanup.

* mutex.h: New file.
* posix-sema.c: Implement.

2002-03-08 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Fixed type. Thanks to Frank Heckenbach.

2002-03-07 Werner Koch <wk@gnupg.org>

* gpgme.h (gpgme_op_keylist_ext_start): Add prototype.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

*
encrypt.c (_gpgme_encrypt_sym_status_handler): New function.
(gpgme_op_encrypt_start): New variable SYMMETRIC, set it if RECP
is null, and if it is set, use _gpgme_encrypt_sym_status_handler
as status handler and run _gpgme_passphrase_start.
* rungpg.c (_gpgme_gpg_op_encrypt): If RECP is zero, do symmetric
encryption.
* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): If RECP is zero,
return error value.

* rungpg.c (_gpgme_gpg_op_verify): Add "--" argument.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Also set the
error No_Passphrase if only a bad passphrase was provided.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_verify): If TEXT is of mode
GPGME_DATA_MODE_IN, construct a command line that stores the
plaintext in TEXT.
* verify.c (gpgme_op_verify_start): Accept TEXT being
uninitialized, and in this case interpret SIG as a normal or
cleartext signature and TEXT as a return
data object.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext) [!ENABLE_GPGSM]:
Add stub function.

2002-02-28 Werner Koch <wk@gnupg.org>

* key.h (subkey_s): New member expires_at.
* keylist.c (keylist_colon_handler): Set it here
* key.c (gpgme_key_get_as_xml,gpgme_key_get_ulong_attr): Return it.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h (_gpgme_gpg_op_keylist_ext): New prototype.
* rungpg.c (_gpgme_gpg_op_keylist_ext): New function.
* engine-gpgsm.h (_gpgme_gpgsm_op_keylist_ext): New prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): New function.
* engine.h (_gpgme_engine_op_keylist_ext): New prototype.
* engine.c (_gpgme_engine_op_keylist_ext): New function.

* keylist.c (gpgme_op_keylist_ext_start): New function.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new error code GPGME_Invalid_Recipient.
* encrypt.c (struct
encrypt_result_s): New member invalid_recipients,
rename no_recipients to no_valid_recipients.
(_gpgme_encrypt_status_handler): Include error for invalid
recipients.
* engine-gpgsm.c (gpgsm_set_recipients): Change type of first
argument to GpgsmObject. Use that to report back the status about
the recipients.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Fix the last change.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Parse the args line to
see if the problem is due to a missing key, and report that back
to the user.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_engine_op_encrypt_sign): New function.
* engine.h (_gpgme_engine_op_encrypt_sign): New prototype.
* rungpg.c (_gpgme_append_gpg_args_from_signers): New function.
(_gpgme_gpg_op_sign): Use that new function.
(_gpgme_gpg_op_encrypt_sign): New function.
* rungpg.h (_gpgme_gpg_op_encrypt_sign):
New prototype.
* gpgme.h (gpgme_op_encrypt_sign_start): New prototype.
(gpgme_op_encrypt_sign): Likewise.
* Makefile.am (libgpgme_la_SOURCES): Add encrypt-sign.c.
* ops.h (_gpgme_encrypt_status_handler): Add prototype.
(_gpgme_sign_status_handler): Add prototype.
* sign.c (sign_status_handler): Rename to ...
(_gpgme_sign_status_handler): ... this and make non-static.
* encrypt.c (encrypt_status_handler): Rename to ...
(_gpgme_encrypt_status_handler): ... this and make non-static.
* encrypt.c (gpgme_op_encrypt_start): Use new status handler name.
* sign.c (gpgme_op_sign_start): Likewise.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): New member include_certs.

* gpgme.h (gpgme_set_include_certs): Add prototype.
(gpgme_get_include_certs): Likewise.
* gpgme.c (gpgme_set_include_certs): New function.
(gpgme_get_include_certs): Likewise.
(gpgme_new): Set include_certs to 1 (the default).
* engine.c (_gpgme_engine_op_sign): Accept
new argument include_certs,
and pass it to _gpgme_gpgsm_op_sign.
* engine.h (_gpgme_engine_op_sign): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Accept new argument
include_certs and handle it.
* engine-gpgsm.h (_gpgme_gpgsm_start): Add new argument include_certs.
* sign.c (gpgme_op_sign_start): Add new argument to
_gpgme_engine_op_sign call.

2002-02-14 Werner Koch <wk@gnupg.org>

* keylist.c (gpgme_op_keylist_start): Do not use a verbose listing.

2002-02-13 Werner Koch <wk@gnupg.org>

* vasprintf.c, fopencookie.c: Add replacement functions.
* util.h: Add prototypes for them.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return 0 if we
reach the end of the function.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Fix logic in validity check.
(gpgme_op_genkey_start): Skip newlines after opening tag.

* engine-gpgsm.c (_gpgme_gpgsm_start): Remove cruft.

2002-02-08
Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Allow PUBKEY and SECKEY to be
set, and pass them down to the crypto engine.
* engine-gpgsm.h (_gpgme_gpgsm_start): New arguments PUBKEY and SECKEY.
* engine.h: Likewise.
* rungpg.h (_gpgme_gpg_spawn): Likewise.
* engine.c (_gpgme_engine_op_genkey): Likewise. Use those
arguments.
* rungpg.c (_gpgme_gpg_op_genkey): Likewise. Complain if those
arguments are set.

* engine-gpgsm.c (_gpgme_gpgsm_op_genkey): Likewise. Implement
function.

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Beautify comment.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_keylist): Remove handling of keylist
mode (for now).

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* wait.c (gpgme_wait): Add new argument STATUS, in which the
status of the returned context is returned.
(_gpgme_wait_on_condition): Rework the function a bit, to make it
aware of cancelled processes, and to
allow to use gpgme_wait with
CTX being NULL (as documented in the source).
(struct proc_s): New member REPORTED.
* gpgme.h: Fix prototype.
* verify.c (gpgme_op_verify): Fix use of gpgme_wait.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.
* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_keylist_mode): Possibly return an error
value.
(gpgme_get_keylist_mode): New function.
(gpgme_new): Set the default for keylist_mode member of CTX.

* gpgme.h (gpgme_set_keylist_mode): Fix prototype.
(gpgme_get_keylist_mode): New prototype.
(GPGME_KEYLIST_MODE_LOCAL): New macro.
(GPGME_KEYLIST_MODE_EXTERN): Likewise..

2002-02-02 Marcus Brinkmann <marcus@g10code.de>

This patch has gotten a bit large... mmh. The
main thing that
happens here is that error values are now not determined in the
operation function after gpgme_wait completed, but in the status
handler when EOF is received. It should always be the case that

either an error is flagged or EOF is received, so that after a
gpgme_wait you should never have the situation that no error is
flagged and EOF is not received. One problem is that the engine
status handlers don't have access to the context, a horrible
kludge works around this for now. All errors that happen during a
pending operation should be caught and reported in ctx->error,
including out-of-core and cancellation. This rounds up neatly a
couple of loose ends, and makes it possible to pass up any errors
in the communication with the backend as well. As a bonus, there
will be a function to access gpgme->wait, so that the operations
can truly be implemented with their _start function.

* engine-gpgsm.c (gpgsm_status_handler): Horrible kludge to report
error back
to the context.
* rungpg.c (gpg_status_handler): Same horrible kludge applied here.

* engine-gpgsm.c (gpgsm_assuan_simple_command): Add error checking.

* wait.c (_gpgme_wait_on_condition): If canceled, set CTX->error
to a value indication that.

* verify.c (add_notation): Set error, not out_of_core.
(finish_sig): Likewise.
(gpgme_op_verify_start): Don't clear out_of_core.
(_gpgme_verify_status_handler): At EOF, clean up the notation data.
(gpgme_op_verify): And don't do it here.

* trustlist.c (trustlist_status_handler): Check error, not out_of_core.
(gpgme_op_trustlist_start): Don't clear out_of_core.
(gpgme_op_trustlist_next): Check error, not out_of_core.
(gpgme_op_trustlist_end): Likewise.

* ops.h (test_and_allocate_result): New macro.
(_gpgme_passphrase_result): Remove prototype.
* delete.c (gpgme_op_delete): Return error from context.
(delete_status_handler): Use macro test_and_allocate_result.
Perform error checking at EOF.
(gpgme_op_delete_start): Release
result.
* passphrase.c (_gpgme_passphrase_status_handler): Use macro
test_and_allocate_result, and perform error checking here.
(_gpgme_passphrase_result): Function removed.
* sign.c (gpgme_op_sign_start): Do not set out_of_core to zero.
(gpgme_op_sign): Just return the error value from the context.
(sign_status_handler): Only progress if no error is set yet. If
we process an EOF, set the resulting error value (if any).
* decrypt.c (_gpgme_decrypt_result): Function removed.

(create_result_struct): Function removed.
(_gpgme_decrypt_status_handler): Use macro test_and_allocate_result,
caclulate error on EOF, do not progress with errors.
(_gpgme_decrypt_start): Do not set out_of_core to zero.
(gpgme_op_decrypt): Just return the error value from the context.
* encrypt.c (encrypt_status_handler): Perform the error checking
here.
(gpgme_op_encrypt_start): Do not clear out_of_core.
* export.c (export_status_handler): Return if error is set in context.
(gpgme_op_export_start):
Release result.
(gpgme_op_export): Return error from context.
* decrypt-verify.c (gpgme_op_decrypt_verify): Return the error in
the context.
* genkey.c (genkey_status_handler): Use macro
test_and_allocate_result. Perform error checking at EOF.
(gpgme_op_genkey): Just return the error from context.
* import.c (gpgme_op_import): Return the error from context.
(import_status_handler): Use macro test_and_allocate_result.
* keylist.c (gpgme_op_keylist_start): Do not clear out_of_core.
(gpgme_op_keylist_next): Return error of context.
(keylist_colon_handler): Set error instead out_of_code.
(finish_key): Likewise.

* context.h: Remove member out_of_core, add member error.
* gpgme.c (_gpgme_release_result): Clear error flag.

* engine.h (_gpgme_engine_get_error): New prototype.
* engine.c (_gpgme_engine_get_error): New function.
* engine-gpgsm.c (_gpgme_gpgsm_get_error): New function.

* engine-gpgsm.c (map_assuan_error): New function.
(gpgsm_assuan_simple_command): Change
return type to GpgmeError,
use the new function to map error values.
(gpgsm_set_fd): Change return type tp GpgmeError.
(_gpgme_gpgsm_op_decrypt): Change type of ERR to GpgmeError.
(gpgsm_set_recipients): Likewise. Change type of return value
equivalently. Adjust error values.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(struct gpgsm_object_s): New member error.
(gpgsm_status_handler): Set error if error occurs. Determine
error number from ERR line received. If assuan_read_line fails,
terminate the connection.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (MOSTLYCLEANFILES): New variable.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): At error, terminate the
connection to the server.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h: Add STATUS_KEY_CREATED.

* progress.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add progress.c.

* genkey.c (genkey_status_handler):
Use
_gpgme_progress_status_handler. Add check for status.
(struct genkey_result_s): New structure.
(_gpgme_release_genkey_result): New function.
(gpgme_op_genkey): Check for error.
* gpgme.c (_gpgme_release_result): Call
_gpgme_release_genkey_result.
* ops.h (_gpgme_release_genkey_result): Add prototype.
* types.h (GenKeyResult): New type.
* context.h (gpgme_context_s): Add GenKeyResult to member result.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_release_result): Call
_gpgme_release_delete_result.
* ops.h (_gpgme_release_delete_result): Add prototype.
* types.h (DeleteResult): New type.
* context.h (gpgme_context_s): Add DeleteResult to member result.

* delete.c (enum delete_problem): New type.
(struct delete_result_s): New structure.
(_gpgme_release_delete_result): New function.
(delete_status_handler): Implement more status codes.
(gpgme_op_delete): Return error on failure.

* import.c (MAX_IMPORTED_FIELDS): Bump up to 14.

2002-01-30
 Marcus Brinkmann <marcus@g10code.de>

* import.c (struct import_result_s): New structure.
(_gpgme_release_import_result): New function.
(append_xml_impinfo): Likewise.

(import_status_handler): Implement.
* gpgme.c (_gpgme_release_result): Add call to
_gpgme_release_import_result.
* ops.h (_gpgme_release_import_result): Add prototype.
* types.h (ImportResult): New type.
* context.h (gpgme_context_s): Add ImportResult to member result.

* encrypt.c (gpgme_op_encrypt): Code clean up.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add lots of comment and fix the formatting. Add
gpgme_trustlist_end prototype.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new type GpgmeIdleFunc. Change type of
gpgme_register_idle to return and accept this type.
* wait.c (gpgme_register_idle): Fix type.
Save and return old value of idle_function.

2002-01-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Implement
secret only mode.

* keylist.c (keylist_colon_handler): Add support for the new "crs"
record type.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Call assuan_disconnect,
not assuan_pipe_disconnect.

* Makefile.am (libgpgme_la_LIBADD): Change to link assuan and
jnlib (needed by assuan) statically into libgpgme. Linking a
static library into a shared library this way is not portable.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type of R_HD from void* to
void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_new_from_filepart): Change type of LENGTH
from off_t to size_t.
* gpgme.h: Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_wait_on_condition): If the process finished,
reset the pending flag. Also if the operation was cancelled.

(struct proc_s): Rename READY to DONE.
(wait_item_s): Likewise.
(set_process_ready): Rename
to ...
(set_process_done): ... this.
(_gpgme_remove_proc_from_wait_queue): Call set_process_done
instead set_process_ready.
(_gpgme_wait_on_condition): Likewise.
(do_select): Rename READY to DONE.

* verify.c (gpgme_op_verify): Do not set pending to zero here.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.
* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.
* decrypt.c (gpgme_op_decrypt): Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* export.c: Cleanup.

2002-01-15 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c: Various source clean ups.
(my_isdigit): Removed.
(gpgme_op_trustlist_end): New function.

2002-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c: Various source clean ups, like renaming C to CTX where
appropriate.
(gpgme_new): Clear
R_CTX before starting the work.
(my_isdigit): Removed.
(my_isxdigit): Likewise.

* data.c: Various source clean ups.
(gpgme_data_new_from_mem): Check BUFFER after clearing R_DH.
(gpgme_data_new_with_read_cb): Similar for READ_CB.

(gpgme_data_new_from_file): Loop over fread while EINTR.
(gpgme_data_new_from_filepart): Rediddled a bit. Allow LENGTH to
be zero. Loop over fread while EINTR.

(my_isdigit): Removed.
(my_isxdigit): Likewise.

2001-12-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Replace General_Error with
Pipe_Error where appropriate.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine.c: Include `string.h'. Reported by Stphane Corthsy.

* version.c (get_engine_info): Remove prototype.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): New variable CHILD_FDS.
Fill it with the servers fds, and pass it to assuan_pipe_connect.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

*
keylist.c (gpgme_op_keylist_end): New function.
* gpgme.h (gpgme_op_keylist_end): New prototype.

* engine.h (gpgme_engine_check_version): Move prototype to ...
* gpgme.h (gpgme_engine_check_version): ... here.

* genkey.c (gpgme_op_genkey_start): Remove unused variable.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* version.c (gpgme_get_engine_info): Reimplemented.
(gpgme_check_engine): Reimplemented.
(_gpgme_compare_versions): Return NULL if MY_VERSION is NULL.

* engine.c: Include `io.h'.
(gpgme_engine_get_info): New function.
* engine.h (gpgme_engine_check_version, _gpgme_engine_get_info):
Add prototype.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (struct reap_s, reap_list, reap_list_lock): Moved to ...

* engine.c (struct reap_s, reap_list, reap_list_lock): ... here.
Include `time.h', `sys/types.h', `assert.h', and `sema.h'.

* rungpg.c (_gpgme_engine_add_child_to_reap_list): New function.
(do_reaping, _gpgme_gpg_housecleaning): Moved to
...
* engine.c (do_reaping, _gpgme_engine_housecleaning): ... here.
* rungpg.c (_gpgme_gpg_release): Replace code that is now in its
own function by call to _gpgme_engine_add_child_to_reap_list().

* wait.c: Include `engine.h'.
(run_idle): Call _gpgme_engine_housecleaning(), not
_gpgme_gpg_housecleaning().

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Append, not prepend, the uid.
Initialize the next field of the uid structure.
(gpgme_key_get_as_xml): Do not list last uid first.

2001-12-17 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New
function [!ENABLE_GPGSM].

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Put TEXT into
message_data, not SIG.
(_gpgme_gpgsm_op_sign): Use `--detached', not `--detach'.

* sign.c (sign_status_handler): Call
_gpgme_passphrase_status_handler early.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c: Revert last change.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Freeze the output file
handler when ending this operation, otherwise the wait function
will sit on it.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct gpgsm_object_s): New member colon.attic.

(_gpgme_gpgsm_new): Initialize some more members.
(_gpgme_gpgsm_release): Free the colon line handler's attic line.
(gpgsm_status_handler): Rework the inline-data processing.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not add the fds to the child
list that are not dup'ed, for those the close-on-exec flag is set
now.
* version.c (_gpgme_get_program_version): Remove first entry in
CFD, as the close-on-exec flag is now set for this fd.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): Do not add `armor'
option to `ENCRYPT'.
* engine-gpgsm.c
(gpgsm_set_recipients): Free LINE when returning
successfully.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (close_notify_handler): New function.
(_gpgme_gpgsm_new): Manage the file descriptors a
bit differently. Do not set close-on-exec flags.
(_gpgme_gpgsm_op_decrypt): Do not set message_fd
to -1, this is done by the close handler.
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_import): Likewise (also for output_fd).
(_gpgme_gpgsm_op_keylist): Likewise (also for input_fd and output_fd).
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise, but for output_fd.

* posix-io.c (_gpgme_io_pipe): Set the close-on-exec flag for the
non-inherited file descriptor index of the pipe.

2001-12-13 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New.
(gpgsm_status_handler): Pass datalines to a colon handler
* engine.c (_gpgme_engine_set_colon_line_handler): Set the colon
handler for gpgsm.

* engine-gpgsm.c
(_gpgme_gpgsm_op_keylist): Allow NULL for
pattern.
(gpgsm_assuan_simple_command): Removed underscore from
assuan_write_line.

(_gpgme_gpgsm_start): Ditto.
(gpgsm_assuan_simple_command): Replaced internal Assuan read
function by the new assuan_read_line. Removed the use of the
internal header.
(gpgsm_status_handler): Ditto. Use the new assuan_pending_line.
(_gpgme_gpgsm_start): Use the documented way to get an fd from
assuan.

* keylist.c (keylist_colon_handler): Handle "crt" records
* key.h (gpgme_key_s): Add an x509 flag.
* key.c (parse_x509_user_id): New.
(_gpgme_key_append_name): Handle x.509 names.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Make it work with current
version of assuan.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_set_fd): Accept one more argument OPT.
(_gpgme_gpgsm_op_encrypt): Pass armor argument to gpgsm_set_fd for
output descriptor.
(_gpgme_gpgsm_op_sign):
Likewise.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_next): Set pending to 0 if EOF
occurs.

2001-11-26 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Fix stupid typo.

2001-11-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Don't break if bsearch fails.
Deal with assuan read line returning more than one line (for now).

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Implement it according to
the current protocol definition.

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set CLOEXEC flag for parent

ends of the pipe.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Include stdlib.h and string.h. Also include,
for now, rungpg.h and status-table.h.
(gpgsm_status_handler): Implement more of the status handler.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

*
engine.c (_gpgme_engine_op_decrypt): Implement CMS case.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): New function.
(gpgsm_assuan_simple_command): Likewise.
(gpgsm_set_recipients): Likewise.
(gpgsm_set_fd): Reimplement using gpgsm_assuan_simple_command.
(_gpgme_gpgsm_op_delete): New function.
(_gpgme_gpgsm_op_export): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_trustlist): Likewise.
(_gpgme_gpgsm_release): Release command.
(_gpgme_gpgsm_op_decrypt): Allocate command.
(_gpgme_gpgsm_op_import): Likewise.
(gpgsm_status_handler): Also treat `ERR' strings as EOF.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h
(gpgme_set_protocol): New prototype.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_decrypt): New function.
(_gpgme_gpgsm_op_import): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Shuffle around header inclusion a bit, to still

keep them separate.
(_gpgme_set_status_handler) [!ENABLE_GPGSM]: New function.

2001-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c: Include more headers so that NULL and mk_error
is defined even with an undefined GPGSM_PATH.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_inbound_handler, write_mem_data, write_cb_data,
gpg_outbound_handler): Moved to ...
* data.c (_gpgme_data_inbound_handler, write_mem_data,
write_cb_data, _gpgme_data_outbound_handler): ... here. Make the
_gpgme_* ones non-static.
* data.c: Include io.h.

* ops.h (_gpgme_data_inbound_handler): New prototype.
(_gpgme_data_outbound_handler): Likewise.
(_gpgme_gpg_spawn): Use
these new functions.

* engine-gpgsm.h (_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,
_gpgme_gpgsm_op_encrypt, _gpgme_gpgsm_op_export,
_gpgme_gpgsm_op_genkey, _gpgme_gpgsm_op_import,
_gpgme_gpgsm_op_keylist, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_trustlist, _gpgme_gpgsm_op_verify,
_gpgme_gpgsm_start, _gpgme_gpgsm_set_status_handler): New prototype.
Include <rungpg.h> for status handler function.

* engine-gpgsm.c (struct gpgsm_object_s): New members input_fd,
input_data, output_fd, output_data, message_fd, message_data, command
and status.
(_gpgme_gpgsm_new): Open input, output and message pipes before
connecting to the client. Close server's ends afterwards.
(_gpgme_gpgsm_release): Close open file descriptors. Remove
server process from wait queue.
(_gpgme_gpgsm_op_verify, _gpgme_gpgsm_start,
_gpgme_gpgsm_set_status_handler, gpgms_status_handler): New function.

* engine.c (_gpgme_engine_start): Implement for GPGME_PROTOCOL_CMS.
(_gpgme_engine_set_status_handler):
Likewise.
(_gpgme_engine_op_verify): Likewise.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* context.h: Do not include rungpg.h, but engine.h.

(struct gpgme_context_s): Replace member gpg with engine.
* gpgme.c (gpgme_release): Release engine, not gpg.

* recipient.c (_gpgme_append_gpg_args_from_recifgpients): Function
moved ...
* rungpg.c (_gpgme_append_gpg_args_from_recipients): ... here.
Make static, change order of arguments, and return an error value.
* ops.h (_gpgme_append_gpg_args_from_recipients): Removed prototype.

* rungpg.h (_gpgme_gpg_op_verify): Add prototype.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt): Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.
* rungpg.c (_gpgme_gpg_op_verify): New function.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt):
Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.

* engine.h (_gpgme_engine_set_status_handler): Add prototype.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler): Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.
* engine.c (_gpgme_engine_set_status_handler): New function.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler):

Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.

* verify.c (gpgme_op_verify_start): Reimplement in terms of above
functions.
* encrypt.c (gpgme_op_encrypt_start): Likewise.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* passphrase.c (_gpgme_passphrase_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* types.h: Add types EngineObject and GpgsmObject.

* Makefile.am (libgpgme_la_SOURCES): Add engine-gpgsm.h,
engine-gpgsm.c, engine.h and engine.c.
* engine.h: New file.
* engine.c: Likewise.
* engine-gpgsm.h: Likewise.
*
engine-gpgsm.c: Likewise.

* rungpg.c (_gpgme_gpg_get_version): New function.
(_gpgme_gpg_check_version): Likewise.
* rungpg.h: Add prototypes for _gpgme_gpg_get_version and
_gpgme_gpg_check_version.

* version.c (compare_versions): Rename to ...
(_gpgme_compare_versions): ... this. Make non-static.
(gpgme_check_version): Use _gpgme_compare_versions rather than
compare_versions.
(gpgme_check_engine): Likewise.
* ops.h (_gpgme_get_program_version): Add prototype.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_INCLUDES): Remove obsolete directive.
(AM_CPPFLAGS): New directive [BUILD_ASSUAN].

(libgpgme_la_LIBADD): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* version.c: Remove global variables lineno and
tmp_engine_version.
(version_handler): Removed.
(_gpgme_get_program_version): New function.
(get_engine_info): Don't use context and version_handler,
but _gpgme_get_program_version.
* ops.h (_gpgme_get_program_version):
Add prototype for
_gpgme_get_program_version (we expect to use it elsewhere soon).

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* version.c (get_engine_info): If GnuPG is not available, return
an error message.
* posix-util.c (_gpgme_get_gpg_path): Allow GPG_PATH to be
undefined.
(_gpgme_get_gpgsm_path): New function.
* w32-util.c (find_program_in_registry): New static function.
(_gpgme_get_gpg_path): Allow GPG_PATH to be undefined. Rework
to use find_program_in_registry.
(_gpgme_get_gpgsm_path): New function.
(util.h): Prototype _gpgme_get_gpgsm_path).
* rungpg.c (_gpgme_gpg_spawn): Verify that _gpgme_get_gpg_path()
returns non-null.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add decrypt-verify.c.
* types.h: Add decrypt-verify types.
* ops.h: Likewise.
* context.h: Add result type for decrypt-verify.
* gpgme.h: Add decrypt-verify prototypes.

* decrypt.c (decrypt_status_handler):
Renamed to ...
(_gpgme_decrypt_status_handler): ... this. Make non-static.
(_gpgme_decrypt_start): New function, derived from
gpgme_op_decrypt_start.
(gpgme_op_decrypt_start): Reimplement in terms of
_gpgme_decrypt_start.
(_gpgme_decrypt_result): New function to retrieve error value.
(gpgme_op_decrypt): Use _gpgme_decrypt_result.
* ops.h: Add prototypes for new functions.

* verify.c (verify_status_handler): Renamed to ...
(_gpgme_verify_status_handler): ... this. Make non-static.
(gpgme_op_verify_start): Use new function name.
(intersect_stati): Renamed to ...
(_gpgme_intersect_stati): ... this. Make non-static.
(gpgme_op_verify): Use new name.
* ops.h: Add prototypes for new functions.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add passphrase.c.
* ops.h (_gpgme_passphrase_result): Add prototypes from
passphrase.c.
* types.h: Likewise.
* context.h: Add member passphrase to result.
*
gpgme.c (_gpgme_release_result): Release passphrase member.

* decrypt.c: Some formatting and variable name changes (like
CTX instead C).
(struct decrypt_result_s): Remove members now found in
passphrase result.
(_gpgme_release_decrypt_result): Don't release removed members.
(decrypt_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_decrypt_start): Don't set command handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_decrypt): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

* sign.c Some formatting and variable name changes (like
CTX instead C).
(struct sign_result_s): Remove members now found in
passphrase result.
(_gpgme_release_sign_result): Don't release removed members.
(sign_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_sign_start): Don't set command
handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_sign): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (command_handler): Fix last change.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_release_verify_result): Rename RES to RESULT.
Rename R2 to NEXT_RESULT.
(intersect_stati): Rename RES to RESULT.
(gpgme_get_sig_status): Likewise. Do not check return_type, but
the member verify of result.
(gpgme_get_sig_key): Likewise.

* sign.c (_gpgme_release_sign_result): Rename RES to RESULT. If
RESULT is zero, return.
(sign_status_handler, command_handler): Do not check return_type,
but the member sign of result.
(gpgme_op_sign): Likewise. Drop assertion.

* encrypt.c (_gpgme_release_encrypt_result): Rename RES to RESULT.
If RESULT is zero, return.
(encrypt_status_handler): Do not check return_type, but the member
encrypt of result.
(gpgme_op_encrypt):
Likewise. Drop assertion.

* decrypt.c (_gpgme_release_decrypt_result): Rename RES to RESULT.
(create_result_struct): Do not set result_type.
(command_handler, decrypt_status_handler): Do not check
return_type, but the member decrypt of result.
(gpgme_op_decrypt): Likewise. Drop assertion.

* context.h (enum ResultType): Removed.
(struct gpgme_context_s): Remove member result_type.
(struct result): Replaces union result.
* gpgme.c: Include string.h.
(_gpgme_release_result): Release all members of c->result, which
is now a struct. Zero out all members of the struct afterwards.

2001-11-11 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Release GPG->cmd.cb_data.
Release all members of the list GPG->arglist.
Reported by Michael Schmidt <mschmidt@cs.uni-sb.de>.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (pipemode_copy): Change type of NBYTES to size_t.

* key.c: Include string.h.
* data.c: Likewise.
* recipient.c: Likewise.

2001-10-29
Marcus Brinkmann <marcus@g10code.de>

* context.h: New member signers_len.
* signers.c (gpgme_signers_clear): Require that signers are
non-NULL with assertion. Use signers_len to determine how much
keys to release. Add documentation.
(gpgme_signers_add): Use signers_len to determine if the buffer is
large enough. Use xtryrealloc rather than xtrymalloc and copying.
Add documentation.
(gpgme_signers_enum): Use signers_len to determine if key is
available. Add documentation.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_append): Check if LENGTH is smaller than
ALLOC_CHUNK, not DH->length.

2001-10-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_protocol): Fix last change.

2001-10-15 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeProtocol): New.
* gpgme.c (gpgme_set_protocol): New.

2001-09-26 Werner Koch <wk@gnupg.org>

* gpgme.c (gpgme_set_passphrase_cb): Ignore a NULL context.
(gpgme_set_progress_cb): Ditto.
Suggested by Mark Mutz.

2001-09-17 Werner Koch <wk@gnupg.org>

* keylist.c (finish_key): Shortcut for no tmp_key. Changed all
callers to use this function without a check for tmp_key.

* keylist.c (gpgme_op_keylist_next): Reset the key_cond after
emptying the queue. Bug reported by Stphane Corthsy.

2001-09-12 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_rewind): Allow rewind for callbacks.

2001-09-07 Werner Koch <wk@gnupg.org>

 * rungpg.h: Add NO_RECP.
 * encrypt.c (encrypt_status_handler): Take on No_RECP.
 (gpgme_op_encrypt): Better error return.

 * verify.c (verify_status_handler): Take on NODATA.

2001-09-03 Werner Koch <wk@gnupg.org>

 * rungpg.h: Added STATUS_INV_RECP.
 * gpgme.c (_gpgme_release_result): Add support for new
 EncryptResult object.
 * encrypt.c (append_xml_encinfo): New.
 (encrypt_status_handler): Add some status parsing.
 (_gpgme_release_encrypt_result): New.

2001-08-29 Werner Koch <wk@gnupg.org>

 * recipient.c (gpgme_recipients_release):
 Free the list. By Timo.

 * keylist.c (keylist_colon_handler): Do a finish key if we receive
 an EOF here. This is probably the reason for a lot of bugs
 related to keylisting. It is so obvious. Kudos to Enno Cramer
 for pointing that out.

2001-08-28 Werner Koch <wk@gnupg.org>

 * gpgme.c, gpgme.h (gpgme_get_op_info): New.
 (_gpgme_set_op_info): New.
 (_gpgme_release_result): Reset the op_info here.
 * sign.c (append_xml_siginfo): New.
 (sign_status_handler): Store the sig create information.

2001-07-31 Werner Koch <wk@gnupg.org>

 * encrypt.c (gpgme_op_encrypt): Hack to detect no valid recipients.

2001-07-30 Werner Koch <wk@gnupg.org>

 * gpgme.c (gpgme_get_armor,gpgme_get_textmode): New.

 * rungpg.c (build_argv): Disable armor comments
 * w32-io.c (build_commandline): Need to add quotes here

2001-07-24 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_read): Add a a way to return the available bytes.

2001-07-23 Werner Koch <wk@gnupg.org>

* util.c: Removed
stpcpy() because we use the version from jnlib.

2001-07-19 Werner Koch <wk@gnupg.org>

* mkstatus: Define the collating sequence for sort.

2001-06-26 Werner Koch <wk@gnupg.org>

* rungpg.h: Add STATUS_UNEXPECTED as suggested by Timo.

2001-06-15 Werner Koch <wk@gnupg.org>

* keylist.c (set_userid_flags): Fixed the assigned values. Kudos
to Timo for pointing this out.

2001-06-01 Werner Koch <wk@gnupg.org>

* debug.c (_gpgme_debug_begin): Fixed a /tmp race. Noted by
Johannes Poehlmann.

2001-05-28 Werner Koch <wk@gnupg.org>

* version.c (gpgme_check_engine): Stop version number parsing at
the opening angle and not the closing one. By Tommy Reynolds.

2001-05-01 Jos Carlos Garca Sogo <jose@jaimedelamo.eu.org>

* encrypt.c (gpgme_op_encrypt_start): Deleted the assert (!c->gpg)
line, because it gave an error if another operation had been made
before using the same context.

* decrypt.c (gpgme_op_decrypt_start): The same as above. Also added
one line to release
the gpg object in the context (if any).

2001-04-26 Werner Koch <wk@gnupg.org>

* key.c, key.h (_gpgme_key_cache_init): New.
(_gpgme_key_cache_add): New.
(_gpgme_key_cache_get): New.
* version.c (do_subsystem_inits): Init the cache.
* keylist.c (finish_key): Put key into the cache

* verify.c (gpgme_get_sig_key): First look into the cache.

2001-04-19 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Adjusted for the changed
--fixed-list-mode of gpg 1.0.4h.

2001-04-05 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify_start): Enabled pipemode for detached sigs.

2001-04-04 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_select): Don't select on the writer if there
are still bytes pending. Timo found this not easy to track down
race condition.

2001-04-02 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_KEY_{EXPIRED,DISABLED}.
* key.c (gpgme_key_get_ulong_attr): And return those attribs.

* verify.c (gpgme_get_sig_key): Set keyliosting mode
depending on
the mode set in the current context. Suggested by Timo.

* key.c (gpgme_key_get_ulong_attr): Return can_certify and not
can_encrypt. By Timo.

2001-03-30 Werner Koch <wk@gnupg.org>

* debug.c (debug_init): Allow to specify a debug file.
(_gpgme_debug_level): New.

* posix-io.c (_gpgme_io_read, _gpgme_io_write): Print output.
(_gpgme_io_select): Debug only with level > 2.

2001-03-15 Werner Koch <wk@gnupg.org>

* rungpg.c: Included time.h.

* key.h: New keyflags for capabilities.
* keylist.c (set_mainkey_capability, set_subkey_capability): New.
(keylist_colon_handler): Parse them.
* gpgme.h: New attribute values for capabilities.
* key.c (gpgme_key_get_string_attr): Return them.
(capabilities_to_string): New.
(gpgme_key_get_ulong_attr): Return the global caps.

2001-03-14 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,destroy_writer): Fixed syntax error.
Thanks to Jan Oliver Wagner.

2001-03-13 Werner Koch <wk@gnupg.org>

* context.h: Add
invalid and revoke flags to user_id structure.
* keylist.c (gpgme_op_keylist_start): Use --fixed-list-mode.
(keylist_colon_handler): Adjust for that.
(set_userid_flags): New.
(set_mainkey_trust_info): Handle new key invalid flag
(set_subkey_trust_info): Ditto.
* gpgme.h: Add new attributes for key and user ID flags.
* key.c (_gpgme_key_append_name): Init these flags
(gpgme_key_get_as_xml): Print them.
(one_uid_as_xml): New helper for above.
(gpgme_key_get_string_attr, gpgme_key_get_ulong_attr):
Return the new attributes. Enhanced, so that subkey information
can be returned now.

2001-02-28 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader): Set stop_me flag.
(writer,create_writer,destroy_writer,find_writer,kill_writer): New.
(_gpgme_io_write): Use a writer thread to avoid blocking.
(_gpgme_io_close): Cleanup a writer thread
(_gpgme_io_select): Repalce the faked wait on writing by a real
waiting which is now possible due to the use of a writer thread.

2001-02-20
 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,kill_reader): New.
(create_reader, reader): Add a new event to stop the thread.
(_gpgme_io_close): Kill the reader thread.

* posix-io.c (_gpgme_io_select): Handle frozen fds here.
* 32-io.c (_gpgme_io_select): Ditto. Removed a bunch of unused code.

* wait.c: Reworked the whole thing.
* rungpg.c (_gpgme_gpg_new): Init pid to -1.
(_gpgme_gpg_release): Remove the process from the wait queue.

2001-02-19 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close): Do the notification.

* posix-io.c (_gpgme_io_select): Use a 1 sec timeout and not 200
microseconds.

* wait.c (remove_process): Don't close the fd here.
(do_select): Set the fd to -1 and remove the is_closed flag everywhere.
(_gpgme_wait_on_condition): Remove the assert on the queue and
break out if we could not find the queue. The whole thing should
be reworked.

* posix-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close):
Do the notification.

* rungpg.c (close_notify_handler): New.
(_gpgme_gpg_new): Register a callback for the fd.
(_gpgme_gpg_set_colon_line_handler): Ditto.
(build_argv): Ditto

2001-02-13 Werner Koch <wk@gnupg.org>

* rungpg.c (struct reap_s): Replaced pid_t by int.

* types.h: Add ulong typedef.

* rungpg.c (do_reaping, _gpgme_gpg_housecleaning): New.
(_gpgme_gpg_release): Reap children.
* io.h, posix-io.c (_gpgme_io_kill): New.
* w32-io.c (_gpgme_io_kill): New (dummy).

* keylist.c (gpgme_op_keylist_start): Cancel a pending request.

* posix-io.c (_gpgme_io_read): Add some debug output.
(_gpgme_io_write): Ditto.
(_gpgme_io_select): Increased the timeout.

2001-02-12 Werner Koch <wk@gnupg.org>

Enhanced the signature verification, so that it can how handle
more than one signature and is able to return more information on
the signatures.
* verify.c (gpgme_get_sig_key): New.
(gpgme_get_sig_status): New.

* gpgme.h: Add stdio.h.
(GpgmeSigStat):

New status DIFF.

2001-02-01 Werner Koch <wk@gnupg.org>

* w32-io.c (set_synchronize): Add EVENT_MODIFY_STATE. Add Debug
code to all Set/ResetEvent().

* rungpg.c (read_status): Check for end of stream only if we have
an r. By Timo.

2001-01-31 Werner Koch <wk@gnupg.org>

* wait.c (_gpgme_wait_on_condition): Removed all exit code processing.
(propagate_term_results,clear_active_fds): Removed.
(count_active_fds): Renamed to ..
(count_active_and_thawed_fds): .. this and count only thawed fds.

* rungpg.c (gpg_colon_line_handler): Return colon.eof and not
status.eof ;-)

2001-01-30 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_spawn): Use the supplied path arg.

* version.c (get_engine_info): Return better error information.

* posix-util.c, w32-util.c: New.
(_gpgme_get_gpg_path): New, suggested by Jan-Oliver.
* rungpg.c (_gpgme_gpg_spawn): Use new function to get GPG's path.

* signers.c (gpgme_signers_add): Ooops, one should test code and
not just write it;
the newarr was not assigned. Thanks to Jos
for pointing this out. Hmmm, still not tested, why should a coder
test his fix :-)

* w32-io.c: Does now use reader threads, so that we can use
WaitForMultipleObjects.
* sema.h, posix-sema.c, w32-sema.c: Support for Critical sections.
Does currently only work for W32.

* debug.c, util.h : New. Changed all fprintfs to use this new
set of debugging functions.

2001-01-23 Werner Koch <wk@gnupg.org>

* data.c (_gpgme_data_release_and_return_string): Fixed string
termination.

2001-01-22 Werner Koch <wk@gnupg.org>

 * delete.c: New.

 * signers.c: New.
 * key.c (gpgme_key_ref, gpgme_key_unref): New.
 * sign.c (gpgme_op_sign_start): Allow the use of other keys.

 * version.c (gpgme_get_engine_info,gpgme_check_engine): New.
 * rungpg.c (_gpgme_gpg_set_simple_line_handler): New.

2001-01-05 Werner Koch <wk@gnupg.org>

 * data.c (gpgme_data_rewind): Allow to rewind data_type_none.

Copyright (C) 2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,
        2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
Just GNU it!
Just GNU it!
Just GNU it!
;;; -*- Mode: lisp -*-

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME.
;;;
;;; GPGME is free software; you can redistribute it and/or
;;; modify it under the terms of the GNU Lesser General Public License
;;; as published by the Free Software Foundation; either version 2.1 of
;;; the License, or (at your option) any later version.
;;;
;;; GPGME is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU Lesser General Public
;;; License along with GPGME; if not, write to the Free

```
;;; Software Foundation, Inc., 59 Temple Place - Suite 330, Boston, MA
;;; 02111-1307, USA.

(defpackage #:gpgme-system
 (:use #:common-lisp #:asdf))

(in-package #:gpgme-system)

(defsystem gpgme
 :description "GnuPG Made Easy."
 :author "g10 Code GmbH"
  :version "1.15.1"
 :licence "GPL"
 :defsystem-depends-on ("cffi-grovel")
 :depends-on ("cffi" "gpg-error" "trivial-garbage")
 :components ((:file "gpgme-package")
              (:cffi-grovel-file "gpgme-grovel"
               :depends-on ("gpgme-package"))
       (:file "gpgme"
  :depends-on ("gpgme-package" "gpgme-grovel"))))
# -*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* GPGME Python Bindings
 :PROPERTIES:
 :CUSTOM_ID: top
 :END:


** Contents
  :PROPERTIES:
  :CUSTOM_ID: contents
  :END:


- [[file:short-history][A short history of the project]]
- [[file:what-is-new][What's New]]
 - [[file:maintenance-mode][Maintenance Mode]] (from January, 2019)
- [[file:what-was-new][What Was New]]
```

- [[file:gpgme-python-howto][GPGME Python Bindings HOWTO]]

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING

OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAG0EHRlc3RAZXhhbXBsZS5v
cmeJAVQEEwEIAD4WIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8Jn
AAULCQgHAgYVCgkICwIEFgIDAQIeAQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGw
Fq07W9N01HWULyhHKoMmcHL6rfZ64oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6
kaBe+wF6Kqir6udFSBW9rPcFg6/VZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rN
GkYo1JCBR0XdRJYCSX3yB4TWv/eXnZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k7
0DevQeBsv+UjVXjWpNTZmPbvDnd995uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6U
unOf9Rlp1oMzdxMool/d1MlCxg2h3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ
1J8Nsv87SZeEuQENBFrsKEkBCADjoEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6
yE+x2hk5FoQCajxKa/d4AVxOnJpdwhAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0p
O7bgAiZxkA6RHxtNqhpPnPQoXvUzkzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/
8i9Taz67pdZwuJjac8qBuJHjzAo1bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt
3RuqVGP316Fk+Sy2+60tC/HlX8jgMyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyL
UGKU+L8cB2g1PGGp2biBFWqZbudZoyRBet/0yH/zirBdQJw1ABEBAAGJATwEGAEI
ACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAKCRAjAWNe
7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ5F32NDJ9
PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7Jq3e/4Iy
0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02Lkr+2Cc/Q
k6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe23nntMSD

A+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t9Mmd7bM1
+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=QyY6
-----END
 PGP PUBLIC KEY BLOCK-----
Using gpgme.js

At first, make sure that the environment you want to use gpgme.js in has access
and permissions for nativeMessaging, and gpgme-json installed. For details,
see the README.

The library itself is started via the {@link init} method. This will test the
nativeMessaging connection, and then resolve into an Object offering
the top level API:

* [encrypt]{@link GpgME#encrypt}
* [decrypt]{@link GpgME#decrypt}
* [sign]{@link GpgME#sign}
* [verify]{@link GpgME#verify}
* [Keyring]{@link GPGME_Keyring}

```
gpgmejs.init()
  .then(function(GPGME) {
    // using GPGME
  }, function(error){
    // error handling;
  })
```

All methods that require communication with nativeMessaging are asynchronous,
using Promises. Rejections will be instances of {@link GPGME_Error}.

An exaeption are Keys, which can be initialized in a 'sync' mode, allowing them
to be cached and used synchronously until manually refreshed.

Keyring and Keys

The gnupg keys
 can be accessed via the [Keyring]{@link GPGME_Keyring}.

The Keyring offers the methods for accessing information on all Keys known to
gnupg.

**Due to security constraints, the javascript-binding currently only offers
limited support for secret-Key interaction.**

The existence of secret Keys is not secret, and those secret Keys can be used

for signing, but Operations that may expose, modify or delete secret Keys are
not supported.

* [getKeysArmored]{@link GPGME_Keyring#getKeysArmored}
* [getKeys]{@link GPGME_Keyring#getKeys}
* [getDefaultKey]{@link GPGME_Keyring#getDefaultKey}
* [generateKey]{@link GPGME_Keyring#generateKey}
* [deleteKey]{@link GPGME_Keyring#deleteKey}

```
#!/usr/bin/env bash
# MIT licenses will each have a unique MD5 sum since they contain a unique copyright.
# This script will read the license file into memory, strip out the copyright, and then
# generate an MD5 that is not unique and can be matched against a known MIT MD5 sum.
set -e

calculate_md5_sum() {
 local FILE="$1"

 # Read the contents of the file into a variable
 local raw_license_text=$(<"$FILE")

 # Convert to lowercase
 local lowercase_license_text="${raw_license_text,,}"

 # Remove anything before the beginning of the license
 local stripped_license_text=$(awk '/permission is hereby granted,/{p=1} p' <<< "$lowercase_license_text")

 # Replace line breaks (Windows or Linux) with a single space
 local replaced_linebreaks=$(tr '\r\n' ' ' <<< "$stripped_license_text")

 # Replace multiple spaces with a single space
 local normalized_license_text=$(tr -s ' ' <<< "$replaced_linebreaks")

 # Strip away any non-printable, non-whitespace characters
 local clean_unprintable_license_text=$(tr
 -cd '[:print:][:space:]' <<< "$normalized_license_text")

 # Remove punctuation and special characters
 local clean_license_text=$(echo "$clean_unprintable_license_text" | sed 's/[^a-zA-Z ]//g')

 # Calculate the MD5 sum of the cleaned license text
 local MD5SUM=$(echo -n "$clean_license_text" | md5sum | awk '{print $1}')

 # Output the MD5 sum
 echo "$MD5SUM"
}

# Check if the FILE argument is provided
if [ -z "$1" ]; then
```

```
 echo "Please provide a FILE as an argument."
 exit 1
fi

# Invoke the function with the provided FILE argument
calculate_md5_sum "$1"
```

```
;;;; gpgme-grovel.lisp

;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.


(in-package :gpgme)


(include "errno.h" "sys/types.h")

(constant (+ebadf+ "EBADF"))

(ctype off-t "off_t")
(ctype size-t "size_t")
(ctype ssize-t "ssize_t")

(cvar ("errno" *errno*) :int)
```

```
(21:protected-private-key(3:dsa(1:p129:_d8|po3s@!WGUOAXRC$_[8SN:y|o?2[.pVxn(kOc\Bk0zu&FnK)(1:q21:
vBeOP\P)(1:g129:fU/e(2hp@hjc2uE=Sg GO;ZkIyFnGM!GsG@
=  _SZklI)(1:y128:K:9tA]4SU1 }sG`nZpx/imV^>A;V%?5!!sS{!=-6@|
=d
)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:Li7:6452224)16:,kO{,)80:z7OCG/sB48(H9%*ojSO
OGSma`YUs1h<_)(12:protected-at15:20130812T105134)))
```

```
For a list of the authors of the source code of GPGME, please see the
file AUTHORS.  The following people supported GPGME development in
various ways (for example by finding bugs or giving advice), and we
want to thank them for their help.  If we forgot you, please let us
know.
```

Adriaan de Groot adridg@cs.kun.nl
Albrecht Dre albrecht.dress@arcor.de
Alfons Hoogervorst alfons@proteus.demon.nl
Daniel Mueller daniel@danm.de
Enno Cramer uebergeek@web.de
Frank Heckenbach frank@g-n-u.de
Igor Belyi gpgme@katehok.ac93.org
Jan-Oliver Wagner jan@intevation.de
Johannes Poehlmann jhp@caldera.de
Jose C. Garca Sogo jose@jaimedelamo.eu.org
Leo Gaspard ekleog@gmail.com
Mark Mutz mutz@kde.org
Miguel Coca mcoca@gnu.org
Noel Torres envite@rolamasao.org
Patrick Spendrin patrick.spendrin@kdab.com
Stphane Corthsy stephane@sente.ch
Timo Schulz twoaday@freakmail.de
Tommy Reynolds reynolds@redhat.com
W.
Trevor King wking@tremily.us

Copyright 2001, 2002, 2004, 2010, 2012 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
% Created 2019-01-18 Fri 10:10
% Intended LaTeX compiler: xelatex
\documentclass[12pt]{article}
\usepackage{graphicx}
\usepackage{grffile}
\usepackage{longtable}
\usepackage{wrapfig}
\usepackage{rotating}
\usepackage[normalem]{ulem}
\usepackage{amsmath}
\usepackage{textcomp}
\usepackage{amssymb}
\usepackage{capt-of}
\usepackage{hyperref}
\usepackage{xltxtra}
\usepackage[margin=1in]{geometry}
\setmainfont[Ligatures={Common}]{Times New Roman}

\author{Ben McGinnes <ben@gnupg.org>}
\author{Ben McGinnes}
\date{\today}
\title{GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)}
\hypersetup{
pdfauthor={Ben McGinnes},
pdftitle={GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)},
pdfkeywords={},
pdfsubject={},
pdfcreator={Emacs 26.1 (Org mode 9.1.14)},
pdflang={English}}
\begin{document}

\maketitle
\tableofcontents

\section{Introduction}
\label{sec:org8e5fa02}
\begin{center}
\begin{tabular}{ll}
Version: & 0.1.4\\
GPGME Version: & 1.12.1\\
Author: & Ben
 McGinnes <ben@gnupg.org>\\
Author GPG Key: & DB4724E6FA4286C92B4E55C4321E4E2373590E5D\\
Language: & Australian English, British English\\
Language codes: & en-AU, en-GB, en\\
\end{tabular}
\end{center}

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.

\subsection{Python 2 versus Python 3}
\label{sec:org517cbf4}
Though the GPGME Python bindings themselves provide support for both
Python 2 and 3, the focus is unequivocally on Python 3 and
specifically from Python 3.4 and above. As a consequence all the
examples and instructions in this guide use Python 3 code.

Much of it will work with Python 2, but much of it also deals with
Python 3 byte literals, particularly when reading and writing data.
Developers concentrating on Python 2.7, and possibly even 2.6, will
need to make the appropriate modifications to support the older string
and unicode types as opposed to bytes.

There are multiple reasons for concentrating
on Python 3; some of
which relate to the immediate integration of these bindings, some of
which relate to longer term plans for both GPGME and the python
bindings and some of which relate to the impending EOL period for
Python 2.7. Essentially, though, there is little value in tying the
bindings to a version of the language which is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data
types with which GPGME deals considerably easier.

\subsection{Examples}
\label{sec:org2c08d53}
All of the examples found in this document can be found as Python 3
scripts in the \texttt{lang/python/examples/howto} directory.

\subsection{Unofficial Drafts}
\label{sec:orgceb2216}
In addition to shipping with each release of GPGME, there is a section
on locations to read or download \hyperref[sec:org080a94a]{draft editions} of this document from
at the end of it. These are unofficial versions produced in between
major releases.

\subsection{What's New}
\label{sec:orga79ddc2}
Full
details of what is new are now available in the \href{what-is-new.org}{What's New} file
and archives of the preceding \emph{What's New} sections are available in
the \href{what-was-new}{What Was New} file.

\subsubsection{New in GPGME 1130}
\label{sec:org746b75d}
See the \href{what-is-new\#new-stuff-1-13-0}{What's New} document for what is new in version 1.13.0.

\subsubsection{New in GPGME 1120}
\label{sec:org7adcade}
See the \href{what-was-new\#new-stuff-1-12-0}{What Was New} document for what was new in version 1.12.0.

\section{GPGME Concepts}
\label{sec:orgb257fc1}
\subsection{A C API}
\label{sec:org4fe1dfa}

Unlike many modern APIs with which programmers will be more familiar
with these days, the GPGME API is a C API. The API is intended for
use by C coders who would be able to access its features by including
the \texttt{gpgme.h} header file with their own C source code and then access
its functions just as they would any other C headers.

This is a very
 effective method of gaining complete access to the API
and in the most efficient manner possible. It does, however, have the
drawback that it cannot be directly used by other languages without
some means of providing an interface to those languages. This is
where the need for bindings in various languages stems.

\subsection{Python bindings}
\label{sec:org0e49e52}
The Python bindings for GPGME provide a higher level means of
accessing the complete feature set of GPGME itself. It also provides
a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of
\texttt{gpgme.h} generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied
to the exact same version of GPGME used to generate that copy of
\texttt{gpgme.h}.

\subsection{Difference between the Python bindings and other GnuPG Python packages}
\label{sec:org97acfd7}
There have been numerous attempts to add GnuPG support to Python
 over
the years. Some of the most well known are listed here, along with
what differentiates them.

\subsubsection{The python-gnupg package maintained by Vinay Sajip}
\label{sec:org0136847}
This is arguably the most popular means of integrating GPG with
Python. The package utilises the \texttt{subprocess} module to implement
wrappers for the \texttt{gpg} and \texttt{gpg2} executables normally invoked on the
command line (\texttt{gpg.exe} and \texttt{gpg2.exe} on Windows).

The popularity of this package stemmed from its ease of use and
capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the
past; most of which stemmed from using unsafe methods of accessing the

command line via the \texttt{subprocess} calls. While some effort has been
made over the last two to three years (as of 2018) to mitigate this,
particularly by no longer providing shell access through those
subprocess calls, the wrapper is still somewhat
 limited in the scope
of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

\subsubsection{The gnupg package created and maintained by Isis Lovecruft}
\label{sec:orgdc03987}
In 2015 Isis Lovecruft from the Tor Project forked and then
re-implemented the python-gnupg package as just gnupg. This new
package also relied on subprocess to call the \texttt{gpg} or \texttt{gpg2}
binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however,
resulted in conflicts with the original python-gnupg and since its
functions were called in a different manner to python-gnupg, the
release of this package also resulted in a great deal of consternation
when people installed what they thought was an upgrade that
subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License
version 3.0 (or any later version).

\subsubsection{The PyME package maintained by Martin
 Albrecht}
\label{sec:org715600b}
This package is the origin of these bindings, though they are somewhat
different now. For details of when and how the PyME package was
folded back into GPGME itself see the \href{short-history.org}{Short History} document.\footnote{\texttt{short-history} and/or \texttt{short-history.html}.}

The PyME package was first released in 2002 and was also the first
attempt to implement a low level binding to GPGME. In doing so it
provided access to considerably more functionality than either the
\texttt{python-gnupg} or \texttt{gnupg} packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME

itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version
 2.1 (or any
later version).

\section{GPGME Python bindings installation}
\label{sec:org73d8d6f}
\subsection{No PyPI}
\label{sec:orgec9a038}
Most third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against \texttt{gpgme.h} and \texttt{gpgme.h} is generated from
\texttt{gpgme.h.in} at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require
either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding \hyperref[sec:org645735a]{CFFI and SWIG} at the end of this
section for further details.

\subsection{Requirements}
\label{sec:org2f7f06c}
The
 GPGME Python bindings only have three requirements:

\begin{enumerate}
\item A suitable version of Python 2 or Python 3. With Python 2 that
means CPython 2.7 and with Python 3 that means CPython 3.4 or
higher.
\item \href{https://www.swig.org}{SWIG}.
\item GPGME itself. Which also means that all of GPGME's dependencies
must be installed too.
\end{enumerate}

\subsubsection{Recommended Additions}
\label{sec:org25bd7d4}
Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide

a significant advantage in some way.

\begin{enumerate}
\item If possible, use Python 3 instead of 2.
\item Favour a more recent version of Python since even 3.4 is due to
reach EOL soon. In production systems and services, Python 3.6
should be robust enough to be relied on.
\item If possible add the
 following Python modules which are not part of
the standard library: \href{http://docs.python-requests.org/en/latest/index.html}{Requests},
\href{https://cython.org/}{Cython}, \href{https://pendulum.eustace.io/}{Pendulum} and
\href{https://github.com/Selfnet/hkp4py}{hkp4py}.
\end{enumerate}

Chances are quite high that at least the first one and maybe two of
those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly
well known and commonly installed ones, however, which are in many
cases likely to have already been installed on many systems or be
familiar to Python programmers.

\subsection{Installation}
\label{sec:orgf1c7587}
Installing the Python bindings is effectively achieved by compiling
and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME
are installed you only need to confirm that the version(s) of Python
you want the
 bindings installed for are in your \texttt{\$PATH}.

By default GPGME will attempt to install the bindings for the most
recent or highest version number of Python 2 and Python 3 it detects
in \texttt{\$PATH}. It specifically checks for the \texttt{python} and \texttt{python3}
executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: \texttt{python},
\texttt{python2} and \texttt{python2.7}.

For Python 3 it checks for these executables in this order: \texttt{python3},
\texttt{python3.7}, \texttt{python3.6}, \texttt{python3.5} and \texttt{python3.4}.\footnote{With no issues reported
specific to Python 3.7, the release of
Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing
with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of
3.6 now. Production environments with more conservative requirements

will always enforce their own policies anyway and installation to each
supported minor release
 is quite possible too.}

On systems where \texttt{python} is actually \texttt{python3} and not \texttt{python2} it
may be possible that \texttt{python2} may be overlooked, but there have been
no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has
been extensive testing and work with these bindings with no issues
specifically relating to the new version of Python or any of the new
features of either the language or the bindings. This has also been
the case with Python 3.7.1rc1. With that in mind and given the
release of Python 3.7.1 is scheduled for around the same time as GPGME
1.12.0, the order of preferred Python versions has been changed to
move Python 3.7 ahead of Python 3.6.

\subsubsection{Installing GPGME}
\label{sec:org903bd67}
See the GPGME \texttt{README} file for details of how to install GPGME from
source.

\subsection{Known Issues}
\label{sec:org0d2a332}
There are a few known issues with the current build process
 and the
Python bindings. For the most part these are easily addressed should
they be encountered.

\subsubsection{Breaking Builds}
\label{sec:orgbac75f3}
Occasionally when installing GPGME with the Python bindings included
it may be observed that the \texttt{make} portion of that process induces a
large very number of warnings and, eventually errors which end that
part of the build process. Yet following that with \texttt{make check} and
\texttt{make install} appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to
dynamically generate the C bindings for GPGME in the first place. So
the entire process will always produce \texttt{lang/python/python2-gpg/} and
\texttt{lang/python/python3-gpg/} directories. These should contain the
build output generated during compilation, including the complete
bindings and module installed into \texttt{site-packages}.

Occasionally the errors in the early part or some other conflict

(e.g. not installing
as \textbf{\emph{root}} or \textbf{\emph{su}}) may result in nothing
being installed to the relevant \texttt{site-packages} directory and the
build directory missing a lot of expected files. Even when this
occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the
\textbf{root} user or prepended with \texttt{sudo -H}\footnote{Yes, even if you use virtualenv with everything you do in
Python. If you want to install this module as just your user account
then you will need to manually configure, compile and install the
\emph{entire} GnuPG stack as that user as well. This includes libraries
which are not often installed that way. It can be done and there are
circumstances under which it is worthwhile, but generally only on
POSIX systems which utilise single user mode (some even require it).} in the \texttt{lang/python/}
directory:

\begin{verbatim}
/path/to/pythonX.Y setup.py build
/path/to/pythonX.Y setup.py
build
/path/to/pythonX.Y setup.py install
\end{verbatim}

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or incomplete steps during the
\texttt{configure}, \texttt{make} and \texttt{make install} steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
\texttt{setup.py} and \texttt{gpgme.h} files).

\begin{enumerate}
\item IMPORTANT Note
\label{sec:org37f3d4a}
If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when
listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build
process before generating bindings for those other languages. In
these cases it may be preferable
to configure all preferred language
bindings separately with alternative \texttt{configure} steps for GPGME using
the \texttt{-{}-enable-languages=\$LANGUAGE} option.

Alternatively \texttt{make} (or \texttt{gmake}, depending on your platform) may be
run with the the \texttt{-k} option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.
\end{enumerate}

\subsubsection{Reinstalling Responsibly}
\label{sec:org21e4dec}
Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the
relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues
 observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing the previous version(s) is simply a matter of changing to the
relevant \texttt{site-packages} directory for the version of Python in
question and removing the \texttt{gpg/} directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

\subsubsection{Multiple installations}
\label{sec:org30b18bd}
For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python
 installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings \textbf{must} match those used to
compile Python itself, including the version number(s) (at least going

by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME \href{https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e}{1.12.1} the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, 3.6,
3.7 and 3.8 (dev branch) that it finds. Usually this will be in the
same prefix as GPGME itself, but is dictated by the \texttt{\$PATH} when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find,
 including alternative prefixes.

\subsubsection{Won't Work With Windows}
\label{sec:org0ebae3a}
There are semi-regular reports of Windows users having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
\href{https://python.org}{Python website} (i.e. mostly MSI installers, sometimes self-extracting
\texttt{.exe} files).

The Windows versions of Python are not built using Cygwin, MinGW or
Msys2; they're built using Microsoft Visual Studio. Furthermore the
version used is \emph{considerably} more advanced than the version which
MinGW obtained a small number of files from many years ago in order to
be able to compile anything at all. Not only that, but there are
changes to the version of
 Visual Studio between some micro releases,
though that is is particularly the case with Python 2.7, since it has
been kept around far longer than it should have been.

There are two theoretical solutions to this issue:

\begin{enumerate}
\item Compile and install the GnuPG stack, including GPGME and the
Python bindings using the same version of Microsoft Visual Studio
used by the Python Foundation to compile the version of Python
installed.

If there are multiple versions of Python then this will need to be

done with each different version of Visual Studio used for those
versions of Python.

\item Compile and install Python using the same tools used by choice,
such as MinGW or Msys2.
\end{enumerate}

Do \textbf{not} use the official Windows installer for Python unless
following the first method.

In this type of situation it may even be for the best to accept that
there are less limitations on permissive software than free software
and simply opt to use a recent version of the Community
 Edition of
Microsoft Visual Studio to compile and build all of it, no matter
what.

Investigations into the extent or the limitations of this issue are
ongoing.

The following table lists the version of Microsoft Visual Studio which
needs to be used when compiling GPGME and the Python bindings with
each version of the CPython binary released \href{https://www.python.org/downloads/windows/}{for Windows}:

\begin{center}
\begin{tabular}{rll}
CPython & Microsoft product name & runtime filename\\
2.7.6 & Visual Studio 2008 & MSVCR90.DLL\\
3.4.0 & Visual Studio 2010 & MSVCR100.DLL\\
3.5.0 & Visual Studio 2015 & \textbf{see below}\\
3.6.0 & Visual Studio 2015 & \textbf{see below}\\
3.7.0 & Visual Studio 2017* & \textbf{see below}\\
\end{tabular}
\end{center}

It is important to note that MingW and Msys2 ship with the Visual C
runtime from Microsoft Visual Studio 2005 and are thus \textbf{incompatible}
with all the versions of CPython which can be used with the GPGME
Python bindings.

It is
 also important to note that from CPython 3.5 onwards, the Python
Foundation has adopted the reworking of the Visual C runtime which was
performed for Visual Studio 2015 and aimed at resolving many of these
kinds of issues. Much greater detail on these issues and the correct
file(s) to link to are available from Matthew Brett's invaluable page,
\href{https://matthew-brett.github.io/pydagogue/python_msvc.html}{Using Microsoft Visual C with Python}. It is
also worth reading the

Microsoft Developer Network blog post on \href{http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx}{the universal CRT} and Steve
Dower's blog posts on Python extensions (\href{http://stevedower.id.au/blog/building-for-python-3-5}{part 1} and \href{http://stevedower.id.au/blog/building-for-python-3-5-part-two}{part 2}).

The second of those two posts by Steve Dower contains the details of
specific configuration options required for compiling anything to be
used with official CPython
releases. In addition to those
configuration and compiler settings to use, the versions of Visual
Studio prior to Visual Studio 2015 did not support 64-bit systems by
default. So compiling a 64-bit version of these bindings for a 64-bit
version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the \href{https://wiki.python.org/moin/WindowsCompilers}{Windows compilers} wiki page on the
CPython wiki is another essential reference on the relevant versions
of Visual Studio to use and the degree of compatibility with CPython
releases.

Eventually someone will ask why there isn't an installable binary for
Windows, which the GPGME of the licenses do not preclude as long as
the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with
differing configuration options depending on the target Windows
version and whether the architecture is 64-bit or 32-bit makes it
difficult to provide a correct
binary installer for Windows users. At
the bare minimum doing so would require the GnuPG project compile ten
different versions of the bindings with each release; both 32-bit and
64-bit versions for CPython 2.7 and 3.4, with 64-bit versions for both
x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5,
3.6, 3.7 and later releases. That's the bare \textbf{minimum}, it'd probably
be higher.

Additionally, with only a binary installation used in conjunction with
the CPython installer from \texttt{python.org} the advanced options available
which utilise \hyperref[sec:org3b53926]{Cython} will not be able to be used at all. Cython
depends on being able to compile the C code it generates and that too
would need to utilise a matching runtime to both the installed version
of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

\begin{enumerate}
\item Use a recent version of CPython; at least 3.5, but ideally 3.6 or
later.

\item
Use Visual Studio 2015 or the standalone build tools for Visual
Studio 2017 (or later).

\item Compile both CPython and GPGME with these bindings using the tools
selected in step 2.

\item Ignore MingW, Msys2 and the official CPython binary installers.

\item Be thankful the answer to this question wasn't simply to say
something like, install Linux or install FreeBSD (or even
Apple's OS X).
\end{enumerate}

\subsubsection{CFFI is the Best and GPGME should use it instead of SWIG}
\label{sec:org645735a}
There are many reasons for favouring \href{https://cffi.readthedocs.io/en/latest/overview.html}{CFFI} and proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the
bindings to Python using the \texttt{gpgme.h} file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in
at least one of CFFI's dependencies before any of this can be
addressed.

So if you're a massive fan of CFFI; that's great, but if you want this
project to switch to CFFI then rather than just insisting that it
should, I'd suggest you volunteer to bring CFFI up to the level this
project needs.

If you're actually seriously considering doing so, then I'd suggest
taking the \texttt{gpgme-tool.c} file in the GPGME \texttt{src/} directory and
getting that to work with any of the CFFI API methods

(not the ABI
methods, they'll work with pretty much anything). When you start running into trouble with "ifdefs" then you'll know what sort of things are lacking. That doesn't even take into account the amount of work saved via SWIG's code generation techniques either.

\subsubsection{Virtualised Environments}
\label{sec:orgb0d56f5}
It is fairly common practice amongst Python developers to, as much as possible, use packages like virtualenv to keep various things that are to be installed from interfering with each other. Given how much of the GPGME bindings is often at odds with the usual pythonic way of doing things, it stands to reason that this would be called into question too.

As it happens the answer as to whether or not the bindings can be used with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching prefix of GPGME itself. Which means that when GPGME, and ideally the rest of the GnuPG stack, is installed to a prefix
like \texttt{/usr/local} or
\texttt{/opt/local} then the bindings would need to be installed to the main Python installation and not a virtualised abstraction. Attempts to separate the two in the past have been known to cause weird and intermittent errors ranging from minor annoyances to complete failures in the build process.

As a consequence we only recommend building with and installing to the main Python installations within the same prefix as GPGME is installed to or which are found by GPGME's configuration stage immediately prior to running the make commands. Which is exactly what the compiling and installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled module may be installed into a virtualenv of the same major and minor version matching the build. Alternatively it is possible to utilise a \texttt{sites.pth} file in the \texttt{site-packages/} directory of a virtualenv installation, which links back to the system
installations
corresponding directory in order to import anything installed system wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet complete, preliminary testing of them indicates that both are viable as long as the main installation is complete. Which means that certain other options normally restricted to virtual environments are

also available, including integration with pythonic test suites
(e.g. \href{https://docs.pytest.org/en/latest/index.html}{pytest}) and other large projects.

That said, it is worth reiterating the warning regarding non-standard
installations. If one were to attempt to install the bindings only to
a virtual environment without somehow also including the full GnuPG
stack (or enough of it as to include GPGME) then it is highly likely
that errors would be encountered at some point and more than a little
likely that the build process itself would break.

If a degree of separation
 from the main operating system is still
required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. \href{https://www.virtualbox.org/}{VirtualBox}), a
hardware emulation layer (e.g. \href{https://www.qemu.org/}{QEMU}) or an application container
(e.g. \href{https://www.docker.com/why-docker}{Docker}).

Finally it should be noted that the limited tests conducted thus far
have been using the \texttt{virtualenv} command in a new directory to create
the virtual python environment. As opposed to the standard \texttt{python3
-m venv} and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command \texttt{python3 -m virtualenv /path/to/install/virtual/thingy}
instead.

\section{Fundamentals}
\label{sec:org832642e}
Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly
 or these Python bindings.

\subsection{No REST}
\label{sec:org3d694ba}
The first part of which is or will be fairly blatantly obvious upon
viewing the first example, but it's worth reiterating anyway. That
being that this API is \emph{\textbf{not}} a REST API. Nor indeed could it ever
be one.

Most, if not all, Python programmers (and not just Python programmers)
know how easy it is to work with a RESTful API. In fact they've
become so popular that many other APIs attempt to emulate REST-like
behaviour as much as they are able. Right down to the use of JSON
formatted output to facilitate the use of their API without having to
retrain developers.

This API does not do that. It would not be able to do that and also provide access to the entire C API on which it's built. It does, however, provide a very pythonic interface on top of the direct bindings and it's this pythonic layer that this HOWTO deals with.

\subsection{Context}
\label{sec:org10e4004}
One of the reasons which prevents
 this API from being RESTful is that
most operations require more than one instruction to the API to perform the task. Sure, there are certain functions which can be performed simultaneously, particularly if the result known or strongly anticipated (e.g. selecting and encrypting to a key known to be in the public keybox).

There are many more, however, which cannot be manipulated so readily: they must be performed in a specific sequence and the result of one operation has a direct bearing on the outcome of subsequent operations. Not merely by generating an error either.

When dealing with this type of persistent state on the web, full of both the RESTful and REST-like, it's most commonly referred to as a session. In GPGME, however, it is called a context and every operation type has one.

\section{Working with keys}
\label{sec:orgff114ca}
\subsection{Key selection}
\label{sec:org6589217}
Selecting keys to encrypt to or to sign with will be a common occurrence when working with
 GPGMe and the means available for doing
so are quite simple.

They do depend on utilising a Context; however once the data is recorded in another variable, that Context does not need to be the same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that key's key ID or fingerprint, preferably the full fingerprint without any spaces in it. A long key ID will probably be okay, but is not advised and short key IDs are already a problem with some being generated to match specific patterns. It does not matter whether the pattern is upper or lower case.

So this is the best method:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

This is passable and very likely to be common:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

And this is a really bad idea:

\begin{verbatim}
import
 gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
\end{verbatim}

Alternatively it may be that the intention is to create a list of keys
which all match a particular search string. For instance all the
addresses at a particular domain, like this:

\begin{verbatim}
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
\end{verbatim}

\subsubsection{Counting keys}
\label{sec:org63a3d62}
Counting the number of keys in your public keybox (\texttt{pubring.kbx}), the
format which has superseded the old keyring format (\texttt{pubring.gpg} and
\texttt{secring.gpg}), or the number of secret keys is a very simple task.

\begin{verbatim}
import gpg

```
c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys:  {0}
 Number of public keys:  {1}
""".format(secnum, pubnum))
\end{verbatim}

NOTE:
 The \hyperref[sec:org3b53926]{Cython} introduction in the \hyperref[sec:org944cc00]{Advanced and Experimental}
section uses this same key counting code with Cython to demonstrate
some areas where Cython can improve performance even with the
bindings.  Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.


\subsection{Get key}
\label{sec:org26adb2e}
An alternative method of getting a single key via its fingerprint is
available directly within a Context with \texttt{Context().get\_key}.  This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due
 to expire at the end of 2018:

\begin{verbatim}
import gpg

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
\end{verbatim}
```

Whereas this example demonstrates selecting the author's current key
with the \texttt{secret} key word argument set to \texttt{True}:

\begin{verbatim}
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
\end{verbatim}

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

\subsection{Importing keys}
\label{sec:org1ad598a}
Importing keys is possible with the \texttt{key_import()} method and takes
one argument which is a bytes literal object containing either the
binary or ASCII armoured key data for one or more
 keys.

The following example retrieves one or more keys from the SKS
keyservers via the web using the requests module. Since requests
returns the content as a bytes literal object, we can then use that
directly to import the resulting data into our keybox.

\begin{verbatim}
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)
result = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
   print(result)
elif result is not None and hasattr(result, "considered") is True:
   num_keys = len(result.imports)

```
  new_revs = result.new_revocations
  new_sigs = result.new_signatures
  new_subs = result.new_sub_keys
  new_uids = result.new_user_ids
  new_scrt = result.secret_imported
  nochange = result.unchanged
  print("""
 The total number of keys considered for import was:  {0}

   Number of keys revoked:  {1}
  Number of new signatures:  {2}
    Number of new subkeys:  {3}
   Number of new user IDs:  {4}
 Number of new secret keys:  {5}
  Number of unchanged keys:  {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
  for i in range(num_keys):
      print("{0}\n".format(result.imports[i].fpr))
else:
  pass
\end{verbatim}

NOTE: When searching for a key ID of any length or a fingerprint
(without spaces), the SKS servers require the the leading \texttt{0x}
indicative of hexadecimal be included.  Also note that the old short
key IDs (e.g. \texttt{0xDEADBEEF}) should no longer be used due to the
relative ease by which such key IDs can be reproduced, as demonstrated
by the Evil32 Project in 2014 (which was subsequently exploited in
2016).

Testing for whether a string in any given search is or may be a
hexadecimal
 value which may be missing the leading \texttt{0x} is a simple
matter of using a try/except statement which attempts to convert the
string as hex to an integer and then back to hex; then using that to
search with.  Raising a ValueError simply results in treating the
string as a string.  This is the method and logic utilised in the
\texttt{import-keys-hkp.py} script (see below).


\subsubsection{Working with ProtonMail}
\label{sec:org27b0d6f}
Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail public keys.
```

```
\begin{verbatim}
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []

if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")

if keyterm.count("@") == 2 and keyterm.startswith("@") is
 True:
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
  ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
  ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
  ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
  ksearch.append("{0}@protonmail.com".format(keyterm))
  ksearch.append("{0}@protonmail.ch".format(keyterm))
  ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
  uidlist = keyterm.split("@")
  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
  uidlist = keyterm.split("@")
  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
       ksearch.append("{0}@pm.me".format(uid))
else:
  ksearch.append(keyterm)

for k in ksearch:
```

```
  payload = {"op": "get", "search": k}
  try:
     r = requests.get(url, verify=True, params=payload)
     if r.ok is True:
        result = c.key_import(r.content)
     elif r.ok is False:
        result = r.content
  except Exception as e:
     result = None

  if result is not None and hasattr(result, "considered") is False:
     print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
     num_keys = len(result.imports)
     new_revs = result.new_revocations
     new_sigs = result.new_signatures
     new_subs = result.new_sub_keys
     new_uids = result.new_user_ids
     new_scrt = result.secret_imported
     nochange = result.unchanged
     print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the
 following string:

     {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
     for i in range(num_keys):
        print(result.imports[i].fpr)
     print("")
  elif result is None:
     print(e)
\end{verbatim}

Both the above example, \href{../examples/howto/pmkey-import.py}{pmkey-import.py}, and a version which
prompts
for an alternative GnuPG home directory, \href{../examples/howto/pmkey-import-alt.py}{pmkey-import-alt.py}, are
```

available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool. One notable difference
being
 that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.

\subsubsection{Importing with HKP for Python}
\label{sec:org592d7ab}
Performing the same tasks with the \href{https://github.com/Selfnet/hkp4py}{hkp4py module} (available via PyPI)
is not too much different, but does provide a number of options of
benefit to end users. Not least of which being the ability to perform
some checks on a key before importing it or not. For instance it may
be the policy of a site or project to only import keys which have not
been revoked. The hkp4py module permits such checks prior to the
importing of the keys found.

```
\begin{verbatim}
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
  pattern = " ".join(sys.argv[1:])
elif
 len(sys.argv) == 2:
  pattern = sys.argv[1]
else:
  pattern = input("Enter the pattern to search for keys or user IDs: ")


if pattern is not None:
  try:
     key = server.search(hex(int(pattern, 16)))
     keyed = True
  except ValueError as ve:
     key = server.search(pattern)
     keyed = False
```

```
  if key is not None:
     keys.append(key[0])
     if keyed is True:
        try:
           fob = server.search(pattern)
        except:
           fob = None
        if fob is not None:
           keys.append(fob[0])
     else:
        pass
  else:
     pass

  for logrus in pattern.split():
     try:
        key = server.search(hex(int(logrus, 16)))
        hexed = True
     except ValueError as ve:
        key = server.search(logrus)
        hexed = False

     if key is not None:
        keys.append(key[0])
        if hexed is True:
           try:

 fob = server.search(logrus)
           except:
              fob = None
           if fob is not None:
              keys.append(fob[0])
        else:
           pass
     else:
        pass


if len(keys) > 0:
  for key in keys:
     import_result = c.key_import(key.key_blob)
     results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
     print(result)
  elif result is not None and hasattr(result, "considered") is True:
```

```
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
Number of new signatures:  {2}
   Number of new subkeys:  {3}
  Number
 of new user IDs:  {4}
Number of new secret keys:  {5}
Number of unchanged keys:  {6}

The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    else:
        pass
\end{verbatim}

Since the hkp4py module handles multiple keys just as effectively as
one (\texttt{keys} is a list of responses per matching key), the example
above is able to do a little bit more with the returned data before
anything is actually imported.


\subsubsection{Importing from ProtonMail with HKP for Python}
\label{sec:org3966a76}
Though this can provide certain benefits even when working with
ProtonMail, the scope is somewhat constrained there due to the
limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg"
produces hundreds of results from any time the word appears in any
part of
 a user ID.  Performing the same search on the ProtonMail
keyserver returns zero results, even though there are at least two
test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that
```

server by ProtonMail to require an exact match of the full email address of the ProtonMail user whose key is being requested. Presumably this is intended to reduce breaches of privacy of their users as an email address must already be known before a key for that address can be obtained.

\begin{enumerate}
\item Import from ProtonMail via HKP for Python Example no. 1
\label{sec:org6cd15c3}
The following script is available with the rest of the examples under the somewhat less than original name, \texttt{pmkey-import-hkp.py}.

\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and imports it.

Usage: pmkey-import-hkp.py [search strings]
""")

c
 = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
  keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
    ksearch.append(keyterm[1:])

```
      ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
      ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
      ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
      ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
      ksearch.append("{0}@protonmail.com".format(keyterm))
      ksearch.append("{0}@protonmail.ch".format(keyterm))
       ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
      uidlist = keyterm.split("@")
      for uid in uidlist:
          ksearch.append("{0}@protonmail.com".format(uid))
          ksearch.append("{0}@protonmail.ch".format(uid))
          ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
      uidlist = keyterm.split("@")
      for uid in uidlist:
          ksearch.append("{0}@protonmail.com".format(uid))
          ksearch.append("{0}@protonmail.ch".format(uid))
          ksearch.append("{0}@pm.me".format(uid))
  else:
      ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
      keys = server.search(k)
      if isinstance(keys, list) is True:
          for key in keys:
              allkeys.append(key)
              try:
                  import_result = c.key_import(key.key_blob)

 except Exception as e:
                  import_result = c.key_import(key.key)
      else:
          paradox.append(keys)
          import_result = None
  except Exception as e:
      import_result = None
  results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
      print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
```

```
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}

  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
        pass
\end{verbatim}


\item Import from ProtonMail via HKP for Python Example no. 2
\label{sec:org3b674e5}
Like its counterpart above, this script can also be found with the
rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything
passed as a \texttt{homedir} which either does not exist or which is not a
directory, as also being a pssible user ID to check for.  It's not
guaranteed to pick up on all such cases, but it should cover most of
them.

\begin{verbatim}
import gpg
import hkp4py
import os.path
```

```
import sys

print("""
This script searches the ProtonMail key server
 for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.

Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 3:
   homedir = sys.argv[1]
   keyterms = sys.argv[2:]
elif len(sys.argv) == 3:
   homedir = sys.argv[1]
   keyterm = sys.argv[2]
   keyterms.append(keyterm)
elif len(sys.argv) == 2:
   homedir = ""
   keyterm = sys.argv[1]
   keyterms.append(keyterm)
else:
   keyterm = input("Enter the key ID, UID or search string: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")
   keyterms.append(keyterm)

if len(homedir) == 0:
   homedir = None
   homeless = False

if homedir is not None:
   if homedir.startswith("~"):
      if os.path.exists(os.path.expanduser(homedir))
 is True:
         if os.path.isdir(os.path.expanduser(homedir)) is True:
            c.home_dir = os.path.realpath(os.path.expanduser(homedir))
         else:
            homeless = True
```

```
      else:
        homeless = True
    elif os.path.exists(os.path.realpath(homedir)) is True:
      if os.path.isdir(os.path.realpath(homedir)) is True:
        c.home_dir = os.path.realpath(homedir)
      else:
        homeless = True
    else:
      homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
# a search string.
if homeless is True:
    keyterms.append(homedir)
    c.home_dir = None
else:
    pass

for keyterm in keyterms:
    if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
      ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
    elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
      ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
       ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
      ksearch.append("{0}@pm.me".format(keyterm[1:]))
    elif keyterm.count("@") == 0:
      ksearch.append("{0}@protonmail.com".format(keyterm))
      ksearch.append("{0}@protonmail.ch".format(keyterm))
      ksearch.append("{0}@pm.me".format(keyterm))
    elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
      uidlist = keyterm.split("@")
      for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
    elif keyterm.count("@") > 2:
      uidlist = keyterm.split("@")
      for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
    else:
      ksearch.append(keyterm)

for k in ksearch:
    print("Checking
```

```
 for key for: {0}".format(k))
  try:
     keys = server.search(k)
     if isinstance(keys, list) is True:
        for key in keys:
           allkeys.append(key)
           try:
              import_result = c.key_import(key.key_blob)
           except Exception as e:
              import_result = c.key_import(key.key)
     else:
        paradox.append(keys)
        import_result = None
  except Exception as e:
     import_result = None
  results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
     print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
     num_keys = len(result.imports)
     new_revs = result.new_revocations
     new_sigs = result.new_signatures
     new_subs = result.new_sub_keys
     new_uids = result.new_user_ids
     new_scrt = result.secret_imported
      nochange = result.unchanged
     print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

     {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
     for i in range(num_keys):
        print(result.imports[i].fpr)
     print("")
```

```
  elif result is None:
      pass
\end{verbatim}
\end{enumerate}


\subsection{Exporting keys}
\label{sec:org4596a77}
Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine.  Two of those functions are for exporting public keys and the
third is for exporting secret keys.


\subsubsection{Exporting
 public keys}
\label{sec:org873704f}
There are two methods of exporting public keys, both of which are very
similar to the other.  The default method, \texttt{key\_export()}, will export
a public key or keys matching a specified pattern as normal.  The
alternative, the \texttt{key\_export\_minimal()} method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

\begin{verbatim}
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the
```

```
 GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export(pattern=logrus)
except:
  result = c.key_export(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
else:
  pass
\end{verbatim}

It should be noted that the result will only return \texttt{None} when a
search pattern has been entered, but has not matched any keys.  When
the search pattern itself is set to \texttt{None} this triggers the exporting
of the entire public keybox.

\begin{verbatim}
import
 gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
```

```
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
     c.home_dir = os.path.expanduser(homedir)
  else:
     pass
elif os.path.exists(homedir)
 is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_minimal(pattern=logrus)
except:
  result = c.key_export_minimal(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
else:
  pass
\end{verbatim}


\subsubsection{Exporting secret keys}
\label{sec:org6c28d3d}
Exporting secret keys is, functionally, very similar to exporting
public keys; save for the invocation of \texttt{pinentry} via \texttt{gpg-agent} in
order to securely enter the key's passphrase and authorise the export.

The following example exports the secret key to a file which is then
set with the same permissions as the output files created by the
command line secret key export options.
```

```
\begin{verbatim}
import gpg
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile
 = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir =
 None
else:
  if os.path.isdir(homedir) is False:
```

```
      homedir = None
  else:
      pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
      f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
\end{verbatim}
```

Alternatively the approach of the following script can be used. This longer example saves the exported secret key(s) in files in the GnuPG home directory, in addition to setting the file permissions as only readable and writable by the user. It also exports the secret key(s) twice in order to output both GPG binary (\texttt{.gpg}) and ASCII armoured (\texttt{.asc}) files.

```
\begin{verbatim}
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the
 user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
  gpgconfcmd = "gpgconf --list-dirs homedir"
```

```
a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir)
 == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
    homedir = os.path.realpath(userdir)
  else:
    homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
    homedir = None
  else:
    pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

if c.home_dir is not None:
```

```
  if c.home_dir.endswith("/"):
    gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
    gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
    hd = os.environ["GNUPGHOME"]
  else:
    try:
      hd = subprocess.getoutput(gpgconfcmd)
    except:
      process = subprocess.Popen(gpgconfcmd.split(),
                                 stdout=subprocess.PIPE)
      procom = process.communicate()
      if sys.version_info[0] == 2:
        hd = procom[0].strip()
      else:
        hd = procom[0].decode().strip()
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)

try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
    f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
    f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
\end{verbatim}


\subsubsection{Sending public keys to the SKS Keyservers}
\label{sec:org82d4958}
```

As with the previous section on importing
 keys, the \texttt{hkp4py} module
adds another option with exporting keys in order to send them to the
public keyservers.

The following example demonstrates how this may be done.

\begin{verbatim}
```
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")

if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
    export_result = c.key_export(pattern=logrus)
  except Exception as e:
    print(e)
    export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
    try:
      send_result = server.add(export_result)
    except:
       send_result = server.add(export_result.decode())
    if send_result is not None:
      print(send_result)
    else:
      pass
  except Exception as e:
```

```
      print(e)
else:
  pass
\end{verbatim}
```

An expanded version of this script with additional functions for
specifying an alternative homedir location is in the examples
directory as \texttt{send-key-to-keyserver.py}.

The \texttt{hkp4py} module appears to handle both string and byte literal text
data equally well, but the GPGME bindings deal primarily with byte
literal data only and so this script sends in that format first, then
tries the string literal form.

\section{Basic Functions}
\label{sec:orgb40b488}
The most frequently called features of any cryptographic library will
be the most fundamental tasks for encryption software. In this
section we will look at how to programmatically encrypt data, decrypt
it, sign it and verify signatures.

\subsection{Encryption}
\label{sec:org3170365}
Encrypting
 is very straight forward. In the first example below the
message, \texttt{text}, is encrypted to a single recipient's key. In the
second example the message will be encrypted to multiple recipients.

\subsubsection{Encrypting to one key}
\label{sec:org8098c64}
Once the the Context is set the main issues with encrypting data is
essentially reduced to key selection and the keyword arguments
specified in the \texttt{gpg.Context().encrypt()} method.

Those keyword arguments are: \texttt{recipients}, a list of keys encrypted to
(covered in greater detail in the following section); \texttt{sign}, whether
or not to sign the plaintext data, see subsequent sections on signing
and verifying signatures below (defaults to \texttt{True}); \texttt{sink}, to write
results or partial results to a secure sink instead of returning it
(defaults to \texttt{None}); \texttt{passphrase}, only used when utilising symmetric
encryption (defaults to \texttt{None}); \texttt{always_trust}, used to override
 the
trust model settings for recipient keys (defaults to \texttt{False});
\texttt{add_encrypt_to}, utilises any preconfigured \texttt{encrypt-to} or
\texttt{default-key} settings in the user's \texttt{gpg.conf} file (defaults to

\texttt{False}); \texttt{prepare}, prepare for encryption (defaults to \texttt{False});
\texttt{expect_sign}, prepare for signing (defaults to \texttt{False}); \texttt{compress},
compresses the plaintext prior to encryption (defaults to \texttt{True}).

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:
    afile.write(ciphertext)
\end{verbatim}

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the \texttt{gpg.conf} file:

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"

with open("secret_plans.txt", "rb") as afile:
   text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                    always_trust=True,
                                    add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
   afile.write(ciphertext)
\end{verbatim}

If the \texttt{recipients} parameter is empty then the plaintext is encrypted
symmetrically. If no \texttt{passphrase} is supplied as a parameter or via a

callback registered with
 the \texttt{Context()} then an out-of-band prompt
for the passphrase via pinentry will be invoked.

\subsubsection{Encrypting to multiple keys}
\label{sec:orgdcf6e47}
Encrypting to multiple keys essentially just expands upon the key
selection process and the recipients from the previous examples.

The following example encrypts a message (\texttt{text}) to everyone with an
email address on the \texttt{gnupg.org} domain,\footnote{You probably don't really want to do this. Searching the keyservers for "gnupg.org" produces over 400 results, the majority of
which aren't actually at the gnupg.org domain, but just included a
comment regarding the project in their key somewhere.} but does \emph{not} encrypt
to a default key or other key which is configured to normally encrypt
to.

\begin{verbatim}
import gpg

text = b"""Oh look, another test message.

The same rules apply as with the previous example and more likely
than not, the message will actually be drawn from reading the
contents
 of a file or, maybe, from entering data at an input()
prompt.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data
format.
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
     logrus.append(rpattern[i])

ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)

\end{verbatim}

All it would take to change the above example to sign the message
and also encrypt the message to any configured default keys would
be to change the \texttt{c.encrypt} line to this:

\begin{verbatim}
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,

                        always_trust=True,
                                add_encrypt_to=True)
\end{verbatim}

The only keyword arguments requiring modification are those for which
the default values are changing. The default value of \texttt{sign} is
\texttt{True}, the default of \texttt{always_trust} is \texttt{False}, the default of
\texttt{add_encrypt_to} is \texttt{False}.

If \texttt{always_trust} is not set to \texttt{True} and any of the recipient keys
are not trusted (e.g. not signed or locally signed) then the
encryption will raise an error. It is possible to mitigate this
somewhat with something more like this:

\begin{verbatim}
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
     logrus.append(rpattern[i])

  try:
     ciphertext, result,
 sign_result = c.encrypt(text, recipients=logrus,
                                      add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
     for i in range(len(e.recipients)):
        for n in range(len(logrus)):
           if logrus[n].fpr == e.recipients[i].fpr:
              logrus.remove(logrus[n])
           else:
              pass

```
    try:
        ciphertext, result, sign_result = c.encrypt(text,
                                            recipients=logrus,
                                            add_encrypt_to=True)
        with open("secret_plans.txt.asc", "wb") as afile:
            afile.write(ciphertext)
    except:
        pass
\end{verbatim}

This will attempt to encrypt to all the keys searched for, then remove
invalid recipients if it fails and try again.


\subsection{Decryption}
\label{sec:org1282b3d}
Decrypting something encrypted to a key in one's secret
 keyring is
fairly straight forward.

In this example code, however, preconfiguring either \texttt{gpg.Context()}
or \texttt{gpg.core.Context()} as \texttt{c} is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to \texttt{c} simply adds lines for no
gain.

\begin{verbatim}
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
  try:
      plaintext, result, verify_result = gpg.Context().decrypt(cfile)
  except gpg.errors.GPGMEError as e:
      plaintext = None
      print(e)

if plaintext is not None:
  with open(newfile, "wb") as nfile:
    nfile.write(plaintext)
  else:
      pass
\end{verbatim}

The data available in \texttt{plaintext} in this example is the decrypted
content as a byte object, the recipient key IDs and algorithms
```

in
\texttt{result} and the results of verifying any signatures of the data in
\texttt{verify_result}.

If \texttt{gpg.Context().decrypt(cfile, verify=False)} is called instead,
then \texttt{verify_result} will be returned as \texttt{None} and the rest remains
as described here.

\subsection{Signing text and files}
\label{sec:org59f1262}
The following sections demonstrate how to specify keys to sign with.

\subsubsection{Signing key selection}
\label{sec:org909cb3c}
By default GPGME and the Python bindings will use the default key
configured for the user invoking the GPGME API. If there is no
default key specified and there is more than one secret key available
it may be necessary to specify the key or keys with which to sign
messages and files.

\begin{verbatim}
import gpg

logrus = input("Enter the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
\end{verbatim}

The signing examples in the
following sections include the explicitly
designated \texttt{signers} parameter in two of the five examples; once where
the resulting signature would be ASCII armoured and once where it
would not be armoured.

While it would be possible to enter a key ID or fingerprint here to
match a specific key, it is not possible to enter two fingerprints and
match two keys since the patten expects a string, bytes or None and
not a list. A string with two fingerprints won't match any single
key.

\subsubsection{Normal or default signing messages or files}
\label{sec:org6ee259d}
The normal or default signing process is essentially the same as is
most often invoked when also encrypting a message or file. So when
the encryption component is not utilised, the result is to produce an

encoded and signed output which may or may not be ASCII armoured and
which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the
plaintext is already compressed. ASCII armouring
 will be determined
according to the value of \texttt{gpg.Context().armor}.

The compression algorithm is selected in much the same way as the
symmetric encryption algorithm or the hash digest algorithm is when
multiple keys are involved; from the preferences saved into the key
itself or by comparison with the preferences with all other keys
involved.

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}

Though everything in this example is accurate, it is more likely that
reading the input data from another file and writing the result to a
new file will be performed more like the way it is done in the next
example. Even if the output format is ASCII armoured.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}

\subsubsection{Detached signing messages and files}
\label{sec:org51049d4}
Detached signatures will often be needed in programmatic uses of
GPGME, either for signing files (e.g. tarballs of code releases) or as
a component of message signing (e.g. PGP/MIME encoded email).

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}

\subsubsection{Clearsigning messages or text}
\label{sec:orgf528a20}
Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

\begin{verbatim}
import gpg

```
text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}

In spite of the appearance of a clear-signed message, the data handled
by GPGME in signing it must still be byte literals.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}


\subsection{Signature verification}
\label{sec:org6cd81af}
Essentially there are two principal methods of verification of a
signature.  The first of these is for use with the normal or default
signing method and for clear-signed messages.  The second is for use
with files and data with detached signatures.

The following example is intended for use with the default signing
method where the file was not ASCII armoured:

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"
```

```
c = gpg.Context()

try:
  data, result = c.verify(open(gpg_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):

    sign = result.signatures[i]
     print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

Whereas this next example, which is almost identical would work with
normal ASCII armoured files and with clear-signed files:

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
```

```
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

In both of the previous examples it is also possible to compare the
original data that was signed
 against the signed data in \texttt{data} to see
if it matches with something like this:

\begin{verbatim}
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
else:
  pass
\end{verbatim}

The following two examples, however, deal with detached signatures.
With his method of verification the data that was signed does not get
returned since it is already being explicitly referenced in the first
argument of \texttt{c.verify}.  So \texttt{data} is \texttt{None} and only the information
in \texttt{result} is available.

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
```

```
{0}
with
 key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
```

```
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
```

Creating keys and subkeys

The one thing, aside from GnuPG itself, that GPGME depends on, of course, is the keys themselves. So it is necessary to be able to generate them and modify them by adding subkeys, revoking or disabling them, sometimes
 deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's
greatest secret agent, Danger Mouse. Since Danger Mouse is a secret
agent he needs to be able to protect information to \texttt{SECRET} level
clearance, so his keys will be 3072-bit keys.

The pre-configured \texttt{gpg.conf} file which sets cipher, digest and other
preferences contains the following configuration parameters:

\begin{verbatim}
expert
allow-freeform-uid
allow-secret-key-import
trust-model tofu+pgp
tofu-default-policy unknown
enable-large-rsa
enable-dsa2
cert-digest-algo SHA512
default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP
Uncompressed
personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES
personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
personal-compress-preferences
 ZLIB BZIP2 ZIP Uncompressed
\end{verbatim}

\subsection{Primary key}
\label{sec:org0185c23}
Generating a primary key uses the \texttt{create_key} method in a Context.
It contains multiple arguments and keyword arguments, including:
\texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires}, \texttt{sign}, \texttt{encrypt},
\texttt{certify}, \texttt{authenticate}, \texttt{passphrase} and \texttt{force}. The defaults for
all of those except \texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires} and
\texttt{passphrase} is \texttt{False}. The defaults for \texttt{algorithm} and
\texttt{passphrase} is \texttt{None}. The default for \texttt{expires_in} is \texttt{0}. The
default for \texttt{expires} is \texttt{True}. There is no default for \texttt{userid}.

If \texttt{passphrase} is left as \texttt{None} then the key will not be generated
with a passphrase, if \texttt{passphrase} is set to a string then that will
be the passphrase and if
 \texttt{passphrase} is set to \texttt{True} then gpg-agent
will launch pinentry to prompt for a passphrase. For the sake of
convenience, these examples will keep \texttt{passphrase} set to \texttt{None}.

\begin{verbatim}
import gpg

```
c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
                     sign=True, certify=True)
\end{verbatim}
```

One thing to note here is the use of setting the \texttt{c.home_dir}
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this
example in a separate location rather than adding it to existing and
active key store data. As with the default directory, \texttt{\textasciitilde{}/.gnupg}, any
temporary or separate directory needs the permissions set to only
permit access by the directory owner. On posix systems this means
setting the directory permissions to
 700.

The \texttt{temp-homedir-config.py} script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
\texttt{GenkeyResult} object, which includes the following data:

```
\begin{verbatim}
print("""
Fingerprint:  {0}
Primary Key:  {1}
 Public Key:  {2}
 Secret Key:  {3}
Sub Key:  {4}
User IDs:  {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
        dmkey.uid))
\end{verbatim}
```

Alternatively the information can be confirmed using the command line
program:

```
\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----------------------
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
```

uid [ultimate] Danger Mouse <dm@secret.example.net>

bash-4.4$
\end{verbatim}

As with generating keys manually,
to preconfigure expanded preferences
for the cipher, digest and compression algorithms, the \texttt{gpg.conf} file
must contain those details in the home directory in which the new key
is being generated. I used a cut down version of my own \texttt{gpg.conf}
file in order to be able to generate this:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
quit
Secret key is available.

sec rsa3072/026D2F19E99E63AA
created: 2018-03-15 expires: 2019-03-15 usage: SC
trust: ultimate validity: ultimate
[ultimate] (1). Danger Mouse <dm@secret.example.net>

[ultimate] (1). Danger Mouse <dm@secret.example.net>
Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH,
IDEA, CAST5, 3DES
Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
Compression: ZLIB, BZIP2, ZIP, Uncompressed
Features: MDC, Keyserver no-modify

bash-4.4$
\end{verbatim}

\subsection{Subkeys}
\label{sec:org5e2acbc}
Adding
subkeys to a primary key is fairly similar to creating the
primary key with the \texttt{create_subkey} method. Most of the arguments
are the same, but not quite all. Instead of the \texttt{userid} argument
there is now a \texttt{key} argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key. Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

\begin{verbatim}

```
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
\end{verbatim}
```

As with the primary key, the results here can be checked with:

```
\begin{verbatim}
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmsub.fpr,
 dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
         dmsub.uid))
\end{verbatim}
```

As well as on the command line with:

```
\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----------------------
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid           [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}
```

```
\subsection{User IDs}
\label{sec:org4869c58}
\subsubsection{Adding User IDs}
\label{sec:orgebb13ca}
By comparison to creating primary keys and subkeys, adding a new user
ID to an existing key is much simpler.  The method used to do this is
\texttt{key\_add\_uid} and the only arguments it takes are for the \texttt{key} and
the new \texttt{uid}.
```

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid
 = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
\end{verbatim}

Unsurprisingly the result of this is:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid   [ultimate] Danger Mouse <danger.mouse@secret.example.net>
uid   [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}

\subsubsection{Revoking User IDs}
\label{sec:org1683695}
Revoking a user ID is a fairly similar process, except that it uses
the \texttt{key_revoke_uid} method.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
\end{verbatim}

\subsection{Key certification}
\label{sec:orgf431bf8}
Since
 key certification is more frequently referred to as key signing,
the method used to perform this function is \texttt{key_sign}.

The \texttt{key_sign} method takes four arguments: \texttt{key}, \texttt{uids},
\texttt{expires_in} and \texttt{local}. The default value of \texttt{uids} is \texttt{None} and
which results in all user IDs being selected. The default value of
both \texttt{expires_in} and \texttt{local} is \texttt{False}; which results in the
signature never expiring and being able to be exported.

The \texttt{key} is the key being signed rather than the key doing the
signing. To change the key doing the signing refer to the signing key
selection above for signing messages and files.

If the \texttt{uids} value is not \texttt{None} then it must either be a string to
match a single user ID or a list of strings to match multiple user
IDs. In this case the matching of those strings must be precise and
it is case sensitive.

To sign Danger
 Mouse's key for just the initial user ID with a
signature which will last a little over a month, do this:

\begin{verbatim}
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
\end{verbatim}

\subsubsection{Verifying key certifications}
\label{sec:org87abdd3}
\begin{verbatim}
import gpg
import time

c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))

```
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
\end{verbatim}
```

Which for Danger Mouse displays the following:

```
\begin{verbatim}
0x92E3F6115435C65A  Thu Mar 15 13:17:44 2018  Danger Mouse <dm@secret.example.net>
0x321E4E2373590E5D  Mon Nov 26 12:46:05 2018  Ben McGinnes <ben@adversary.org>
\end{verbatim}
```

The two key signatures listed are for the self-certification of Danger Mouse's key made when the key was created in March, 2018; and the second is a signature made by the author and set to expire at the end of the year. Note that the second signature was made with the following code (including the preceding code to display the output of the certifications or key signatures):

```
\begin{verbatim}
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
ts = tp.total_seconds()
total_secs = math.ceil(ts)
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
keys = list(c.keylist(pattern=dmuid,
 mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]
```

```
for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
```
\end{verbatim}

Note that this final code block includes the use of a module which is
\emph{not} part of Python's standard library, the \href{https://pendulum.eustace.io/}{pendulum module}. Unlike
the standard datetime module, pendulum makes working with dates and
times significantly easier in Python; just as the requests module
makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using
the GPGME Python bindings, they are both highly recommended more
generally.

\section{Advanced or Experimental Use Cases}
\label{sec:org944cc00}
\subsection{C plus Python plus SWIG plus Cython}
\label{sec:org3b53926}
In spite of the apparent incongruence of using Python bindings to a C
interface only to generate
more C from the Python; it is in fact quite
possible to use the GPGME bindings with \href{http://docs.cython.org/en/latest/index.html}{Cython}. Though in
many cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable. One of the better and easier examples being the one of
the early examples in this HOWTO, the \hyperref[sec:org63a3d62]{key counting} code. Running that
example as an executable Python script, \texttt{keycount.py} (available in
the \texttt{examples/howto/} directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically and timed it using
\texttt{time} utility, with the following results:

\begin{verbatim}
bash-4.4$
 time keycount.py

Number of secret keys: 23

Number of public keys: 12112

real 11m52.945s
user 0m0.913s
sys 0m0.752s

bash-4.4$
\end{verbatim}

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the \href{http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html}{Cython Basic Tutorial} to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the \texttt{gpg} module to the end of the script:

\begin{verbatim}
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys: {0}
   Number of public keys: {1}

""".format(secnum, pubnum))
\end{verbatim}

Save
 that into a file called \texttt{keycount.pyx} and then create a
\texttt{setup.py} file which contains this:

\begin{verbatim}
from distutils.core import setup
from Cython.Build import cythonize

setup(
   ext_modules = cythonize("keycount.pyx")

)
\end{verbatim}

Compile it:

\begin{verbatim}
bash-4.4$ python setup.py build_ext --inplace
bash-4.4$
\end{verbatim}

Then run it in a similar manner to \texttt{keycount.py}:

\begin{verbatim}
bash-4.4$ time python3.7 -c "import keycount"

Number of secret keys: 23
Number of public keys: 12113

real 6m47.905s
user 0m0.785s
sys 0m0.331s

bash-4.4$
\end{verbatim}

Cython turned \texttt{keycount.pyx} into an 81KB \texttt{keycount.o} file in the
\texttt{build/} directory, a 24KB \texttt{keycount.cpython-37m-darwin.so} file to be
imported into Python 3.7 and a 113KB \texttt{keycount.c} generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the \texttt{keycount.pyx} file or the full 1,452 bytes
 of the
full executable \texttt{keycount.py} example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The \texttt{keycount.pyx} and \texttt{setup.py} files used to generate this example
have been added to the \texttt{examples/howto/advanced/cython/} directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the
\href{http://docs.cython.org/en/latest/src/tutorial/pure.html\#magic-attributes-within-the-pxd}{Magic Attributes}
section of the Cython documentation.

\section{Miscellaneous extras and work-arounds}
\label{sec:orgd72f7de}

Most of the things in the following sections are here simply because
there was no better place to put them, even though some are only
peripherally related to the GPGME Python bindings. Some are also
workarounds for functions not integrated
 with GPGME as yet. This is
especially true of the first of these, dealing with \hyperref[sec:org83f4d00]{group lines}.

\subsection{Group lines}
\label{sec:org83f4d00}
There is not yet an easy way to access groups configured in the
gpg.conf file from within GPGME. As a consequence these central
groupings of keys cannot be shared amongst multiple programs, such as
MUAs readily.

The following code, however, provides a work-around for obtaining this
information in Python.

\begin{verbatim}
import subprocess
import sys

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
  gpgconfcmd = "gpgconf --list-options gpg"

process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
  lines = procom[0].splitlines()
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
     break

groups = line.split(":")[-1].replace("", ").split(',')

group_lines
 = []
group_lists = []

for i in range(len(groups)):
  group_lines.append(groups[i].split("="))
  group_lists.append(groups[i].split("="))

```
for i in range(len(group_lists)):
  group_lists[i][1] = group_lists[i][1].split()
\end{verbatim}

The result of that code is that \texttt{group\_lines} is a list of lists where
\texttt{group\_lines[i][0]} is the name of the group and \texttt{group\_lines[i][1]}
is the key IDs of the group as a string.

The \texttt{group\_lists} result is very similar in that it is a list of
lists.  The first part, \texttt{group\_lists[i][0]} matches
\texttt{group\_lines[i][0]} as the name of the group, but \texttt{group\_lists[i][1]}
is the key IDs of the group as a list.

A demonstration of using the \texttt{groups.py} module is also available in
the form of the executable \texttt{mutt-groups.py} script.  This second
script reads all the group entries in a user's \texttt{gpg.conf} file and
converts them into crypt-hooks suitable for use
 with the Mutt and
Neomutt mail clients.


\subsection{Keyserver access for Python}
\label{sec:org5ad99aa}
The \href{https://github.com/Selfnet/hkp4py}{hkp4py} module by Marcel Fest was originally a port of the old
\href{https://github.com/dgladkov/python-hkp}{python-hkp} module from Python 2 to Python 3 and updated to use
the
\href{http://docs.python-requests.org/en/latest/index.html}{requests} module instead.  It has since been modified to
provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the \texttt{hkp} protocol prefix as \texttt{http} and \texttt{hkps} as
\texttt{https}, the module is able to be used even with servers which do not
support the full scope of keyserver functions.\footnote{Such as with ProtonMail servers.  This also means that
restricted servers which only advertise either HTTP or HTTPS end
points and not HKP or HKPS end points must still be identified as as
HKP or HKPS within the Python Code.  The \texttt{hkp4py} module will rewrite
these
 appropriately when the connection is made to the server.}  It also works quite
readily when incorporated into a \hyperref[sec:org3b53926]{Cython} generated and compiled version
of any code.


\subsubsection{Key import format}
\label{sec:org1e47c97}
The hkp4py module returns key data via requests as string literals
(\texttt{r.text}) instead of byte literals (\texttt{r.content}).  This means that
the retrurned key data must be encoded to UTF-8 when importing that
```

key material using a \texttt{gpg.Context().key_import()} method.

For this reason an alternative method has been added to the \texttt{search}
function of \texttt{hkp4py.KeyServer()} which returns the key in the correct
format as expected by \texttt{key_import}. When importing using this module,
it is now possible to import with this:

\begin{verbatim}
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
\end{verbatim}

Without that recent addition it would
 have been necessary to encode
the contents of each \texttt{hkp4py.KeyServer().search()[i].key} in
\texttt{hkp4py.KeyServer().search()} before trying to import it.

An example of this is included in the \hyperref[sec:org1ad598a]{Importing Keys} section of this
HOWTO and the corresponding executable version of that example is
available in the \texttt{lang/python/examples/howto} directory as normal; the
executable version is the \texttt{import-keys-hkp.py} file.

\subsection{GPGME version checking}
\label{sec:org18b8ef8}
For various reasons it may be necessary to check which version of
GPGME the bindings have been built against; including whether a
minimum required version of GPGME is in use.

For the most part the \texttt{gpg.version.versionstr} and
\texttt{gpg.version.versionlist} methods have been quite sufficient. The
former returns the same string as \texttt{gpgme-config -{}-version}, while the
latter returns the major, minor and patch values in a list.

To check if the installed bindings
 have actually been built against
the current installed libgpgme version, this check can be performed:

\begin{verbatim}
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,

```
                                stderr=subprocess.PIPE)
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0] >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
    print("The GPGME Python bindings match libgpgme.")
  else:
    print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
\end{verbatim}

For many developers, however, the preferred checking means checking
for a minimum
 version or point release.  This is now readily available
via the \texttt{gpg.version.versionintlist} method (added in version
\texttt{1.12.1-beta79}).  It is also now possible to easily check whether the
installed GPGME Python bindings were built from a development or beta
branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

\begin{verbatim}
import gpg

try:
  if gpg.version.is_beta is True:
    print("The installed GPGME Python bindings were built from beta code.")
  else:
    print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
    if gpg.version.versionintlist[1] == 12:
      if gpg.version.versionintlist[2] == 1:
        print("This is the minimum version for using versionintlist.")
      elif gpg.version.versionintlist[2] > 1:
        print("The versionintlist method is available.")
```

```
        else:
            pass
    elif gpg.version.versionintlist[1] > 12:
        print("The versionintlist method is available.")
    else:
        pass
  elif gpg.version.versionintlist[0] > 1:
    print("The versionintlist method is available.")
  else:
    pass
except Exception as e:
  print(e)
```

The points where \texttt{pass} is used in the above example will most likely also produce an \texttt{Exception} error since those results should only occur in versions which do not have the \texttt{gpgme.version.is_beta} and \texttt{gpgme.version.versionintlist} methods available.

Copyright and Licensing

Copyright

Copyright The GnuPG Project, 2018.

Copyright (C) The GnuPG Project, 2018.

Draft Editions of this HOWTO

Draft editions of this HOWTO may be periodically available directly from the author at any of the following URLs:

- \href{https://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 SSL)}
- \href{http://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 no SSL)}
- \href{https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 SSL)}
- \href{http://files.au.adversary.org/crypto/gpgme-python-howto/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 no SSL)}

All of these draft versions except for one have been generated from this document via GNU Emacs \href{https://orgmode.org/}{Org mode} and

\href{https://www.gnu.org/software/texinfo/}{GNU Texinfo}. Though it is
likely that the specific \href{https://files.au.adversary.org/crypto/gpgme-python-howto}{file}
\href{http://files.au.adversary.org/crypto/gpgme-python-howto.org}{version}
 used will be on the same server
with the generated output formats.

The GNU Texinfo and reStructured Text versions ship with the software,
while the GNU Emacs Info verseion is generated from the Texinfo
version using GNU Texinfo or GNU Makeinfo. The Texinfo format is
generated from the original Org mode source file in Org mode itself
either within GNU Emacs or via the command line by invoking Emacs in
batch mode:

\begin{verbatim}
emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
\end{verbatim}

The reStructuredText format is also generated from the Org-mode source
file, except it is generated using \href{https://pandoc.org}{Pandoc} with either of the following
commands:

\begin{verbatim}
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto.org
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
\end{verbatim}

In addition to these there is
 a significantly less frequently updated
version as a HTML \href{https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html}{WebHelp
site} (AWS S3 SSL); generated from DITA XML
source files, which can be found in \href{https://dev.gnupg.org/source/gpgme/browse/ben\%252Fhowto-dita/}{an
alternative branch} of the GPGME
git repository.

Various generated output formats may occasionally be found in
subdirectories of the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python}{gpgme-python}
directory. In particular within
the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita}{DITA},
\href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst}{reStructuredText} and
\href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo}{Texinfo} subdirectories. The
\texttt{rst}
directory contains output files generated with Sphix and may include a
considerable number of its possible output formats.

These
 draft editions are not official documents and the version of
documentation in the master branch or which ships with released

versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding that they may contain errors or may contain content
subject to change prior to an official release.

\subsection{License GPL compatible}
\label{sec:orge78f3b7}
This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
\end{document}
This is a template. The dist target uses it to create the real file.
Summary: GPGME - GnuPG Made Easy
Name: gpgme
Version: 1.15.1
Release: 1
URL: https://gnupg.org/gpgme.html
Source: https://www.gnupg.org/ftp/gcrypt/gpgme/%{name}-%{version}.tar.gz
Group: Development/Libraries
Copyright: GPL
BuildRoot: %{_tmppath}/%{name}-%{version}
BuildRequires: make
Prereq: /sbin/ldconfig /sbin/install-info
Requires: gnupg

%description
GnuPG Made Easy (GPGME) is a library designed to make access to GnuPG easier
for applications. It provides a High-Level Crypto API for encryption,
decryption, signing, signature verification and key management.

%prep
%setup -q

%build
CFLAGS="$RPM_OPT_FLAGS"; export CFLAGS
./configure --prefix=/usr
make

%install
rm -fr $RPM_BUILD_ROOT
mkdir -p $RPM_BUILD_ROOT

```
make install prefix=$RPM_BUILD_ROOT/usr infodir=$RPM_BUILD_ROOT%{_infodir}
rm -f $RPM_BUILD_ROOT%{_infodir}/dir

%clean
rm -fr $RPM_BUILD_ROOT
make distclean

%post
/sbin/ldconfig
/sbin/install-info %{_infodir}/gpgme.info.gz
 %{_infodir}/dir
/sbin/install-info %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir

%preun
if [ "$1" = 0 ]; then
/sbin/install-info --delete %{_infodir}/gpgme.info.gz %{_infodir}/dir
/sbin/install-info --delete %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir
fi

%postun
/sbin/ldconfig

%files
%defattr(-,root,root)
%doc COPYING COPYING.LESSER AUTHORS README INSTALL NEWS ChangeLog TODO THANKS
%attr(0755,root,root) %{_bindir}/gpgme-config
%attr(0755,root,root) %{_libdir}/*gpgme.so*
%attr(0755,root,root) %{_libdir}/*gpgme.la
%attr(0644,root,root) %{_libdir}/*gpgme.a
%{_includedir}/gpgme.h
%{_datadir}/aclocal/gpgme.m4
%{_infodir}/gpgme.info*
%{_infodir}/gpgme-python-howto.info*

%changelog
* Sat Aug 30 2003 Robert Schiele <rschiele@uni-mannheim.de>
- %{_infodir}/dir is not packaged, remove to prevent checking failure
* Mon Jul 01 2002 Wojciech Polak <polak@lodz.pdi.net>
- initial specfile release for GPGME.

# EOF
```

1.93 npth 1.6-8.el9

1.93.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide
to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether
gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide

complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to

encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the
free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of

its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or

link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you
do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and

all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License

may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING

RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the

library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.94 cracklib 2.9.6-27.el9

1.94.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors
who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally,
software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore
permits such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library
in order to run.
^L

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly
into another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control
compilation
and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it,
in any medium, provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and
can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms
of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so

that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.
^L
 Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

 This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

 4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the
 complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

 If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

 5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

 However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a
 "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

 When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

 If such an object file uses only numerical parameters, data

structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2)

will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything
that is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.
^L
7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined
with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any

attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License,
they do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software

distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR

OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS
PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source
file to most
effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor,
Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper
mail.

You should also get your employer (if you work as a programmer) or
your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

EFFECTIVE OCT 2008, LICENSE IS BEING CHANGED TO LGPL-2.1 (though not reflected in released code until Nov 2009 - slow release cycle...)

Discussion thread from mailing list archive, with approval from everyone actively
involved or holding original licensing rights included.

[Cracklib-devel] cracklib license
From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:16

Attachments: Message as HTML
looks like 2.8.11 is out and marked as "GPL-2" ... releasing libraries unde=
r=20
GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists
=2Dmike

Re: [Cracklib-devel] cracklib license
From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:18
I understand that, and you're welcome to bring it up with Alec directly
and see if he wants to relicense his code as LGPL... but at this point,

it was enough to just get it consistent and documented as to what it was
released under. This wasn't actually a license change, just a
clarification of the licensing that was already in place.=20

-- Nathan
=20

Nathan Neulinger EMail: nneul@um...
University of Missouri - Rolla Phone: (573) 341-6679
UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----
> From: cracklib-devel-bounces@li...
> [mailto:cracklib-devel-bounces@li...] On Behalf Of
> Mike Frysinger
> Sent: Monday, October 01, 2007 8:15 PM
> To: cracklib-devel@li...
> Subject: [Cracklib-devel] cracklib license
>=20
> looks like 2.8.11 is out and marked as "GPL-2" ... releasing
> libraries under
> GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists
> -mike

Re: [Cracklib-devel] cracklib license
From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:33

Attachments: Message as HTML
On Monday 01 October 2007, Neulinger, Nathan
wrote:
> I understand that, and you're welcome to bring it up with Alec directly
> and see if he wants to relicense his code as LGPL... but at this point,
> it was enough to just get it consistent and documented as to what it was
> released under. This wasn't actually a license change, just a
> clarification of the licensing that was already in place.

the original license (before moving to sourceforge -- aka, 2.7) was not=20
GPL-2 ... it was a modified artistic license ... i didnt notice the license=
=20
change until it was mentioned in the latest notes.

unlike the old license, GPL-2 prevents people from using cracklib unless th=
eir=20
applications are also GPL-2 which imo is just wrong. it isnt the place of =
a=20
library to dictact to application writes what license they should be using.=
=20

thus LGPL-2.1 enters to fill this void.
=2Dmike

Re: [Cracklib-devel]
cracklib license
From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:46
Seems like the ideal thing here would be for you and the other distro maintainers to get together with Alec in a conversation and come to a decision as to what licensing scheme y'all want. I haven't really done much other than cleaning up the packaging and patches and a small bit of additional code, so whatever licensing y'all come up with is fine by me.

-- Nathan
=20

Nathan Neulinger EMail: nneul@um...
University of Missouri - Rolla Phone: (573) 341-6679
UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----
> From: cracklib-devel-bounces@li...
> [mailto:cracklib-devel-bounces@li...] On Behalf Of
> Mike Frysinger
> Sent: Monday, October 01, 2007 8:33 PM
> To: Neulinger, Nathan
> Cc: cracklib-devel@li...; Alec Muffett
> Subject: Re: [Cracklib-devel] cracklib license
>=20
> On Monday 01 October 2007, Neulinger, Nathan wrote:
> > I understand that, and you're welcome to bring it up with Alec
> directly
> > and see if he wants to relicense his code as LGPL... but at this
> point,
> > it was enough to just get it consistent and documented as to what
> it was
> > released under. This wasn't actually a license change, just a
> > clarification of the licensing that was already in place.
>=20
> the original license (before moving to sourceforge -- aka, 2.7) was
> not
> GPL-2 ... it was a modified artistic license ... i didnt notice the
> license
> change until it was mentioned in the latest notes.
>=20
> unlike the old license, GPL-2 prevents people from using cracklib
> unless their
> applications are also GPL-2 which imo is just wrong. it isnt the

> place of a
> library
to dictact to application writes what license they should
> be using.
> thus LGPL-2.1 enters to fill this void.
> -mike

Re: [Cracklib-devel] cracklib license
From: Alec Muffett <alecm@cr...> - 2007-10-02 08:57
> Seems like the ideal thing here would be for you and the other distro
> maintainers to get together with Alec in a conversation and come to a
> decision as to what licensing scheme y'all want. I haven't really done
> much other than cleaning up the packaging and patches and a small
> bit of
> additional code, so whatever licensing y'all come up with is fine
> by me.

I am sympathetic. Guys, what do you reckon?

What I am hearing so far is that LGPL makes sense, since it can be
linked with any code, not just GPL...

-a

Re: [Cracklib-devel] cracklib license
From: Devin Reade <gdr@gn...> - 2007-10-02 15:04
I would like to see it under LGPL as well. I
think it is in everyone's
best interests to have as secure systems as possible, and I think tainting
it via GPL will just make it less likely that the library gets used, and
will not usually cause companies/developers to GPL the dependent code
(where it is not already GPL).

I like GPL, I use it when I can, but I don't think that it's the correct
license in this situation.

Devin
--
If it's sinful, it's more fun.

Re: [Cracklib-devel] cracklib license
From: Nalin Dahyabhai <nalin@re...> - 2008-01-28 16:32
On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:
> > Seems like the ideal thing here would be for you and the other distro
> > maintainers to get together with Alec in a conversation and come to a

> > decision as to what licensing scheme y'all want. I haven't really done
> > much other than cleaning up the packaging and patches and a small
> > bit of
> > additional
code, so whatever licensing y'all come up with is fine
> > by me.
>
> I am sympathetic. Guys, what do you reckon?
>
> What I am hearing so far is that LGPL makes sense, since it can be
> linked with any code, not just GPL...

My apologies for not chiming in in anything resembling a reasonable timeframe.

I'd also suggest the LGPL, for the reason you noted above. Alternately, GPLv2 with the option of using the library under a later version of the GPL would permit applications which were released under version 3 of the GPL to use the library, too, which would be sufficient for the packages which are included in Fedora. FWIW, I'd personally lean toward LGPL.

In any case, I thank you both for working on sorting this out.

Cheers,

Nalin

Re: [Cracklib-devel] cracklib license
From: Mike Frysinger <vapier@ge...> - 2008-10-05 21:27

Attachments: Message as HTML

On Monday 28 January 2008, Nalin Dahyabhai wrote:
> On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:
> > > Seems like the ideal thing here would be for you and the other distro
> > > maintainers to get together with Alec in a conversation and come to a
> > > decision as to what licensing scheme y'all want. I haven't really done
> > > much other than cleaning up the packaging and patches and a small
> > > bit of
> > > additional code, so whatever licensing y'all come up with is fine
> > > by me.
> >
> > I am sympathetic. Guys, what do you reckon?
> >
> > What I am hearing so far is that LGPL makes sense, since it can be
> > linked with any code, not just GPL...
>

> My apologies for not chiming in in anything resembling a reasonable
> timeframe.
>
> I'd also suggest the LGPL, for the reason you noted above. Alternately,
> GPLv2 with the option of using
the library under a later version of the
> GPL would permit applications which were released under version 3 of the
> GPL to use the library, too, which would be sufficient for the packages
> which are included in Fedora. FWIW, I'd personally lean toward LGPL.
>
> In any case, I thank you both for working on sorting this out.

looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
the change now ?
-mike

Re: [Cracklib-devel] cracklib license
From: Alec Muffett <alecm@cr...> - 2008-10-05 23:18
>> In any case, I thank you both for working on sorting this out.
>
> looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
> the change now ?

yes. go for it. thanks++

-a

Re: [Cracklib-devel] cracklib license
From: Mike Frysinger <vapier@ge...> - 2008-10-25 22:34

Attachments: Message as HTML
On Sunday 05 October
2008, Alec Muffett wrote:
> >> In any case, I thank you both for working on sorting this out.
> >
> > looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we
> > make the change now ?
>
> yes. go for it. thanks++

Nathan Neulinger is the only one who can actually make said change ...
-mike

BELOW IS ORIGINAL LICENSING DISCUSSION RE CHANGING TO GPL from Artistic.

CrackLib was originally licensed with a variant of the Artistic license. In the
interests of wider acceptance and more modern licensing, it was switched with
the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed
as of 2007-10-01 with the following email from Alec Muffett.

The below email references nneul@umr.edu address, as that is the address
that was used at the time. For any future emails regarding this, please
use nneul@neulinger.org.

From
 alecm@crypticide.com Mon Oct 1 12:26:03 2007
Received: from umr-exproto2.cc.umr.edu ([131.151.0.192]) by UMR-CMAIL1.umr.edu with Microsoft
SMTPSVC(6.0.3790.3959);
  Mon, 1 Oct 2007 12:26:03 -0500
Received: from scansrv2.srv.mst.edu ([131.151.1.114]) by umr-exproto2.cc.umr.edu with Microsoft
SMTPSVC(6.0.3790.3959);
  Mon, 1 Oct 2007 12:26:02 -0500
Received: (qmail 8022 invoked from network); 1 Oct 2007 16:59:55 -0000
Received: from smtp1.srv.mst.edu (131.151.1.43)
 by scanin-ipvs.cc.umr.edu with SMTP; 1 Oct 2007 16:59:55 -0000
Received: from spunkymail-mx8.g.dreamhost.com (mx1.spunky.mail.dreamhost.com [208.97.132.47])
 by smtp1.srv.mst.edu (8.13.1/8.13.1) with ESMTP id l91Gxtpr020623
 for <nneul@umr.edu>; Mon, 1 Oct 2007 11:59:55 -0500
Received: from rutherford.zen.co.uk (rutherford.zen.co.uk [212.23.3.142])
 by spunkymail-mx8.g.dreamhost.com (Postfix) with ESMTP id 2C7734D311
 for <nneul@neulinger.org>; Mon, 1 Oct 2007 09:59:50 -0700 (PDT)
Received: from
 [82.68.43.14] (helo=[192.168.1.3])
 by rutherford.zen.co.uk with esmtp (Exim 4.50)
 id 1IcOcX-0004Qt-6L
 for nneul@neulinger.org; Mon, 01 Oct 2007 16:59:49 +0000
Mime-Version: 1.0 (Apple Message framework v752.2)
In-Reply-To: <1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
References: <1190922867.3457.147.camel@localhost.localdomain>
<EC90713277D2BE41B7110CCD74E235CEF44F38@UMR-CMAIL1.umr.edu>
<1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
Content-Type: text/plain; charset=US-ASCII; delsp=yes; format=flowed
Message-Id: <117A1264-F6DC-4E25-B0DD-56FBFEBE6E9F@crypticide.com>
Content-Transfer-Encoding: 7bit

From: Alec Muffett <alecm@crypticide.com>
Subject: Re: cracklib license
Date: Mon, 1 Oct 2007 17:59:46 +0100
To: Nathan Neulinger <nneul@neulinger.org>
X-Mailer: Apple Mail (2.752.2)
X-Originating-Rutherford-IP: [82.68.43.14]
Return-Path: alecm@crypticide.com
X-OriginalArrivalTime: 01 Oct 2007 17:26:03.0008 (UTC) FILETIME=[2420C000:01C80450]
Status: RO
Content-Length:
585
Lines: 21

>
> ---------- Forwarded message ----------
> From: Neulinger, Nathan <nneul@umr.edu>
> Date: Sep 27, 2007 2:58 PM
> Subject: RE: cracklib license
> To: alecm@crypto.dircon.co.uk
>
> Any chance you could write me a self-contained email stating clearly
> that the license is being changed to GPL, so I could include that
> email
> in the repository and clean up the repository/tarballs? I have all the
> original discussion, but something succinct and self contained
> would be
> ideal.

The license for my code in the Cracklib distribution is henceforth GPL.

Happy now? :-)

-a

1.95 xz 5.2.5-8.el9_0

1.95.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and

modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer

to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to

this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component

(kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under

the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the

Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization

keys, or other information required to install
and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own

removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent

(such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the
option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any

author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

XZ Utils Licensing

==========

Different licenses apply to different files in this package. Here
is a rough summary of which licenses apply to which parts of this
package (but check the individual files to be sure!):

- liblzma is in the public domain.

- xz, xzdec, and lzmadec command line tools are in the public
domain unless GNU getopt_long had to be compiled and linked
in from the lib directory. The getopt_long code is under
GNU LGPLv2.1+.

- The scripts to grep, diff, and view compressed files have been
adapted from gzip. These scripts and their documentation are
under GNU GPLv2+.

- All the documentation in the doc directory and most of the
XZ Utils specific documentation files in other directories
are in the public domain.

- Translated messages are in the public domain.

- The build system contains public domain files, and files that
are under GNU GPLv2+ or GNU
GPLv3+. None of these files end up
in the binaries being built.

- Test files and test code in the tests directory, and debugging
utilities in the debug directory are in the public domain.

- The extra directory may contain public domain files, and files
that are under various free software licenses.

You can do whatever you want with the files that have been put into
the public domain. If you find public domain legally problematic,
take the previous sentence as a license grant. If you still find
the lack of copyright legally problematic, you have too many
lawyers.

As usual, this software is provided "as is", without any warranty.

If you copy significant amounts of public domain code from XZ Utils
into your project, acknowledging this somewhere in your software is
polite (especially if it is proprietary, non-free software), but
naturally it is not legally required. Here is an example of a good
notice to

put into "about box" or into documentation:

This software includes code from XZ Utils <https://tukaani.org/xz/>.

The following license texts are included in the following files:
- COPYING.LGPLv2.1: GNU Lesser General Public License version 2.1
- COPYING.GPLv2: GNU General Public License version 2
- COPYING.GPLv3: GNU General Public License version 3

Note that the toolchain (compiler, linker etc.) may add some code
pieces that are copyrighted. Thus, it is possible that e.g. liblzma
binary wouldn't actually be in the public domain in its entirety
even though it contains no copyrighted code from the XZ Utils source
package.

If you have questions, don't hesitate to ask the author(s) for more
information.

1.96 zstd 1.5.1-2.el9

1.96.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it

in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not

covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those

sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and

of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
BSD License

For Zstandard software

Copyright (c) 2016-present, Facebook, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,

are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

* Neither the name Facebook nor the names of its contributors may be used to
  endorse or promote products derived from this software without specific
  prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.97 gobject-introspection 1.68.0-11.el9

1.97.1 Available under license :

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some

specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain

designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been
distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent
of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work
must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by
this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In
addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,

instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline

functions (ten lines or less in length), then the
use of the object
file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply
a copy of this License. If the work
during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany
the work with a written offer, valid for at
least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the source code distributed need not include anything that is normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the
executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based
on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions
for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not
distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system;
it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Library General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or
concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY
IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE
OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year>
<name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the
Free Software Foundation, Inc., 59 Temple Place - Suite 330,
Boston, MA 02111-1307 USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary.

Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty;

and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program

with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is

void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed

through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS

TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
 `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
gobject-introspection has two licenses; one for the typelib library,
and one for the tools.

* The typelib libraries (girepository/) are licensed under the LGPLv2+.
 See the file COPYING.LGPL.

* The remaining code is GPLv2+ compatible (see the file COPYING.GPL) and
 consists of a mix of GPLv2+, LGPLv2+ and MIT. See the license headers in
 each file for details.

In general where applicable files should have headers denoting their license
status; if they do not, please file a bug at
https://gitlab.gnome.org/GNOME/gobject-introspection/issues.

1.98 keyutils 1.6.3-1.el9

1.98.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. <http://fsf.org/>
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute
software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING

OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either
version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show
 w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
   GNU LESSER GENERAL PUBLIC LICENSE
       Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. <http://fsf.org/>
   51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

      Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

 This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use
 it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you
must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat
to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire
combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software
only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL
PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead
of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code,
which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore
covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2)

will operate properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally distributed (in either source or binary
form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must
be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining

where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any

such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices.
Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser
General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving
the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO

WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL
OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright"
line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU

Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper
mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.99 cyrus-sasl 2.1.27-21.el9

1.99.1 Available under license :

/* CMU libsasl
* Tim Martin
* Rob Earhart
* Rob Siemborski
*/
/*
* Copyright (c) 1998-2003 Carnegie Mellon University. All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
*
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
*
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in
*   the documentation and/or other materials provided with the
*   distribution.
*
* 3. The name "Carnegie Mellon University" must not be used to
*   endorse or promote products derived from this software without
*   prior written permission. For permission or any other legal

```
*    details, please contact
*      Office of Technology Transfer
*      Carnegie Mellon University
*      5000 Forbes Avenue
 *      Pittsburgh, PA  15213-3890
*      (412) 268-4387, fax: (412) 268-7395
*      tech-transfer@andrew.cmu.edu
*
* 4. Redistributions of any form whatsoever must retain the following
*    acknowledgment:
*    "This product includes software developed by Computing Services
*     at Carnegie Mellon University (http://www.cmu.edu/computing/)."
*
* CARNEGIE MELLON UNIVERSITY DISCLAIMS ALL WARRANTIES WITH REGARD TO
* THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
* AND FITNESS, IN NO EVENT SHALL CARNEGIE MELLON UNIVERSITY BE LIABLE
* FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
* WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN
* AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING
* OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
*/
/* CMU libsasl
* Tim Martin
* Rob Earhart
* Rob Siemborski
*/
/*
* Copyright (c) 2001 Carnegie Mellon University.  All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
*
* 1. Redistributions of source code must retain the above copyright
*    notice, this list of conditions and the following disclaimer.
*
* 2. Redistributions in binary form must reproduce the above copyright
*    notice, this list of conditions and the following disclaimer in
*    the documentation and/or other materials provided with the
*    distribution.
*
* 3. The name "Carnegie Mellon University" must not be used to
*    endorse or promote products derived from this software without
*    prior written permission. For permission or any other legal
*    details, please contact
*      Office of Technology Transfer
*      Carnegie Mellon University
*      5000 Forbes Avenue
```

* Pittsburgh, PA 15213-3890
* (412) 268-4387, fax: (412) 268-7395
* tech-transfer@andrew.cmu.edu
*
* 4. Redistributions of any form whatsoever must retain the following
* acknowledgment:
* "This product includes software developed by Computing Services
* at Carnegie Mellon University (http://www.cmu.edu/computing/)."
*
* CARNEGIE MELLON UNIVERSITY DISCLAIMS ALL WARRANTIES WITH REGARD TO
* THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
* AND FITNESS, IN NO EVENT SHALL CARNEGIE MELLON UNIVERSITY BE LIABLE
* FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
* WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN
* AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING
* OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
*/
Copyright (C) 1995-1997 Eric Young (eay@mincom.oz.au)
All rights reserved.

This package is an DES implementation written by Eric Young (eay@mincom.oz.au).
The implementation was written so as to conform with MIT's libdes.

This library is free for commercial and non-commercial use as long as
the following conditions are aheared to. The following conditions
apply to all code found in this distribution.

Copyright remains Eric Young's, and as such any Copyright notices in
the code are not to be removed.
If this package is used in a product, Eric Young should be given attribution
as the author of that the SSL library. This can be in the form of a textual
message at program startup or in documentation (online or textual) provided
with the package.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the copyright
  notice, this list of conditions and the
 following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software
  must display the following acknowledgement:
  This product includes software developed by Eric Young (eay@mincom.oz.au)

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND

ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY,
 OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

The license and distribution terms for any publically available version or
derivative of this code cannot be changed. i.e. this code cannot simply be
copied and put under another distrubution license
[including the GNU Public License.]

The reason behind this being stated in this direct manner is past
experience in code simply being copied and the attribution removed
from it and then being distributed as part of other packages. This
implementation was a non-trivial and unpaid effort.

1.100 keyutils-libs 1.6.3-1.el9

1.100.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. <http://fsf.org/>
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses

are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program
or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program
(or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to

control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent

license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute
software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY
OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either
version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show
w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc. <http://fsf.org/>
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use
it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you
must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the

library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free

software
only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL
PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation
is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation

and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility
in the modified Library refers to a function or a
table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any

application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code,

which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore
covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of
Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse

engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary

form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must
be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore,
by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the

original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License.
If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices.
Many people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new

versions of the Lesser
General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving
the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL
OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright"
line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.101 libarchive 3.5.3-4.el9

1.101.1 Available under license :

The libarchive distribution as a whole is Copyright by Tim Kientzle
and is subject to the copyright notice reproduced at the bottom of
this file.

Each individual file in this distribution should have a clear
copyright/licensing statement at the beginning of the file. If any do
not, please let me know and I will rectify it. The following is
intended to summarize the copyright status of the individual files;
the actual statements in the files are controlling.

* Except as listed below, all C sources (including .c and .h files)
 and documentation files are subject to the copyright notice reproduced
 at the bottom of this file.

* The following source files are also subject in whole or in part to
 a 3-clause UC Regents copyright; please read the individual source
 files for details:
  libarchive/archive_read_support_filter_compress.c
  libarchive/archive_write_add_filter_compress.c
  libarchive/mtree.5

* The following source files are in the public domain:
  libarchive/archive_getdate.c

*
 The following source files are triple-licensed with the ability to choose
 from CC0 1.0 Universal, OpenSSL or Apache 2.0 licenses:
  libarchive/archive_blake2.h
  libarchive/archive_blake2_impl.h
  libarchive/archive_blake2s_ref.c
  libarchive/archive_blake2sp_ref.c

* The build files---including Makefiles, configure scripts,
 and auxiliary scripts used as part of the compile process---have
 widely varying licensing terms. Please check individual files before
 distributing them to see if those restrictions apply to you.

I intend for all new source code to use the license below and hope over
time to replace code with other licenses with new implementations that
do use the license below. The varying licensing of the build scripts
seems to be an unavoidable mess.

Copyright (c) 2003-2018 <author(s)>

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1.
Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer
in this position and unchanged.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR(S) ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.102 gopkg-in-yaml-v2 2.4.0

1.102.1 Available under license :

Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of

the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or

agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.103 gotenv 1.6.0

1.103.1 Available under license :

The MIT License (MIT)

Copyright (c) 2013 Alif Rachmawadi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.104 libcap 2.48-9.el9_2

1.104.1 Available under license :

Unless otherwise *explicitly* stated the following text describes the
licensed conditions under which the contents of this module release
may be distributed:

Redistribution and use in source and binary forms of this module, with
or without modification, are permitted provided that the following
conditions are met:

1. Redistributions of source code must retain any existing copyright
  notice, and this entire permission notice in its entirety,
  including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current
  copyright notices, this list of conditions, and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

3. The name of any author may not be used to endorse or promote
  products derived from this software without their specific prior
  written permission.

ALTERNATIVELY, this product may be distributed under
 the terms of the
GNU Library General Public License, in which case the provisions of
the GNU LGPL are required INSTEAD OF the above restrictions. (This
clause is necessary due to a potential conflict between the GNU LGPL
and the restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

Unless otherwise *explicitly* stated, the following text describes the
licensed conditions under which the contents of this libcap/psx release
may be used and distributed:

Redistribution and use in source and binary forms of libcap/psx, with
or without modification, are permitted provided that the following
conditions are met:

1. Redistributions of source code must retain any existing copyright
  notice, and this entire permission notice in its entirety,
  including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current
  copyright notices, this list of conditions, and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

3. The name of any author may not be used to endorse or promote
  products derived from this software without their specific prior
  written permission.

ALTERNATIVELY, this product may be
 distributed under the terms of the
GNU General Public License (v2.0 - see below), in which case the
provisions of the GNU GPL are required INSTEAD OF the above
restrictions. (This clause is necessary due to a potential conflict
between the GNU GPL and the restrictions contained in a BSD-style
copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

Full
 text of gpl-2.0.txt:

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the
GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must
show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying,
distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only
if its contents constitute a work based on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such

interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the
Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with
the information you received as to the offer
to distribute corresponding source code. (This alternative is

allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access
to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the
Program (or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy
simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions
to the wide range of software distributed
through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new
versions will
be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT
OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it
does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright
(C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary
 programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
Unless otherwise *explicitly* stated, the following text describes the
licensed conditions under which the contents of this libcap/cap release
may be used and distributed:

Redistribution and use in source and binary forms of libcap/cap, with
or without modification, are permitted provided that the following
conditions are met:

1. Redistributions of source code must retain any existing copyright
  notice, and this entire permission notice in its entirety,
  including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current
  copyright notices, this list of conditions, and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

3. The name of any author may not be used to endorse or promote
  products derived from this software without their specific prior
  written permission.

ALTERNATIVELY, this product may be
 distributed under the terms of the
GNU General Public License (v2.0 - see below), in which case the
provisions of the GNU GPL are required INSTEAD OF the above
restrictions. (This clause is necessary due to a potential conflict
between the GNU GPL and the restrictions contained in a BSD-style
copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

Full
text of gpl-2.0.txt:

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the
GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must
show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and

(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying,
distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only
if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the
Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with
the information you received as to the offer
to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access
to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the
Program (or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy
simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions
to the wide range of software distributed
through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot

impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new
versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software
and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT
OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright

(C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary
programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.
Unless otherwise *explicitly* stated, the following text describes the licensed conditions under which the contents of this libcap release may be used and distributed:

Redistribution and use in source and binary forms of libcap, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain any existing copyright notice, and this entire permission notice in its entirety, including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current copyright notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name of any author may not be used to endorse or promote products derived from this software without their specific prior written permission.

ALTERNATIVELY, this product may be distributed
 under the terms of the
GNU General Public License (v2.0 - see below), in which case the
provisions of the GNU GPL are required INSTEAD OF the above
restrictions. (This clause is necessary due to a potential conflict
between the GNU GPL and the restrictions contained in a BSD-style
copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

Full
 text of gpl-2.0.txt:

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU
 Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not

price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its
contents constitute a work based on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a)
You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the

Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program
(or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information
you received as to the offer
to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any

associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access
to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program
(or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously

your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions
to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions
will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software

Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year
name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs.
If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.105 lua-libs 5.4.4-4.el9

1.105.1 Available under license :

No license file was found, but licenses were detected in source scan.

Freely available under the terms of the
Lua is free software,
more details.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua-5.4.4.tar.gz-cosi-expand-archive-8sdNEtxN/lua-5.4.4/doc/manual.html
No license file was found, but licenses were detected in source scan.

/**
* Copyright (C) 1994-2022 Lua.org, PUC-Rio.
*
* Permission is hereby granted, free of charge, to any person obtaining
* a copy of this software and associated documentation files (the
* "Software"), to deal in the Software without restriction, including
* without limitation the rights to use, copy, modify, merge, publish,
* distribute, sublicense, and/or sell copies of the Software, and to
* permit persons to whom the Software is furnished to do so, subject to
* the following conditions:
*
* The above copyright notice and this permission notice shall be
* included in all copies or substantial portions of the Software.
*
* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
* EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
* MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
* IN NO EVENT
 SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
* CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
* TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
* SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
**/

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua-5.4.4.tar.gz-cosi-expand-archive-8sdNEtxN/lua-5.4.4/src/lua.h
No license file was found, but licenses were detected in source scan.

--[[
****
* Copyright (C) 1994-2016 Lua.org, PUC-Rio.

*
* Permission is hereby granted, free of charge, to any person obtaining
* a copy of this software and associated documentation files (the
* "Software"), to deal in the Software without restriction, including
* without limitation the rights to use, copy, modify, merge, publish,
* distribute, sublicense, and/or sell copies of the Software, and to
* permit persons to whom the Software is furnished to do so, subject to
* the following conditions:
*
* The above copyright notice and this permission notice shall be
* included in all copies or substantial portions of the Software.
*
* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
* EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
* MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
* IN NO EVENT
SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
* CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
* TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
* SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
****
]]

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua-5.4.4-tests.tar.gz-cosi-expand-archive-jTWhqocX/lua-5.4.4-tests/all.lua
No license file was found, but licenses were detected in source scan.

License: MIT
general-purpose, stand-alone language. Lua is free software.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua.spec
No license file was found, but licenses were detected in source scan.

Freely available under the terms of the

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua-5.4.4.tar.gz-cosi-expand-archive-8sdNEtxN/lua-5.4.4/doc/contents.html
No license file was found, but licenses were detected in source scan.

Copyright (c) 1994-2013 Lua.org, PUC-Rio.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell

copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
 OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/mit.txt
No license file was found, but licenses were detected in source scan.

Lua is free software distributed under the terms of the
<A HREF="http://www.opensource.org/licenses/mit-license.html">MIT license</A>
Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
furnished to do so, subject to the following conditions:
The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-KYjhLyUh/lua-5.4.4.tar.gz-cosi-expand-archive-8sdNEtxN/lua-5.4.4/doc/readme.html

1.106 dbus-libs 1.12.20-8.el9

1.106.1 Available under license :

D-Bus is licensed to you under your choice of the Academic Free
License version 2.1, or the GNU General Public License version 2
(or, at your option any later version).

Both licenses are included here. Some of the standalone binaries are
under the GPL only; in particular, but not limited to,
tools/dbus-cleanup-sockets.c and test/decode-gcov.c. Each source code
file is marked with the proper copyright information - if you find a
file that isn't marked please bring it to our attention.

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a world-wide, royalty-free, non-exclusive, perpetual, sublicenseable license to do the following:

a) to reproduce the Original Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide, royalty-free, non-exclusive, perpetual, sublicenseable license, under patent claims owned or controlled by the Licensor that are embodied in the Original Work as furnished by the Licensor, to make, use, sell and offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the preferred form of the Original Work for making modifications to it and all available documentation describing how to modify the Original Work. Licensor hereby agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves the right to satisfy this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work, and by publishing the address of that information repository in a notice immediately following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or

any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or

limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any
of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this
License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section
shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not otherwise
restricted or conditioned by this License or by law, and
Licensor promises not to interfere with or be responsible for such uses by You.

This license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential differences between the Academic Free License (AFL) version 1.0 and other open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache licenses in many respects but it is intended to solve a few problems with those licenses.

* The AFL is written so as to make it clear what software is being licensed (by the inclusion of a statement following the copyright notice in the software). This way, the license functions better than a template license. The BSD,
MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD and Apache licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT, UoI/NCSA and Apache licenses rely on an implied patent license and contain

no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the licensor's trademarks. The Apache license contains such a provision, but the BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the copyright or that it is distributing the software under a license. None of the other licenses contain that warranty. All other warranties are disclaimed, as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute without modification). This ensures that the owner of the copyright to the

license will control changes. The Apache license contains a copyright notice, but the BSD, MIT and UoI/NCSA licenses do not.
--
START OF GNU GENERAL PUBLIC LICENSE
--

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not

covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based
on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files
to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print
an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those

sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place,
then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the
Program),
you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the
Program), the recipient automatically receives a license from the
original licensor to copy, distribute or modify the Program subject to
these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties to
this License.

7. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License
and any other pertinent obligations, then as a consequence you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through
that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the
present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and

of promoting the sharing and reuse of
software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT
NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software;
you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details
type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful
to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the copyright
notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.107 dbus-common 1.12.20-8.el9

1.107.1 Available under license :

D-Bus is licensed to you under your choice of the Academic Free
License version 2.1, or the GNU General Public License version 2
(or, at your option any later version).

Both licenses are included here. Some of the standalone binaries are
under the GPL only; in particular, but not limited to,
tools/dbus-cleanup-sockets.c and test/decode-gcov.c. Each source code
file is marked with the proper copyright information - if you find a
file that isn't marked please bring it to our attention.

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a
world-wide, royalty-free, non-exclusive, perpetual, sublicenseable
license to do the following:

a) to reproduce the Original
Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide, royalty-free, non-exclusive, perpetual, sublicenseable license, under patent claims owned or controlled by the Licensor that are embodied in the Original Work as furnished by the Licensor, to make, use, sell and offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the preferred form of the Original Work for making modifications to it and all available documentation describing how to modify the Original Work. Licensor hereby agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves
the right to satisfy
this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work, and by publishing the address of that information repository in a notice immediately following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims
other than the licensed claims
defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark

notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by

international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this
License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section
shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial

ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not otherwise
restricted or conditioned by this License or by law, and
Licensor promises not to interfere with or be responsible for such uses by You.

This license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential differences between the Academic Free License (AFL) version 1.0 and other open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache licenses in many respects but it is intended to solve a few problems with those licenses.

* The AFL is written so as to make it clear what software is being licensed (by the inclusion of a statement following the copyright notice in the software). This way, the license functions better than a template license. The BSD,
MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD and Apache licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT, UoI/NCSA and Apache licenses rely on an implied patent license and contain no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the licensor's trademarks. The Apache license contains such a provision, but the BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the copyright or that it is distributing the software under a license. None of the other licenses contain that warranty. All other warranties are disclaimed, as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute without modification). This ensures that the owner of the copyright to the

license will control changes. The Apache license contains a copyright notice,
but the BSD, MIT and UoI/NCSA licenses do not.
--
START OF GNU GENERAL PUBLIC LICENSE
--

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public
License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so
they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification
follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based
on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License

along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program)

on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place,
then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under

this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program),
you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License
and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through

that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE

PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software;
you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details
type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful
 to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
  derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT

OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.108 python-pip 21.3.1

1.108.1 Available under license :

This is the MIT license

Copyright (c) 2010 ActiveState Software Inc.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2017 Thomas Kluyver

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (C) 2016 Jason R Coombs <jaraco@jaraco.com>

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2010-2020 Benjamin Peterson

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the

library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free

software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must

be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to
a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed

under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the

major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under
the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the

original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people
have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new

versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of
all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

Apache License

Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this
License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,

except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS
This software is made available under the terms of *either* of the licenses
found in LICENSE.APACHE or LICENSE.BSD. Contributions to this software is made
under the terms of *both* these licenses.
MIT License

Copyright (c) 2021 Taneli Hukkinen

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2010 Jonathan Hartley
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

* Neither the name of the copyright holders, nor those of its contributors
may be used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2012 by Simon Sapin.

Some rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* The names of the contributors may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2018, Tzu-ping Chung <uranusjr@gmail.com>

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Copyright (C) 2008-2011 INADA Naoki <songofacandy@gmail.com>

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

***** BEGIN LICENSE BLOCK *****
This Source Code Form is subject to the terms of the Mozilla Public License,
v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain
one at http://mozilla.org/MPL/2.0/.

***** END LICENSE BLOCK *****
@(#) $RCSfile: certdata.txt,v $
$Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership of such entity.

"You"
(or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations,
or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems
that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not

pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution
of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly

negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental,
or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted
against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes

2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2

---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated
documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
Python Software Foundation; All Rights Reserved" are retained in Python alone or
in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS
OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise
using Python, Licensee
agrees to be bound by the terms and conditions of this License

Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the Individual or Organization ("Licensee") accessing and otherwise using this software in source or binary form and its associated documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License Agreement, BeOpen hereby grants Licensee a non-exclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use the Software alone or in any derivative version, provided, however, that the BeOpen Python License is retained in the Software, alone or in any derivative version prepared by Licensee.

3.
BeOpen is making the Software available to Licensee on an "AS IS" basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the

permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National
Research Initiatives, having an office at 1895 Preston White Drive,
Reston, VA 20191 ("CNRI"), and the Individual or Organization
("Licensee") accessing and otherwise using Python 1.6.1 software in
source or binary form and its associated documentation.

2. Subject to the terms and conditions
of this License Agreement, CNRI
hereby grants Licensee a nonexclusive, royalty-free, world-wide
license to reproduce, analyze, test, perform and/or display publicly,
prepare derivative works, distribute, and otherwise use Python 1.6.1
alone or in any derivative version, provided, however, that CNRI's
License Agreement and CNRI's notice of copyright, i.e., "Copyright (c)
1995-2001 Corporation for National Research Initiatives; All Rights
Reserved" are retained in Python 1.6.1 alone or in any derivative
version prepared by Licensee. Alternately, in lieu of CNRI's License
Agreement, Licensee may substitute the following text (omitting the
quotes): "Python 1.6.1 is made available subject to the terms and
conditions in CNRI's License Agreement. This Agreement together with
Python 1.6.1 may be located on the Internet using the following
unique, persistent identifier (known as a handle): 1895.22/1013. This
Agreement may also be obtained from a proxy server on the Internet
using the following
URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python 1.6.1 or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS"
basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6.
This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission
to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam, The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Stichting Mathematisch Centrum or CWI not be used in advertising or publicity pertaining to distribution of the software

without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
BSD 3-Clause License

Copyright (c) 2013-2021, Kim Davies
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2008-2021 The pip developers (see AUTHORS.txt file)

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to

the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012 Georgios Verigakis <verigak@gmail.com>
#
Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.
#
THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Copyright (c) 2006-2013 James Graham and other contributors

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

Copyright (c) 2008-2020 Andrey Petrov and contributors (see CONTRIBUTORS.txt)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright 2015 Eric Larson

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied.

See the License for the specific language governing permissions and
limitations under the License.
Copyright (c) Donald Stufft and individual contributors.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
   this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the

documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their

Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE

SOFTWARE OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes

of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute

copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify

the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

1.109 python-setuptools 53.0.0

1.109.1 Available under license :

Copyright Jason R. Coombs

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE
 OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.

1.110 github.com/sagikazarmark/slog-shim 0.1.0

1.110.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR

A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.111 python-requests 2.25.1

1.111.1 Available under license :

Requests
Copyright 2019 Kenneth Reitz

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical

transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made,

use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,

or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

1.112 rpm 4.16.1.3

1.112.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to
rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains

a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy
an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute
them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of
the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of
the work for
making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues),

conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions

either of that
version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively

convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) 19yy <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY
 WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program; if not, write to the Free Software
  Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) 19yy name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
 and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into

proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the
freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide

complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the

libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains
code derived from the library, while the latter only
works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of

running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what
the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent
notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square
root

function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by

this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the

Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.113 basesystem 11-13.el9

1.113.1 Available under license :

No license file was found, but licenses were detected in source scan.

%global distroname %(source /etc/os-release; echo ${REDHAT_SUPPORT_PRODUCT})

Summary: The skeleton package which defines a simple %{distroname} system
Name: basesystem
Version: 11
Release: 13%{?dist}
License: Public Domain
Requires(pre): setup filesystem
BuildArch: noarch

%description
Basesystem defines the components of a basic %{distroname} system
(for example, the package installation order to use during bootstrapping).
Basesystem should be in every installation of a system, and it
should never be removed.

%prep

%build

%install

%files

%changelog
* Mon Aug 09 2021 Mohan Boddu <mboddu@redhat.com> - 11-13
- Rebuilt for IMA sigs, glibc 2.34, aarch64 flags
Related: rhbz#1991688

* Thu Apr 15 2021 Mohan Boddu <mboddu@redhat.com> - 11-12
- Rebuilt for RHEL 9 BETA on Apr 15th 2021. Related: rhbz#1947937

* Tue Jan 26 2021 Fedora Release Engineering <releng@fedoraproject.org> - 11-11
- Rebuilt for https://fedoraproject.org/wiki/Fedora_34_Mass_Rebuild

*
Mon Jul 27 2020 Fedora Release Engineering <releng@fedoraproject.org> - 11-10
- Rebuilt for https://fedoraproject.org/wiki/Fedora_33_Mass_Rebuild

* Tue Jan 28 2020 Fedora Release Engineering <releng@fedoraproject.org> - 11-9
- Rebuilt for https://fedoraproject.org/wiki/Fedora_32_Mass_Rebuild

* Wed Jul 24 2019 Fedora Release Engineering <releng@fedoraproject.org> - 11-8
- Rebuilt for https://fedoraproject.org/wiki/Fedora_31_Mass_Rebuild

* Thu Jan 31 2019 Fedora Release Engineering <releng@fedoraproject.org> - 11-7
- Rebuilt for https://fedoraproject.org/wiki/Fedora_30_Mass_Rebuild

* Thu Jul 12 2018 Fedora Release Engineering <releng@fedoraproject.org> - 11-6
- Rebuilt for https://fedoraproject.org/wiki/Fedora_29_Mass_Rebuild

* Wed Feb 07 2018 Fedora Release Engineering <releng@fedoraproject.org> - 11-5
- Rebuilt for https://fedoraproject.org/wiki/Fedora_28_Mass_Rebuild

* Wed Jul 26 2017 Fedora Release Engineering <releng@fedoraproject.org>
- 11-4
- Rebuilt for https://fedoraproject.org/wiki/Fedora_27_Mass_Rebuild

* Fri Feb 10 2017 Fedora Release Engineering <releng@fedoraproject.org> - 11-3
- Rebuilt for https://fedoraproject.org/wiki/Fedora_26_Mass_Rebuild

* Wed Feb 03 2016 Fedora Release Engineering <releng@fedoraproject.org> - 11-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_24_Mass_Rebuild

* Thu Jul 09 2015 Ondrej Vasik <ovasik@redhat.com> 11-1
- automatically determine OS name at build time (#1195396)

* Wed Jun 17 2015 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-11
- Rebuilt for https://fedoraproject.org/wiki/Fedora_23_Mass_Rebuild

* Sat Jun 07 2014 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-10
- Rebuilt for https://fedoraproject.org/wiki/Fedora_21_Mass_Rebuild

* Sat Aug 03 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-9
- Rebuilt for https://fedoraproject.org/wiki/Fedora_20_Mass_Rebuild

* Wed Feb 13 2013 Fedora Release Engineering
<rel-eng@lists.fedoraproject.org> - 10.0-8
- Rebuilt for https://fedoraproject.org/wiki/Fedora_19_Mass_Rebuild

* Wed Jul 18 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-7
- Rebuilt for https://fedoraproject.org/wiki/Fedora_18_Mass_Rebuild

* Thu Jan 12 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-6
- Rebuilt for https://fedoraproject.org/wiki/Fedora_17_Mass_Rebuild

* Thu Jun 23 2011 Ondrej Vasik <ovasik@redhat.com> 10.0-5
- fix FTBFS typo (#715640), add disttag

* Mon Feb 07 2011 Fedora Release Engineering <rel-eng@lists.fedoraproject.org>
- Rebuilt for https://fedoraproject.org/wiki/Fedora_15_Mass_Rebuild

* Fri Jul 24 2009 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-3
- Rebuilt for https://fedoraproject.org/wiki/Fedora_12_Mass_Rebuild

* Mon Feb 23 2009 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 10.0-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_11_Mass_Rebuild

* Mon
Oct 20 2008 Phil Knirsch <pknirsch@redhat.com> 10.0-1
- Bump version and rebuild for Fedora 10 (#451289)

* Fri Mar 02 2007 Phil Knirsch <pknirsch@redhat.com> - 8.1-1
- Cleanup per package review (#225608)

* Wed Jul 12 2006 Jesse Keating <jkeating@redhat.com> - 8.0-5.1.1
- rebuild

* Fri Dec 09 2005 Jesse Keating <jkeating@redhat.com>
- rebuilt

* Wed Sep 22 2004 Bill Nottingham <notting@redhat.com>
- rebuilt

* Fri Feb 13 2004 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Wed Jan 22 2003 Tim Powers <timp@redhat.com>
- rebuilt

* Wed Aug 21 2002 Bill Nottingham <notting@redhat.com>
- bump rev

* Fri Jun 21 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Thu May 23 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Wed Jan 09 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Wed Jul 12 2000 Prospector <bugzilla@redhat.com>
- automatic rebuild

* Tue Jun 6 2000 Bill Nottingham <notting@redhat.com>
- rebuild. Wheee.

* Sun Mar 21 1999 Cristian Gafton <gafton@redhat.com>

- auto rebuild in the new build environment (release 4)

* Tue Mar 16 1999 Cristian Gafton <gafton@redhat.com>
- don't require rpm (breaks dependency chain)

* Tue Mar 16 1999 Erik Troan <ewt@redhat.com>
- require rpm

* Wed Dec 30 1998 Cristian Gafton <gafton@redhat.com>
- build for 6.0

* Tue Aug 11 1998 Jeff Johnson <jbj@redhat.com>
- build root

* Mon Apr 27 1998 Prospector System <bugs@redhat.com>
- translations modified for de, fr, tr

* Tue Sep 23 1997 Erik Troan <ewt@redhat.com>
- made a noarch package

Found in path(s):
* /basesystem-11-13.el9.src.rpm-cosi-expand-archive-DT4885Gu/basesystem.spec

1.114 python-dbus 1.2.18-2.el9

1.114.1 Available under license :

As of version 0.82.4, dbus-python itself is released under the following
permissive non-copyleft license (the same one that was proposed for
D-Bus core but wasn't achieved):

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

Copyright holders and licensing are indicated in the source files.

The dbus-gmain/ subdirectory is under a different license: see
dbus-gmain/COPYING for details.
The D-Bus GLib main loop bindings are licensed to you under your choice
of the Academic Free License version 2.1, or the GNU General Public
License version 2. Both licenses are included here.

In SPDX terms, this is:

SPDX-License-Identifier: AFL-2.1 OR GPL-2.0-or-later

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a
world-wide, royalty-free, non-exclusive, perpetual, sublicenseable
license to do the following:

a) to reproduce the Original Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work
and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide,
royalty-free, non-exclusive, perpetual, sublicenseable license, under
patent claims owned or controlled by the Licensor that are embodied in
the Original Work as furnished by the Licensor, to make, use, sell and
offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the
preferred form of the Original Work for making modifications to it and
all available documentation describing how to modify the Original
Work. Licensor hereby agrees to provide a machine-readable copy of the
Source Code of the Original Work along with each copy of the Original
Work that Licensor distributes. Licensor reserves the right to satisfy
this obligation by placing a machine-readable copy of the Source Code
in an information repository reasonably calculated
to permit
inexpensive and convenient access by You for as long as Licensor
continues to distribute the Original Work, and by publishing the
address of that information repository in a notice immediately
following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the

Original Work including, without limitation, damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between
Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary business, and
under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License

or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement concerning the subject matter
hereof. If any provision of this License
is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not otherwise restricted or conditioned by this License or by law, and Licensor promises not to interfere with or be responsible for such uses by You.

This
license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential differences between the Academic Free License (AFL) version 1.0 and other open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache licenses in many respects but it is intended to solve a few problems with those licenses.

* The AFL is written so as to make it clear what software is being licensed (by the inclusion of a statement following the copyright notice in the software). This way, the license functions better than a template license. The BSD, MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD and Apache
licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT, UoI/NCSA and Apache licenses rely on an implied patent license and contain no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the licensor's trademarks. The Apache license contains such a provision, but the BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the copyright or that it is distributing the software under a license. None of the other licenses contain that warranty. All other warranties are disclaimed, as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute without modification). This ensures that the owner of the copyright to the license will control changes. The Apache license contains a copyright notice, but the BSD, MIT and UoI/NCSA licenses do not.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring

to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you
this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a

special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For

example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor
to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR
THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions;
type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library
General
Public License instead of this License.

1.115 d-bus 1.12.20-8.el9

1.115.1 Available under license :

D-Bus is licensed to you under your choice of the Academic Free
License version 2.1, or the GNU General Public License version 2
(or, at your option any later version).

Both licenses are included here. Some of the standalone binaries are
under the GPL only; in particular, but not limited to,
tools/dbus-cleanup-sockets.c and test/decode-gcov.c. Each source code
file is marked with the proper copyright information - if you find a
file that isn't marked please bring it to our attention.

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a
world-wide, royalty-free, non-exclusive, perpetual, sublicenseable
license to do the following:

a) to reproduce the Original
Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide,
royalty-free, non-exclusive, perpetual, sublicenseable license, under
patent claims owned or controlled by the Licensor that are embodied in
the Original Work as furnished by the Licensor, to make, use, sell and
offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the
preferred form of the Original Work for making modifications to it and
all available documentation describing how to modify the Original

Work. Licensor hereby agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves the right to satisfy this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work, and by publishing the address of that information repository in a notice immediately following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation, the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A

PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between Licensor and You) is expressly prohibited by U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary

business, and under the laws of that jurisdiction excluding its conflict-of-law provisions. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any use of the Original Work outside the scope of this License or after its termination shall be subject to the requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101 et seq., the equivalent laws of other countries, and international treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License or seeking damages relating thereto, the prevailing party shall be entitled to recover its costs and expenses, including, without limitation, reasonable attorneys' fees and costs incurred in connection with such action, including any appeal of such action. This section
shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this License, whether in upper or lower case, means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with you. For purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not otherwise
restricted or conditioned by this License or by law, and
Licensor promises not to interfere with or be responsible for such uses by You.

This license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights reserved. Permission is hereby granted to copy and distribute this license without modification. This license may not be modified without the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential differences between the Academic Free License (AFL) version 1.0 and other

open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache licenses in many respects but it is intended to solve a few problems with those licenses.

* The AFL is written so as to make it clear what software is being licensed (by the inclusion of a statement following the copyright notice in the software). This way, the license functions better than a template license. The BSD,
MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD and Apache licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT, UoI/NCSA and Apache licenses rely on an implied patent license and contain no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the licensor's trademarks. The Apache license contains such a provision, but the BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the copyright or that it is distributing the software under a license. None of the other licenses contain that warranty. All other warranties are disclaimed, as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute without modification). This ensures that the owner of the copyright to the

license will control changes. The Apache license contains a copyright notice, but the BSD, MIT and UoI/NCSA licenses do not.
--
START OF GNU GENERAL PUBLIC LICENSE
--

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and

modification
follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based
on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files
to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place,
then offering equivalent
access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program),
you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License
and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through
that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the

present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of
software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT
NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest

possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software;
you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details
type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program

`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful
to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.116 gmp 6.2.0-13.el9

1.116.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to

address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest

possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they

know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

"Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section

4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,

procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of

it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting

any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying

Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is
necessary to install and execute a modified version of the
Combined Work produced by recombining or relinking the
Application with a modified version of the Linked Version. (If
you use option 4d0, the Installation Information must accompany
the Minimal Corresponding Source and Corresponding Application
Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we
stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that

patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated

conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of
technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you
receive it, in any medium, provided that you conspicuously and
appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all

recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the

machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source

as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in

source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under

this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within

the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
 do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/philosophy/why-not-lgpl.html>.

1.117 ncurses 6.2-10.20210508.el9

1.117.1 Available under license :

Upstream source https://invisible-island.net/ncurses/ncurses-examples.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 2003-2019,2020 by Thomas E. Dickey
Licence: X11

 Permission is hereby granted, free of charge, to any person obtaining a
 copy of this software and associated documentation files (the
 "Software"), to deal in the Software without restriction, including
 without limitation the rights to use, copy, modify, merge, publish,
 distribute, distribute with modifications, sublicense, and/or sell
 copies of the Software, and to permit persons to whom the Software is
 furnished to do so, subject to the following conditions:

 The above copyright notice and this permission notice shall be included
  in all copies or substantial portions of the Software.

 THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
 OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
 MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization from the X Consortium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent `make' implicit rules from creating a file called install from it when there is no Makefile.

This script is compatible with the BSD install script, but was written from scratch. It can only install one file at a time, a restriction shared with many OS's install programs.

On Debian systems, the complete text of the GNU General
Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8
Upstream source https://invisible-island.net/ncurses/ncurses.html
This package is used for testing builds of ncurses.

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 by Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 1996-2020,2021 by Thomas E. Dickey
Licence: X11

Files: doc/html/NCURSES-Programming-HOWTO.html
Copyright: 2001 by Pradeep Padala
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software
is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright
holders shall not be used in advertising or otherwise to promote the
sale, use or other dealings in this Software without prior written
authorization.

Files:
install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF
CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other deal-
ings in this Software without prior written authorization from the X Consor-
tium.

Files: progs/tset.c ncurses/tinfo/read_termcap.c
Copyright: 1980,1991,1992,1993 The Regents of the University of California.
License: BSD

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list
of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND

ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

-- vile: txtmode file-encoding=utf-8
Copyright 2018-2020,2021 Thomas E. Dickey
Copyright 1998-2017,2018 Free Software Foundation, Inc.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright
holders shall not be used in advertising or otherwise to promote the
sale, use or other dealings in this Software without prior written
authorization.

-- vile:txtmode fc=72
-- $Id: COPYING,v 1.10 2021/01/01 09:54:30 tom Exp $
Upstream source https://invisible-island.net/ncurses/Ada95.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 by Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 2010-2020,2021 by Thomas E. Dickey
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, distribute with modifications, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included

in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in

all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except
as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization from the X Consortium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent
`make' implicit rules from creating a file called install from it
when there is no Makefile.

This script is compatible with the BSD install script, but was written
from scratch. It can only install one file at a time, a restriction
shared with many OS's install programs.

On Debian systems, the complete text of the GNU General
Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8
Upstream source https://invisible-island.net/ncurses/ncurses-examples.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 2003-2020,2021 by Thomas E. Dickey
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell

copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright
holders shall not be used in advertising or otherwise to promote the
sale, use or other dealings in this Software without prior written
authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining
a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other deal-
ings in this Software without prior written authorization from the X Consor-
tium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent
`make' implicit rules from creating a file called install from it
when there is no Makefile.

This script is compatible with the BSD install script, but was written
from scratch. It can only install one file at a time, a restriction
shared with many OS's install programs.

On Debian systems, the complete text of the GNU General
Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8

1.118 python-dateutil 2.8.1-7.el9

1.118.1 Available under license :

Copyright 2017- Paul Ganssle <paul@ganssle.io>
Copyright 2017- dateutil contributors (see AUTHORS file)

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The above license applies to all contributions after 2017-12-01, as well as
all contributions that have been re-licensed (see AUTHORS file for the list of
contributors who have re-licensed their code).
---
dateutil - Extensions to the standard Python datetime module.

Copyright
(c) 2003-2011 - Gustavo Niemeyer <gustavo@niemeyer.net>
Copyright (c) 2012-2014 - Tomi Pievilinen <tomi.pievilainen@iki.fi>
Copyright (c) 2014-2016 - Yaron de Leeuw <me@jarondl.net>
Copyright (c) 2015- - Paul Ganssle <paul@ganssle.io>
Copyright (c) 2015- - dateutil contributors (see AUTHORS file)

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
  this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.
* Neither the name of the copyright holder nor the names of its
  contributors may be used to endorse or promote products derived from
  this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The above BSD License Applies to all code, even that also covered by Apache 2.0.
BSD-style without advertising clause

1.119 which 2.21-29.el9

1.119.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free

software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.

States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the

work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately

publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no

charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright

holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered

work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF

SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.120 gnupg 2.3.3-4.el9

1.120.1 Available under license :

Here is a list with collected copyright notices. For details see the
description of each individual package. [Compiled by wk 2017-11-07]

GNUPG is

Copyright (C) 1997-2017 Werner Koch
Copyright (C) 1994-2017 Free Software Foundation, Inc.
Copyright (C) 2003-2017 g10 Code GmbH
Copyright (C) 2002 Klarlvdalens Datakonsult AB
Copyright (C) 1995-1997, 2000-2007 Ulrich Drepper <drepper@gnu.ai.mit.edu>
Copyright (C) 1994 X Consortium
Copyright (C) 1998 by The Internet Society.
Copyright (C) 1998-2004 The OpenLDAP Foundation
Copyright (C) 1998-2004 Kurt D. Zeilenga.
Copyright (C) 1998-2004 Net Boolean Incorporated.
Copyright (C) 2001-2004 IBM Corporation.
Copyright (C) 1999-2003 Howard Y.H. Chu.
Copyright (C) 1999-2003 Symas Corporation.
Copyright (C) 1998-2003 Hallvard B. Furuseth.
Copyright (C) 1992-1996 Regents of the University of Michigan.
Copyright (C) 2000 Dimitrios Souflis

Copyright (C) 2008,2009,2010,2012-2016 William Ahern

GnuPG is free software;
you can redistribute it and/or modify it
under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

GnuPG is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY
or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public
License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <https://www.gnu.org/licenses/>.

LIBGCRYPT is

Copyright (C) 1989,1991-2017 Free Software Foundation, Inc.
Copyright (C) 1994 X Consortium
Copyright (C) 1996 L. Peter Deutsch
Copyright (C) 1997 Werner Koch
Copyright (C) 1998 The Internet Society
Copyright (C) 1996-1999 Peter Gutmann, Paul Kendall, and Chris Wedgwood
Copyright (C) 1996-2006 Peter Gutmann, Matt Thomlinson and Blake Coverett
Copyright (C) 2003 Nikos Mavroyanopoulos
Copyright (C) 2006-2007 NTT (Nippon Telegraph and Telephone Corporation)
Copyright (C) 2012-2017 g10 Code GmbH
Copyright (C) 2012 Simon Josefsson, Niels Mller
Copyright (c) 2012 Intel Corporation
Copyright (C) 2013 Christian Grothoff
Copyright (C) 2013-2017 Jussi Kivilinna
Copyright (C) 2013-2014 Dmitry Eremin-Solenikov
Copyright (C) 2014 Stephan Mueller
Copyright (C) 2017 Bundesamt fr Sicherheit in der Informationstechnik

Libgcrypt is free software; you can redistribute it and/or modify
it under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

Libgcrypt is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU Lesser General Public License for more details.

You should have received a copy of the

GNU Lesser General Public
License along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBGPG-ERROR is

Copyright (C) 2003-2004, 2010, 2013-2017 g10 Code GmbH

libgpg-error is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public License
as published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

libgpg-error is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBASSUAN is

Copyright (C) 1992-2013 Free Software Foundation, Inc.
Copyright (C) 1994 X Consortium
Copyright (C) 2000 Werner Koch (dd9jn)
Copyright (C)
2001-2016 g10 Code GmbH
Copyright (C) 2004 Simon Josefsson

Assuan is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

Assuan is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this program; if not, see <http://www.gnu.org/licenses/>.

LIBKSBA is

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2010, 2011

2012, 2013, 2014, 2015 g10 Code GmbH
Copyright (C) 2001, 2002, 2003, 2007 Free Software Foundation, Inc.
Copyright (C) 2000, 2001 Fabio Fiorina

The library and the header files are distributed under
the following
terms (LGPLv3+/GPLv2+):

KSBA is free software; you can redistribute it and/or modify
it under the terms of either

- the GNU Lesser General Public License as published by the Free
  Software Foundation; either version 3 of the License, or (at
  your option) any later version.

or

- the GNU General Public License as published by the Free
  Software Foundation; either version 2 of the License, or (at
  your option) any later version.

or both in parallel, as here.

KSBA is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY
or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public
License for more details.

The other parts (e.g. manual, build system, tests) are distributed
under the following terms (GPLv3):

KSBA is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the
Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

KSBA is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

NPTH is

Copyright (C) 2011, 2012, 2014, 2015, 2017 g10 Code GmbH

nPth is free software; you can redistribute it and/or modify

it under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

nPth is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See
the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this program;
if not, see <https://www.gnu.org/licenses/>.

NTBTLS is

Copyright (C) 2006-2014 Brainspark B.V.
Copyright (C) 2014-2017 g10 Code GmbH

NTBTLS is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

NTBTLS is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

PINENTRY is

Copyright (C) 1999 Robert Bihlmeyer <robbe@orcus.priv.at>
Copyright (C) 2001-2004, 2007-2008, 2010, 2015-2016 g10 Code GmbH
Copyright (C) 2002, 2008 Klarlvdalens Datakonsult AB (KDAB)
Copyright (C) 2004 by Albrecht
Dre <albrecht.dress@arcor.de>
Copyright 2007 Ingo Klcker
Copyright (C) 2014 Serge Voilokov
Copyright (C) 2015 Daiki Ueno
Copyright (C) 2015 Daniel Kahn Gillmor <dkg@fifthhorseman.net>
Copyright 2016 Intevation GmbH

PINENTRY is free software; you can redistribute it and/or modify it
under the terms of the GNU General Public License as published by

the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

PINENTRY is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <https://www.gnu.org/licenses/>.

GPGME is

Copyright (C) 1991-2013 Free Software Foundation, Inc.
Copyright (C) 2000-2001 Werner Koch
Copyright (C) 2001-2017 g10 Code GmbH

Copyright (C) 2002 Klarlvdalens Datakonsult AB
Copyright (C) 2004-2008 Igor Belyi
Copyright (C) 2002 John Goerzen
Copyright (C) 2014, 2015 Martin Albrecht
Copyright (C) 2015 Ben McGinnes
Copyright (C) 2015-2016 Bundesamt fr Sicherheit in der Informationstechnik
Copyright (C) 2016 Intevation GmbH

GPGME is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.

GPGME is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

NSIS is

Copyright 1999-2009 Nullsoft and Contributors
Copyright 2002-2008 Amir Szekely
Copyright 2003 Ramon

This license applies to everything in the NSIS package, except where
otherwise noted.

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.

3. This notice may not be removed or altered from any source distribution.

The user interface used with the installer is

Copyright 2002-2009 Joost Verburg

[It is distributed along with NSIS and the same conditions as stated above apply]

TinySCHEME is part of the GnuPG package and is

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of Dimitrios Souflis nor the names of the contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED
BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

LIBDNS is part of the GnuPG package and is

Copyright (c) 2008, 2009, 2010, 2012-2016 William Ahern

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"),
to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN
NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE
USE OR OTHER DEALINGS IN THE SOFTWARE.

ZLIB is

(C) 1995-2013 Jean-loup Gailly and Mark Adler

This software is provided
'as-is', without any express or implied
warranty. In no event will the authors be held liable for any damages
arising from the use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not
   claim that you wrote the original software. If you use this software
   in a product, an acknowledgment in the product documentation would be
   appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be
   misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

BZIP2 is

This program, "bzip2", the associated library "libbzip2", and all
documentation,
are copyright (C) 1996-2010 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
   not claim that you wrote the original software. If you use this
   software in a product, an acknowledgment in the product
   documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
   not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote
   products derived from this software without specific prior written
   permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS
OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL

DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

SQLITE has

been put into the public-domain by its author D. Richard Hipp:
The author disclaims copyright to this source code. In place of
a legal notice, here is a blessing:

May you do good and not evil.
May you find forgiveness for yourself and forgive others.
May you share freely, never taking more than you give.

[Note that only a few files are distributed under this license.]

Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing
to a commons of creative, cultural and
scientific works ("Commons") that the public can reliably and without fear of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific

works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation thereof, including any amended or successor version of such directive); and
vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each

member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document.
b. Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.
d. Affirmer understands and acknowledges that Creative Commons is

not a
party to this document and has no duty or obligation with respect to
this CC0 or use of the Work.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright on the software, and (2) offer
you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those
domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To
"modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate
Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than
the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all

the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users'

Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep
intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license
the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7

additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This

alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge.
You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object
code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute
modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because

modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you

add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional
terms are considered "further
restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may
not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your
receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time
you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not
impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control"
includes the right to grant
patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING,
BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer
of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea

of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software: you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation, either version 3 of the License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

 If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

  <program> Copyright (C) <year> <name of author>
  This program comes with ABSOLUTELY
NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But first,
 please read
<https://www.gnu.org/philosophy/why-not-lgpl.html>.
                GNU GENERAL PUBLIC LICENSE
                  Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free

program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause

any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete

machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the

Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if

necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
[Note that only a few files are distributed under this license.]

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically
libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get

it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original

library. The ordinary
General Public License therefore permits such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free
libraries. In this
case, there is little to gain by limiting the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library,
whereas the latter must
be combined with the library in order to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of

this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim
or with modifications and/or translated
straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies
of the Library's
complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public

License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.
^L
Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library
(because it
contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise,
if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy
of this License. Also, you must do one
of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than
copying library functions into the executable, and (2)
will operate properly with a modified version of the library, if

the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the
materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.
^L
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library
with a copy of the same work
based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the
Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole

purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written
in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the
Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.

EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY
OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It
is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free
Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

LICENSE TERMS

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

Neither the name of Dimitrios Souflis nor the names of the
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,

EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
[Note that only a few files are distributed under this license.]

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the

Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without
being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material
is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library

facilities that are not Applications and are not
covered by this
License, and convey such a combined library under terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it
is a work based on the Library, and explaining where to find the
accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions
of the GNU Lesser General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the
Library as you received it specifies that a certain numbered version
of the GNU Lesser General Public License "or
any later version"
applies to it, you have the option of following the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser
General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.
COPYING.other -*- org -*-
#+TITLE: List of code with permissive licenses as used by GnuPG.
#+STARTUP: showall

* DNS resolver (dirmngr/dns.c)

dns.c - Recursive, Reentrant DNS Resolver.

Copyright (c) 2008, 2009, 2010, 2012-2016 William Ahern

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the

"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY
OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN
NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE
USE OR OTHER DEALINGS IN THE SOFTWARE.

* TinySCHEME (tests/gpgscm/LICENSE.TinySCHEME)

Copyright (c) 2000, Dimitrios Souflis
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided
with the distribution.

Neither the name of Dimitrios Souflis nor the names of the
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING

NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* Regular
expression support

regexp/jimregexp.[ch]:

Originally:

Copyright (c) 1986 by University of Toronto.
Written by Henry Spencer. Not derived from licensed software.

Subsequently modified by:

1986 John Gilmore hoptoad!gnu
1987 James A. Woods ames!jaw
1993 Christopher Seiwald seiwald@vix.com
2000, 2002 Christopher Seiwald <seiwald@perforce.com>
2010 Steve Bennett <steveb@workware.net.au>
2020 NIIBE Yutaka <gniibe@fsij.org>

Permission is granted to anyone to use this software for any
purpose on any computer system, and to redistribute it freely,
subject to the following restrictions:

1. The author is not responsible for the consequences of use of
this software, no matter how awful, even if they arise
from defects in it.

2. The origin of this software must not be misrepresented, either
by explicit claim or by omission.

3. Altered versions must be plainly marked as such, and must not
be misrepresented as being the
original software.

regexp/utf8.[ch] (see regexp/LICENSE):

(c) 2010-2016 Steve Bennett <steveb@workware.net.au>

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or other materials
   provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE JIM TCL PROJECT ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
JIM TCL PROJECT OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The views and conclusions contained in the software and documentation
are those of the authors and should not be interpreted as representing
official policies, either expressed or implied, of the Jim Tcl Project.

UnicodeData.txt:

Copyright 1991-2020 Unicode, Inc. All rights reserved.
Distributed under the Terms of Use in https://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining
a copy of the Unicode data files and any associated documentation
(the "Data Files") or Unicode software and any associated documentation
(the "Software")
to deal in the Data Files or Software
without restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, and/or sell copies of
the Data Files or Software, and to permit persons to whom the Data Files
or Software are furnished to do so, provided that either
(a) this copyright and permission notice appear with all copies
of the Data Files or Software, or
(b) this copyright and permission notice appear in associated
Documentation.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF
ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT OF THIRD PARTY RIGHTS.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS

NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER
TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

1.121 libffi 3.4.2-8.el9

1.121.1 Available under license :

The libffi source distribution contains certain code that is not part of libffi, and is only used as tooling to assist with the building and testing of libffi. This includes the msvcc.sh script used to wrap the Microsoft compiler with GNU compatible command-line options, make_sunver.pl, and the libffi test code distributed in the testsuite/libffi.bhaible directory. This code is distributed with libffi for the purpose of convenience only, and libffi is in no way derived from this code.

msvcc.sh an testsuite/libffi.bhaible are both distributed under the terms of the GNU GPL version 2, as below.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by

the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed

under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program
or a portion of it,
either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program
a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the
most ordinary way, to print or display an
announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under

these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the
scripts used to
control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have
received copies, or rights, from you under
this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You
are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or

otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance
of the section is intended to
apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright
holder who places the Program under this License
may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free

Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more
details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work
as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may

consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
libffi - Copyright (c) 1996-2021 Anthony Green, Red Hat, Inc and others.
See source files for details.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
 CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.122 zlib 1.2.11-40.el9

1.122.1 Available under license :

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE
FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

1.123 lua 5.4.4-4.el9

1.123.1 Available under license :

No license file was found, but licenses were detected in source scan.

```
--[[
*********************************************************************
* Copyright (C) 1994-2016 Lua.org, PUC-Rio.
*
* Permission is hereby granted, free of charge, to any person obtaining
* a copy of this software and associated documentation files (the
* "Software"), to deal in the Software without restriction, including
* without limitation the rights to use, copy, modify, merge, publish,
* distribute, sublicense, and/or sell copies of the Software, and to
* permit persons to whom the Software is furnished to do so, subject to
* the following conditions:
*
* The above copyright notice and this permission notice shall be
* included in all copies or substantial portions of the Software.
*
* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
* EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
* MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
* IN NO EVENT
 SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
* CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
* TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
* SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
*********************************************************************
]]
```

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua-5.4.4-tests.tar.gz-cosi-expand-archive-bgThrYwt/lua-5.4.4-tests/all.lua
No license file was found, but licenses were detected in source scan.

Copyright (c) 1994-2013 Lua.org, PUC-Rio.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION
 OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/mit.txt
No license file was found, but licenses were detected in source scan.

License: MIT
general-purpose, stand-alone language. Lua is free software.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua.spec
No license file was found, but licenses were detected in source scan.

/**
* Copyright (C) 1994-2022 Lua.org, PUC-Rio.
*
* Permission is hereby granted, free of charge, to any person obtaining
* a copy of this software and associated documentation files (the
* "Software"), to deal in the Software without restriction, including
* without limitation the rights to use, copy, modify, merge, publish,
* distribute, sublicense, and/or sell copies of the Software, and to
* permit persons to whom the Software is furnished to do so, subject to
* the following conditions:
*
* The above copyright notice and this permission notice shall be
* included in all copies or substantial portions of the Software.
*
* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
* EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
* MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
* IN NO EVENT
 SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
* CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,

* TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
* SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
**/

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua-5.4.4.tar.gz-cosi-expand-archive-H3vPp9TN/lua-5.4.4/src/lua.h
No license file was found, but licenses were detected in source scan.

Freely available under the terms of the
Lua is free software,
more details.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua-5.4.4.tar.gz-cosi-expand-archive-H3vPp9TN/lua-5.4.4/doc/manual.html
No license file was found, but licenses were detected in source scan.

Freely available under the terms of the

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua-5.4.4.tar.gz-cosi-expand-archive-H3vPp9TN/lua-5.4.4/doc/contents.html
No license file was found, but licenses were detected in source scan.

Lua is free software distributed under the terms of the
<A HREF="http://www.opensource.org/licenses/mit-license.html">MIT license</A>
Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
furnished to do so, subject to the following conditions:
The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

Found in path(s):
* /lua-5.4.4-4.el9.src.rpm-cosi-expand-archive-7X4CNuok/lua-5.4.4.tar.gz-cosi-expand-archive-H3vPp9TN/lua-5.4.4/doc/readme.html

1.124 xz-libs 5.2.5-8.el9_0

1.124.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies

of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the

program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause

any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete

machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the

Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if

necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of

packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works

for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a

copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent

the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders of
that material) supplement the terms of this License with terms:

a) Disclaiming warranty or
limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you

must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and
finally terminates your license, and (b) permanently, if the copyright
holder fails to notify you of the violation by some reasonable means
prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright
holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, you do not qualify to receive new licenses for the same
material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or
run a copy of the Program. Ancillary propagation of a covered work
occurring solely as a consequence of using peer-to-peer transmission
to receive a copy likewise does not require acceptance. However,
nothing other than this License grants you permission to propagate or
modify any covered work. These actions infringe copyright if you do
not accept this License. Therefore, by modifying or propagating a
covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and

propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or

that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's

public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to

do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

XZ Utils Licensing
==========

Different licenses apply to different files in this package. Here
is a rough summary of which licenses apply to which parts of this
package (but check the individual files to be sure!):

- liblzma is in the public domain.

- xz, xzdec, and lzmadec command line tools are in the public
domain unless GNU getopt_long had to be compiled and linked
in from the lib directory. The getopt_long code is under
GNU LGPLv2.1+.

- The scripts to grep, diff, and view compressed files have been
adapted from gzip. These scripts and their documentation are
under GNU GPLv2+.

- All the documentation in the doc directory and most of the
XZ Utils specific documentation files in other directories
are in the public domain.

- Translated messages are in the public domain.

- The build system contains public domain files, and files that
are under GNU GPLv2+ or GNU
GPLv3+. None of these files end up
in the binaries being built.

- Test files and test code in the tests directory, and debugging
utilities in the debug directory are in the public domain.

- The extra directory may contain public domain files, and files
that are under various free software licenses.

You can do whatever you want with the files that have been put into
the public domain. If you find public domain legally problematic,
take the previous sentence as a license grant. If you still find
the lack of copyright legally problematic, you have too many
lawyers.

As usual, this software is provided "as is", without any warranty.

If you copy significant amounts of public domain code from XZ Utils

into your project, acknowledging this somewhere in your software is
polite (especially if it is proprietary, non-free software), but
naturally it is not legally required. Here is an example of a good
notice to
put into "about box" or into documentation:

This software includes code from XZ Utils <https://tukaani.org/xz/>.

The following license texts are included in the following files:
- COPYING.LGPLv2.1: GNU Lesser General Public License version 2.1
- COPYING.GPLv2: GNU General Public License version 2
- COPYING.GPLv3: GNU General Public License version 3

Note that the toolchain (compiler, linker etc.) may add some code
pieces that are copyrighted. Thus, it is possible that e.g. liblzma
binary wouldn't actually be in the public domain in its entirety
even though it contains no copyrighted code from the XZ Utils source
package.

If you have questions, don't hesitate to ask the author(s) for more
information.

1.125 ncurses-libs 6.2-10.20210508.el9

1.125.1 Available under license :

Upstream source https://invisible-island.net/ncurses/ncurses-examples.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 2003-2019,2020 by Thomas E. Dickey
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright
holders shall not be used in advertising or otherwise to promote the
sale, use or other dealings in this Software without prior written
authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining
a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other deal-
ings in this Software without prior written authorization from the X Consor-
tium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent
`make' implicit rules from creating a file called install from it

when there is no Makefile.

This script is compatible with the BSD install script, but was written
from scratch. It can only install one file at a time, a restriction
shared with many OS's install programs.

On Debian systems, the complete text of the GNU General
Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8
Upstream source https://invisible-island.net/ncurses/ncurses.html
This package is used for testing builds of ncurses.

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 by Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 1996-2020,2021 by Thomas E. Dickey
Licence: X11

Files: doc/html/NCURSES-Programming-HOWTO.html
Copyright: 2001 by Pradeep Padala
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software
is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

Files:
install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization from the X Consortium.

Files: progs/tset.c ncurses/tinfo/read_termcap.c
Copyright: 1980,1991,1992,1993 The Regents of the University of California.
License: BSD

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list

of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

-- vile: txtmode file-encoding=utf-8
Copyright 2018-2020,2021 Thomas E. Dickey
Copyright 1998-2017,2018 Free Software Foundation, Inc.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, distribute with modifications, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR
THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright
holders shall not be used in advertising or otherwise to promote the
sale, use or other dealings in this Software without prior written
authorization.

-- vile:txtmode fc=72
-- $Id: COPYING,v 1.10 2021/01/01 09:54:30 tom Exp $
Upstream source https://invisible-island.net/ncurses/Ada95.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 by Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package
Copyright: 2010-2020,2021 by Thomas E. Dickey
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, distribute with modifications, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included

in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a

copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except
as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other deal-
ings in this Software without prior written authorization from the X Consor-
tium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent
`make' implicit rules from creating a file called install from it
when there is no Makefile.

This script is compatible with the BSD install script, but was written
from scratch. It can only install one file at a time, a restriction
shared with many OS's install programs.

On Debian systems, the complete text of the GNU General
Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8
Upstream source https://invisible-island.net/ncurses/ncurses-examples.html

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

Files: *
Copyright: 2017-2020,2021 Thomas E. Dickey
Copyright: 1998-2016,2017 Free Software Foundation, Inc.
Licence: X11

Files: aclocal.m4 package

Copyright: 2003-2020,2021 by Thomas E. Dickey
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, distribute with modifications, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

Files: install-sh
Copyright: 1994 X Consortium
Licence: X11

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-

TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization from the X Consortium.

FSF changes to this file are in the public domain.

Calling this script install-sh is preferred over install.sh, to prevent `make' implicit rules from creating a file called install from it when there is no Makefile.

This script is compatible with the BSD install script, but was written from scratch. It can only install one file at a time, a restriction shared with many OS's install programs.

On Debian systems, the complete text of the GNU General Public License can be found in '/usr/share/common-licenses/GPL-2'

-- vile: txtmode file-encoding=utf-8

1.126 mux 1.8.1

1.126.1 Available under license :

Copyright (c) 2023 The Gorilla Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER

OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.127 sigs-k8s-io-yaml 1.4.0

1.127.1 Available under license :

Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

This project is covered by two different licenses: MIT and Apache.

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go
writerc.go yamlh.go yamlprivateh.go

Copyright (c) 2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial
portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR
CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one

of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT

(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The forked go-yaml.v3 library under this project is covered by two
different licenses (MIT and Apache):

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go
writerc.go yamlh.go yamlprivateh.go

Copyright (c)
2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The forked go-yaml.v2 library under the project is covered by an
Apache license:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND
CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall
mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or

Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative
Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding
communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section)
patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s)

with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet
the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution

of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason

of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS"
BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.128 afero 1.11.0

1.128.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its

distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

1.129 spf13-cast 1.6.0

1.129.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Steve Francia

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.130 spf13-afero 1.11.0

1.130.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct

or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

1.131 properties 1.8.7

1.131.1 Available under license :

Copyright (c) 2013-2020, Frank Schroeder

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
 OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.132 spew 1.1.2-0.20180830191138-d8f796af33cc

1.132.1 Available under license :

ISC License

Copyright (c) 2012-2016 Dave Collins <dave@davec.name>

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR

ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.133 sqlite 3.34.1-7.el9_3

1.133.1 Available under license :

The author disclaims copyright to this source code. In place of
a legal notice, here is a blessing:

  May you do good and not evil.
  May you find forgiveness for yourself and forgive others.
  May you share freely, never taking more than you give.
The author disclaims copyright to this source code. In place of
a legal notice, here is a blessing:

* May you do good and not evil.
* May you find forgiveness for yourself and forgive others.
* May you share freely, never taking more than you give.

1.134 uuid 1.6.0

1.134.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall
mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original
work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the
Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along

with the Derivative Works; or,

within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill,

work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
The Uuid Project is copyright 2013-2014, The Rust Project Developers and
copyright 2018, The Uuid Developers.

Licensed under the Apache License, Version 2.0 <LICENSE-APACHE or
http://www.apache.org/licenses/LICENSE-2.0> or the MIT License <LICENSE-MIT or

http://opensource.org/licenses/MIT>, at your option. All files in the project
carrying such notice may not be copied, modified, or distributed except
according to those terms.
Copyright (c) 2021 The Uuid Developers

Permission is hereby granted, free of charge, to any
person obtaining a copy of this software and associated
documentation files (the "Software"), to deal in the
Software without restriction, including without
limitation the rights to use, copy, modify, merge,
publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software
is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice
shall be included in all copies or substantial portions
of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF
ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED
TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT
SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
Copyright (c) 2014 The Rust Project Developers
Copyright (c) 2018 Ashley Mannix, Christopher Armstrong, Dylan DPC, Hunar Roop Kahlon

Permission is hereby granted, free of charge, to any
person obtaining a copy of this software and associated
documentation files (the "Software"), to deal in the
Software without restriction, including without
limitation the rights to use, copy, modify, merge,
publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software
is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice
shall be included in all copies or substantial portions
of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF
ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED

TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT
SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
The Uuid Project is copyright 2021, The Uuid Developers.

Licensed under the Apache License, Version 2.0 <LICENSE-APACHE or
http://www.apache.org/licenses/LICENSE-2.0> or the MIT License <LICENSE-MIT or
http://opensource.org/licenses/MIT>, at your option. All files in the project
carrying such notice may not be copied, modified, or distributed except
according to those terms.

1.135 google-uuid 1.6.0

1.135.1 Available under license :

Paul Borman <borman@google.com>
bmatsuo
shawnps
theory
jboverfelt
dsymonds
cd1
wallclockbuilder
dansouza
Copyright (c) 2009,2014 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR

A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.136 libcom-err 1.46.5-5.el9

1.136.1 Available under license :

This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2001 by Andries Brouwer
Copyright (C) 1999, 2000, 2003 by Theodore Ts'o

You are free to distribute this software under the terms of the GNU
Lesser (Library) General Public License.

On Debian systems, the complete text of the GNU Lesser (Library)
General Public License can be found in /usr/share/common-licenses/LGPL-2.
This is the Debian GNU/Linux prepackaged version of the static EXT2
file system consistency checker (e2fsck.static). The EXT2 utilities
were written by Theodore Ts'o <tytso@mit.edu> and Remy Card
<card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2006 Theodore Ts'o <tytso@mit.edu>
Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
Copyright (c) 2001 Alcove <http://www.alcove.com/>
Copyright (c) 1997 Klee Dienes
Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, is protected by the GNU
General Public License.

 Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General
Public License can be found in `/usr/share/common-licenses/GPL-2'.

```
#
# This is a Makefile stub which handles the creation of BSD shared
# libraries.
#
# In order to use this stub, the following makefile variables must be defined.
#
# BSDLIB_VERSION = 1.0
# BSDLIB_IMAGE = libce
# BSDLIB_MYDIR = et
# BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

all:: image

real-subdirs:: Makefile
 @echo " MKDIR pic"
 @mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)
BSDLIB_PIC_FLAG = -fpic

image:  $(BSD_LIB)

$(BSD_LIB): $(OBJS)
 (cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
 $(MV) pic/$(BSD_LIB) .
 $(RM) -f ../$(BSD_LIB)
 (cd ..; $(LN) $(LINK_BUILD_FLAGS) \
  `echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
 @echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
 @$(INSTALL_PROGRAM) $(BSD_LIB) \
  $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
 @-$(LDCONFIG)

install-strip: install
```

```
install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
 $(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)

clean::
 $(RM)
 -rf pic
 $(RM) -f $(BSD_LIB)
 $(RM) -f ../$(BSD_LIB)
```

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, and the entire permission notice in its entirety,
   including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
   products derived from this software without specific prior
   written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

This is the Debian GNU/Linux prepackaged version of the translation
files of the EXT2 file system utilities. The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card
<card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2006 Theodore Ts'o <tytso@mit.edu>
        Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
    Copyright (c) 2001 Alcove <http://www.alcove.com/>
    Copyright (c) 1997 Klee Dienes
    Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, is protected by the GNU
General Public License.

Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General
Public License can be found in `/usr/share/common-licenses/GPL-2'.
This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Fri Dec 14 22:24:35 EST 2007

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007 by
Theodore Ts'o

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from
this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR

BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c
+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
+   Copyright (C) Andrew Tridgell   1999-2005
+   Copyright (C) Jeremy Allison   2000-2006
+   Copyright (C) Paul `Rusty' Russell   2000

    ** NOTE! The following LGPL license applies to the tdb
    ** library. This does NOT imply that all of Samba is released
EXT2ED is hereby placed under the terms of the GNU General Public License.
Follows the GNU license.

Gadi Oxman, August 1995

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the
GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you
must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for
copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents
constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You
must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program
is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or
with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information
you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such

an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access
to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program
(or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues),

conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously
your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to
the wide range of software distributed
through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will
be
similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any

later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting
the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY
TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively

convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY;
for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may

consider
it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
This package, the EXT2 filesystem utilities, are made available under
the GNU Public License version 2, with the exception of the lib/ext2fs
and lib/e2p libraries, which are made available under the GNU Library
General Public License Version 2, the lib/uuid library which is made
available under a BSD-style license and the lib/et and lib/ss
libraries which are made available under an MIT-style license. Please
see lib/uuid/COPYING for more details for the license for the files
comprising the libuuid library, and the source file headers of the
libet and libss libraries for more information.

The most recent officially distributed version can be found at
http://e2fsprogs.sourceforge.net. If you need to make a distribution,
that's the one you should use. If there is some reason why you'd like
a more recent version that is still in ALPHA testing (i.e., either
using the "WIP" test distributions or one from the hg or git
repository from the development branch, please contact me
(tytso@mit.edu)
before you ship. The release schedules for this
package are flexible, if you give me enough lead time.

Theodore Ts'o
23-June-2007

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software

is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source
code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms
and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains

a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered
only if its contents constitute a work based on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this

License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based
on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with
the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it
with the information you received as to the offer
to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made
by offering
access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing
the Program (or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free

Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name
of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision
comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a

subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for
all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a
fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link a program with the library, you must provide

complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program
is threatened constantly by software
patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is
in some sense simply using the library, and is
analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to

permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in
header files, but we have achieved it as regards
changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed
as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities
other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of

running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each
and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make
any other change in
these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the

source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled
to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library,
or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that
the terms permit
modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work

during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library

facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has
the sole purpose of protecting the
integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as
if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the

"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free Software
Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
This is the Debian GNU/Linux prepackaged version of the EXT2 file
system utilities (e2fsck, mke2fs, etc.). The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2007 Theodore Ts'o <tytso@mit.edu>
Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
Copyright (c) 2001 Alcove <http://www.alcove.com/>
Copyright (c) 1997 Klee Dienes
Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, are made available under the GNU General Public License version 2, with the exception of the lib/ext2fs and lib/e2p libraries, which are made available under the GNU Library General Public License Version 2, the lib/uuid library which is made available under a BSD-style license and the lib/et and lib/ss libraries
which are made available under an MIT-style license.

Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General Public License can be found in `/usr/share/common-licenses/GPL-2'. The complete text of the GNU Library General Public License can be found in '/usr/share/common-licenses/LGPL-2'.

The license used for lib/et and lib/ss libraries is:

Copyright 1987 by the Student Information Processing Board
of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software and its documentation for any purpose is hereby granted, provided that the names of M.I.T. and the M.I.T. S.I.P.B. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T. and the M.I.T. S.I.P.B. make no representations about the suitability of this
software for any purpose. It is provided "as is" without express or implied warranty.

The license used for lib/uuid is:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, and the entire permission notice in its entirety, including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND
FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2000, 2003, 2004 by Theodore Ts'o

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific
prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF

LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This is the Debian GNU/Linux prepackaged version of the ss
command-line interface parsing library. It is currently
distributed together with the EXT2 file system utilities, which are
otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>,
from sources obtained from a mirror of:
tsx-11.mit.edu:/pub/linux/packages/ext2fs/

From the original distribution:

Copyright 1987, 1988 by the Student Information Processing Board
 of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software
and its documentation for any purpose and without fee is
hereby granted, provided that the above copyright notice
appear in all copies and that both that copyright notice and
this permission notice appear in supporting documentation,
and that the names of M.I.T. and the M.I.T. S.I.P.B. not be
used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.
M.I.T. and
 the M.I.T. S.I.P.B. make no representations about
the suitability of this software for any purpose. It is
provided "as is" without express or implied warranty.
This is the Debian GNU/Linux prepackaged version of the Common Error
Description library. It is currently distributed together with the EXT2 file
system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>,
from sources obtained from a mirror of:
tsx-11.mit.edu:/pub/linux/packages/ext2fs/

From the original distribution:

Copyright 1987, 1988 by the Student Information Processing Board
 of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software
and its documentation for any purpose and without fee is
hereby granted, provided that the above copyright notice
appear in all copies and that both that copyright notice and
this permission notice appear in supporting documentation,

and that the names of M.I.T. and the M.I.T. S.I.P.B. not be
used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.
M.I.T. and the M.I.T.
S.I.P.B. make no representations about
the suitability of this software for any purpose. It is
provided "as is" without express or implied warranty.

1.137 githubcomgolangprotobuf 1.5.4

1.137.1 Available under license :

This source code was written by the Go contributors.
The master list of contributors is in the main Go distribution,
visible at http://tip.golang.org/CONTRIBUTORS.
Copyright 2010 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.138 githubcomgoopenapijsonpointer 0.21.0

1.138.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain

separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without

modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include

the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.139 githubcomgoopenapijsonreference 0.21.0

1.139.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership

of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or

documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.140 go-openapi-jsonpointer 0.21.0

1.140.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.141 githubcomgoopenapiswag 0.23.0

1.141.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.142 ini 1.67.0

1.142.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)

to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by
combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form,

provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2014 Unknwon

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.143 githubcommagiconairproperties 1.8.7

1.143.1 Available under license :

Copyright (c) 2013-2020, Frank Schroeder

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.144 githubcommoderngoconcurrent 0.0.0-20180306012644-bacd9c7ef1dd

1.144.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this License,
each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate

comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.145 githubcommoderngoreflect2 1.0.2

1.145.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and

do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all

other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.146 githubcomhashicorphcl 1.0.0

1.146.1 Available under license :

Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but
not also under the terms of a
Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained
within the Source Code Form of the Covered
Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to
comply with any of the terms of this License
with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You

fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis,
if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all

other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such

modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses
If You choose to distribute Source Code Form that is Incompatible With
Secondary Licenses under the terms of this version of the License,
the
notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then
You may include the notice in a location (such as a LICENSE file in a relevant
directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible
With Secondary Licenses, as defined by
the Mozilla Public License, v. 2.0.

1.147 go-spew 1.1.2-0.20180830191138-d8f796af33cc

1.147.1 Available under license :

ISC License

Copyright (c) 2012-2016 Dave Collins <dave@davec.name>

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN

ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.148 githubcomgooglegofuzz 1.2.0

1.148.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses

granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,

any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.149 gopkgin 0.9.1

1.149.1 Available under license :

Copyright (c) 2012 Pter Surnyi. Portions Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS

"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.150 gopkg.in/ini.v1 1.67.0

1.150.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by

combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall
any Contributor be
liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or
claims asserted against, such Contributor by reason of your
accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2014 Unknwon

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.151 json iterator go 1.1.12

1.151.1 Available under license :

MIT License

Copyright (c) 2016 json-iterator

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.152 sirupsen-logrus 1.9.3

1.152.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Simon Eskildsen

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.153 yaml 3.0.1

1.153.1 Available under license :

No license file was found, but licenses were detected in source scan.

/*
* Licensed to the Apache Software Foundation (ASF) under one
* or more contributor license agreements. See the NOTICE file
* distributed with this work for additional information
* regarding copyright ownership. The ASF licenses this file
* to you under the Apache License, Version 2.0 (the
* "License"); you may not use this file except in compliance
* with the License. You may obtain a copy of the License at
*
* http://www.apache.org/licenses/LICENSE-2.0

*
* Unless required by applicable law or agreed to in writing,
* software distributed under the License is distributed on an
* "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY
* KIND, either express or implied. See the License for the
* specific language governing permissions and limitations
* under the License.
*/

Found in path(s):
* /groovy-yaml-3-0-1-sources-jar/org/apache/groovy/yaml/util/YamlConverter.java
* /groovy-yaml-3-0-1-sources-jar/groovy/yaml/YamlBuilder.java
*
 /groovy-yaml-3-0-1-sources-jar/groovy/yaml/YamlSlurper.java
* /groovy-yaml-3-0-1-sources-jar/groovy/yaml/YamlRuntimeException.java

1.154 python-requests 2.25.1-8.el9

1.154.1 Available under license :

Modifications:

Copyright (c) 2011 Kenneth Reitz.

Original Project:

Copyright (c) 2010 by Armin Ronacher.

Some rights reserved.

Redistribution and use in source and binary forms of the theme, with or
without modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above copyright
 notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
 copyright notice, this list of conditions and the following
 disclaimer in the documentation and/or other materials provided
 with the distribution.

* The names of the contributors may not be used to endorse or
 promote products derived from this software without specific
 prior written permission.

We kindly ask you to only use these themes in an unmodified manner just for Flask and Flask-related products, not for unrelated projects. If you like the visual style and want to use it for your own projects, please consider
making some larger changes to the themes (such as changing font faces, sizes, colors or margins).

THIS THEME IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS THEME, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2019 Kenneth Reitz. All rights reserved.
Requests
Copyright 2019 Kenneth Reitz

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor

has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

1.155 file 5.39-16.el9

1.155.1 Available under license :

Copyright (c) Ian F. Darwin 1986-1995.
Software written by Ian F. Darwin and others;
maintained 1995-present by Christos Zoulas and others.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice immediately at the beginning of the file, without modification,
this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.
$File: COPYING,v 1.2 2018/09/09 20:33:28 christos Exp $
Copyright (c) Ian F. Darwin 1986, 1987, 1989, 1990, 1991, 1992, 1994, 1995.
Software written by Ian F. Darwin and others;
maintained 1994- Christos Zoulas.

This software is not subject to any export provision of the United States
Department of Commerce, and may be exported to any country or planet.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice immediately at the beginning of the file, without modification,
  this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED
 WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

1.156 acl 2.3.1-4.el9

1.156.1 Available under license :

Most components of the "acl" package are licensed under
Version 2.1 of the GNU Lesser General Public License (see COPYING.LGPL).

Some components (as annotated in the source) are licensed
under Version 2 of the GNU General Public License (see below),

---

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if
the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works
based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections

1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions
are
prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to

these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation

may publish revised and/or new versions
of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals
of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one
line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts
in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License
does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
Most components of the "acl" package are licensed under
Version 2.1 of the GNU Lesser General Public License (see below).
below.

Some components (as annotated in the source) are licensed
under Version 2 of the GNU General Public License (see COPYING).

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom
to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries

into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a
certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions
for copying, distribution and
modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under
these terms. A "work based on the
Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use
of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion

of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of

a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library
into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of
the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a

derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file
is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of
this License. If the work
during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library

mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate
distribution of the work based on
the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such
parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence
of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It
is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution
limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs
whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST
OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these
terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License
for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.157 setup 2.13.7-10.el9

1.157.1 Available under license :

No license file was found, but licenses were detected in source scan.

/setup-2.13.7-10.el9.src.rpm-cosi-expand-archive-o9oUw2bZ/setup-2.13.7.tar.bz2-cosi-expand-archive-cVsR1iQh/setup-2.13.7.tar.bz2: binary file matches

Found in path(s):
* /bin/grep
No license file was found, but licenses were detected in source scan.

License: Public Domain

Found in path(s):
* /setup-2.13.7-10.el9.src.rpm-cosi-expand-archive-o9oUw2bZ/setup.spec

1.158 selinux 3.6-1.el9

1.158.1 Available under license :

This library (libselinux) is public domain software, i.e. not copyrighted.

Warranty Exclusion

You agree that this software is a
non-commercially developed program that may contain "bugs" (as that
term is used in the industry) and that it may not function as intended.
The software is licensed "as is". NSA makes no, and hereby expressly
disclaims all, warranties, express, implied, statutory, or otherwise
with respect to the software, including noninfringement and the implied
warranties of merchantability and fitness for a particular purpose.

Limitation of Liability

In no event will NSA be liable for any damages, including loss of data,
lost profits, cost of cover, or other special, incidental,
consequential, direct or indirect damages arising from the software or
the use thereof, however caused and on any theory of liability. This
limitation will apply even if NSA has been advised of the possibility
of such damage. You acknowledge that this is
a reasonable allocation of
risk.

1.159 python3-librepo 1.14.5-2.el9

1.159.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some

specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The

former contains code derived from the library, whereas the latter must be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that

uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood

that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our

decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.160 e2fsprogs 1.46.5-5.el9

1.160.1 Available under license :

This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2001 by Andries Brouwer
Copyright (C) 1999, 2000, 2003 by Theodore Ts'o

You are free to distribute this software under the terms of the GNU

Lesser (Library) General Public License.

On Debian systems, the complete text of the GNU Lesser (Library)
General Public License can be found in /usr/share/common-licenses/LGPL-2.
This is the Debian GNU/Linux prepackaged version of the static EXT2
file system consistency checker (e2fsck.static). The EXT2 utilities
were written by Theodore Ts'o <tytso@mit.edu> and Remy Card
<card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2006 Theodore Ts'o <tytso@mit.edu>
        Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
    Copyright (c) 2001 Alcove <http://www.alcove.com/>
    Copyright (c) 1997 Klee Dienes
    Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, is protected by the GNU
General Public License.

 Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General
Public License can be found in `/usr/share/common-licenses/GPL-2'.
#
This is a Makefile stub which handles the creation of BSD shared
libraries.
#
In order to use this stub, the following makefile variables must be defined.
#
BSDLIB_VERSION = 1.0
BSDLIB_IMAGE = libce
BSDLIB_MYDIR = et
BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

all:: image

real-subdirs:: Makefile
 @echo " MKDIR pic"
 @mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)

```
BSDLIB_PIC_FLAG = -fpic

image:  $(BSD_LIB)

$(BSD_LIB): $(OBJS)
 (cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
 $(MV) pic/$(BSD_LIB) .
 $(RM) -f ../$(BSD_LIB)
 (cd ..; $(LN) $(LINK_BUILD_FLAGS) \
  `echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
 @echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
 @$(INSTALL_PROGRAM) $(BSD_LIB) \
  $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
 @-$(LDCONFIG)

install-strip: install

install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
 $(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)

clean::
 $(RM)
 -rf pic
 $(RM) -f $(BSD_LIB)
 $(RM) -f ../$(BSD_LIB)
```

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
   notice, and the entire permission notice in its entirety,
   including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
   products derived from this software without specific prior
   written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL

DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This is the Debian GNU/Linux prepackaged version of the translation
files of the EXT2 file system utilities. The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card
<card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2006 Theodore Ts'o <tytso@mit.edu>
Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
Copyright (c) 2001 Alcove <http://www.alcove.com/>
Copyright (c) 1997 Klee Dienes
Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, is protected by the GNU
General Public License.

Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General
Public License can be found in `/usr/share/common-licenses/GPL-2'.
This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Fri Dec 14 22:24:35 EST 2007

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007 by
Theodore Ts'o

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions

are met:
1. Redistributions of source code must retain the above copyright
  notice, and the entire permission notice in its entirety,
  including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
  products derived from
 this software without specific prior
  written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c
+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
+   Copyright (C) Andrew Tridgell   1999-2005
+   Copyright (C) Jeremy Allison   2000-2006
+   Copyright (C) Paul `Rusty' Russell   2000

    ** NOTE! The following LGPL license applies to the tdb
    ** library. This does NOT imply that all of Samba is released
EXT2ED is hereby placed under the terms of the GNU General Public License.
Follows the GNU license.

Gadi Oxman, August 1995

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain

that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for
copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents
constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,

under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not

signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program
(or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously
your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to
the wide range of software distributed
through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR

REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY
TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY;
for details type `show w'.
This is free software, and you are welcome to redistribute it

under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider
it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.
This package, the EXT2 filesystem utilities, are made available under the GNU Public License version 2, with the exception of the lib/ext2fs and lib/e2p libraries, which are made available under the GNU Library General Public License Version 2, the lib/uuid library which is made available under a BSD-style license and the lib/et and lib/ss libraries which are made available under an MIT-style license. Please see lib/uuid/COPYING for more details for the license for the files comprising the libuuid library, and the source file headers of the libet and libss libraries for more information.

The most recent officially distributed version can be found at http://e2fsprogs.sourceforge.net. If you need to make a distribution, that's the one you should use. If there is some reason why you'd like a more recent version that is still in ALPHA testing (i.e., either using the "WIP" test distributions or one from the hg or git repository from the development branch, please contact me (tytso@mit.edu)
before you ship. The release schedules for this package are flexible, if you give me enough lead time.

Theodore Ts'o
23-June-2007

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by

modifying or distributing
the Program (or any work based on the
Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy
simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous
contributions to the wide range of software distributed
through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such
new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software
and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE

USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a
fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program
is threatened constantly by software
patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities
other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no

charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make

any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled
to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library,
or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative

work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that
the terms permit
modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then
relink to produce a modified
executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the

Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add

an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as
if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Library General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write
to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO
MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING

RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them
to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free Software
Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
This is the Debian GNU/Linux prepackaged version of the EXT2 file
system utilities (e2fsck, mke2fs, etc.). The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

Sources were obtained from http://sourceforge.net/projects/e2fsprogs

Packaging is Copyright (c) 2003-2007 Theodore Ts'o <tytso@mit.edu>
Copyright (c) 1997-2003 Yann Dirson <dirson@debian.org>
Copyright (c) 2001 Alcove <http://www.alcove.com/>
Copyright (c) 1997 Klee Dienes
Copyright (c) 1995-1996 Michael Nonweiler <mrn20@cam.ac.uk>

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright notice:

This package, the EXT2 filesystem utilities, are made available under
the GNU General Public License version 2, with the exception of the
lib/ext2fs and lib/e2p libraries, which are made available under the
GNU Library General Public License Version 2, the lib/uuid library
which is made available under a BSD-style license and the lib/et and
lib/ss libraries
which are made available under an MIT-style license.

Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000,
2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 by Theodore Ts'o

On Debian GNU systems, the complete text of the GNU General Public
License can be found in `/usr/share/common-licenses/GPL-2'. The
complete text of the GNU Library General Public License can be found
in '/usr/share/common-licenses/LGPL-2'.

The license used for lib/et and lib/ss libraries is:

Copyright 1987 by the Student Information Processing Board
of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software and
its documentation for any purpose is hereby granted, provided that
the names of M.I.T. and the M.I.T. S.I.P.B. not be used in
advertising or publicity pertaining to distribution of the software
without specific, written prior permission. M.I.T. and the
M.I.T. S.I.P.B. make no representations about the suitability of

this
software for any purpose. It is provided "as is" without
express or implied warranty.

The license used for lib/uuid is:

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND
FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

http://sourceforge.net/projects/e2fsprogs

Upstream Author: Theodore Ts'o <tytso@mit.edu>

Copyright:

Copyright (C) 1999, 2000, 2003, 2004 by Theodore Ts'o

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific
prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
This is the Debian GNU/Linux prepackaged version of the ss
command-line interface parsing library. It is currently
distributed together with the EXT2 file system utilities, which are
otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>,
from sources obtained from a mirror of:
tsx-11.mit.edu:/pub/linux/packages/ext2fs/

From the original distribution:

Copyright 1987, 1988 by the Student Information Processing Board
of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software
and its documentation for any purpose and without fee is
hereby granted, provided that the above copyright notice
appear in all copies and that both that copyright notice and
this permission notice appear in supporting documentation,
and that the names of M.I.T. and the M.I.T. S.I.P.B. not be
used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.
M.I.T. and
the M.I.T. S.I.P.B. make no representations about
the suitability of this software for any purpose. It is

provided "as is" without express or implied warranty.
This is the Debian GNU/Linux prepackaged version of the Common Error Description library. It is currently distributed together with the EXT2 file system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>, from sources obtained from a mirror of:
tsx-11.mit.edu:/pub/linux/packages/ext2fs/

From the original distribution:

Copyright 1987, 1988 by the Student Information Processing Board
of the Massachusetts Institute of Technology

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the names of M.I.T. and the M.I.T. S.I.P.B. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T. and the M.I.T.
S.I.P.B. make no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

1.161 bash 5.1.8-9.el9

1.161.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by

the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which

contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or

executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number

of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the License,
or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License along
  with this program; if not, write to the Free Software Foundation, Inc.,
  51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.

GNU Free Documentation License
Version 1.3, 3 November 2008

Copyright (C) 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
<http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other functional and useful document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondarily, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The "Document", below, refers to any such manual or work. Any member of the public is a

licensee, and is addressed as "you". You accept the license if you copy,
modify or distribute the work in a way requiring permission under copyright law.

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections,
in the notice
that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters
or
for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML, PostScript or PDF designed for human modification. Examples of transparent image formats include PNG, XCF and JPG. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML, PostScript or PDF produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

The "publisher" means any person or entity that distributes copies of the Document to the public.

A section "Entitled XYZ" means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as "Acknowledgements", "Dedications", "Endorsements", or "History".) To "Preserve the Title" of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough

number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.
B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.
C. State on the Title page the name of the publisher of the Modified Version, as the publisher.
D. Preserve all the copyright notices of the Document.
E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.
F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.
G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.
H. Include an unaltered copy of this License.
I. Preserve the section Entitled "History", Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.
J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.
K. For any section Entitled "Acknowledgements" or "Dedications", Preserve the Title of the section, and preserve in the section all

the substance and tone of each of the contributor
acknowledgements
and/or dedications given therein.
L. Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.
M. Delete any section Entitled "Endorsements". Such a section
may not be included in the Modified Version.
N. Do not retitle any existing section to be Entitled "Endorsements"
or to conflict in title with any Invariant Section.
O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document, you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains
nothing but
endorsements of your Modified Version by various
parties--for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

5. COMBINING
DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and

list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections
 Entitled "History"
in the various original documents, forming one section Entitled
"History"; likewise combine any sections Entitled "Acknowledgements",
and any sections Entitled "Dedications". You must delete all sections
Entitled "Endorsements".

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other
documents released under this License, and replace the individual
copies of this License in the various documents with a single copy
that is included in the collection, provided that you follow the rules
of this License for verbatim copying of each of the documents in all
other respects.

You may extract a single document from such a collection, and
distribute it individually under this License, provided you insert a
copy of this License into the extracted document, and follow this
License in all other respects regarding verbatim copying of that
document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives
 with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an "aggregate" if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4.
Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements", "Dedications", or "History", the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, or distribute it is void, and will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the

violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies
or rights from you under
this License. If your rights have been terminated and not permanently reinstated, receipt of a copy of some or all of the same material does not give you any rights to use it.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See http://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version
ever published (not
as a draft) by the Free Software Foundation. If the Document specifies that a proxy can decide which future versions of this License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Document.

11. RELICENSING

"Massive Multiauthor Collaboration Site" (or "MMC Site") means any World Wide Web server that publishes copyrightable works and also provides prominent facilities for anybody to edit those works. A public wiki that anybody can edit is an example of such a server. A "Massive Multiauthor Collaboration" (or "MMC") contained in the site means any set of copyrightable works thus published on the MMC site.

"CC-BY-SA" means the Creative Commons Attribution-Share Alike 3.0 license published by Creative Commons Corporation, a not-for-profit corporation with a principal place of business in San Francisco, California, as well as future copyleft versions of that license

published by
that same organization.

"Incorporate" means to publish or republish a Document, in whole or in
part, as part of another Document.

An MMC is "eligible for relicensing" if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole or
in part into the MMC, (1) had no cover texts or invariant sections, and
(2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the MMC is eligible for relicensing.

ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

> Copyright (c) YEAR YOUR NAME.
> Permission is granted to copy, distribute and/or modify this document
> under the terms of the GNU Free Documentation License, Version 1.3
> or any later version published by the Free Software Foundation;
> with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts.
> A copy of the license is included in the section entitled "GNU
> Free Documentation License".

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the "with...Texts." line with this:

> with the Invariant Sections being LIST THEIR TITLES, with the
> Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.
@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
 must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to use that
work under the conditions stated herein. The ``Document'', below,
refers
 to any such manual or work. Any member of the public is a
licensee, and is addressed as ``you''. You accept the license if you

copy, modify or distribute the work in a way requiring permission
under copyright law.

A ``Modified Version'' of the Document means any work containing the
Document or a portion of it, either copied verbatim, or with
modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section
of the Document that deals exclusively with the relationship of the
publishers or authors of the Document to the Document's overall
subject (or to related matters) and contains nothing that could fall
directly within that overall subject. (Thus, if the Document is in
part a textbook of mathematics, a Secondary Section may not explain
any mathematics.) The relationship could be a matter of historical
connection with the subject or with related matters, or of legal,
commercial, philosophical, ethical or political
 position regarding
them.

The ``Invariant Sections'' are certain Secondary Sections whose titles
are designated, as being those of Invariant Sections, in the notice
that says that the Document is released under this License. If a
section does not fit the above definition of Secondary then it is not
allowed to be designated as Invariant. The Document may contain zero
Invariant Sections. If the Document does not identify any Invariant
Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed,
as Front-Cover Texts or Back-Cover Texts, in the notice that says that
the Document is released under this License. A Front-Cover Text may
be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy,
represented in a format whose specification is available to the
general public, that is suitable for revising the document
straightforwardly with generic text editors or (for
 images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain
@sc{ascii} without markup, Texinfo input format, La@TeX{} input

format, @acronym{SGML} or @acronym{XML} using a publicly available
@acronym{DTD}, and standard-conforming simple @acronym{HTML},
PostScript or @acronym{PDF} designed for human modification. Examples
of transparent image formats include @acronym{PNG}, @acronym{XCF} and
@acronym{JPG}. Opaque formats
include proprietary formats that can be
read and edited only by proprietary word processors, @acronym{SGML} or
@acronym{XML} for which the @acronym{DTD} and/or processing tools are
not generally available, and the machine-generated @acronym{HTML},
PostScript or @acronym{PDF} produced by some word processors for
output purposes only.

The ``Title Page'' means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, ``Title Page'' means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies
of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in
another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'',
``Dedications'', ``Endorsements'', or ``History''.) To ``Preserve the Title''
of such a section when you modify the Document means that it remains a
section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which
states that this License applies to the Document. These Warranty
Disclaimers are considered to be included by reference in this
License, but only as regards disclaiming warranties: any other
implication that these Warranty Disclaimers may have is void and has
no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either
commercially or noncommercially, provided that this License, the
copyright notices, and the license notice saying this License applies
to the Document are reproduced in all copies, and that you add no other
conditions whatsoever
to those of this License. You may not use
technical measures to obstruct or control the reading or further

copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible.
You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that
this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

@item

MODIFICATIONS

You may copy and distribute a Modified Version of the Document under
the conditions of sections 2 and 3 above, provided that you release
the Modified Version under precisely this License, with the Modified
Version filling the role of the Document, thus licensing distribution
and modification of the Modified Version to whoever possesses a copy
of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item
Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from
 those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities
responsible for authorship of the modifications in the Modified
Version, together with at least five of the principal authors of the
Document (all of its principal authors, if it has fewer than five),
unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the
Modified Version, as the publisher.

@item
Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications
adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice
giving the public permission to use the Modified Version under the
terms of this License, in the form shown in
 the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections
and required Cover Texts given in the Document's license notice.

@item
Include an unaltered copy of this License.

@item
Preserve the section Entitled ``History'', Preserve its Title, and add
to it an item stating at least the title, year, new authors, and
publisher of the Modified Version as given on the Title Page. If
there is no section Entitled ``History'' in the Document, create one
stating the title, year, authors, and publisher of the Document as
given on its Title Page, then add an item describing the Modified
Version as stated in the previous sentence.

@item
Preserve the network location, if any, given in the Document for
public access to a Transparent copy of the Document, and likewise
the network locations given in the Document for previous versions
it was based on. These may be placed in the ``History'' section.
You may omit a network location for a work that was published at
least
four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document,
you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the

list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements", provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf
 of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of
 each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History"
in the various original documents, forming one section Entitled
``History"; likewise combine any sections Entitled ``Acknowledgements",
and any sections Entitled ``Dedications". You must delete all

sections Entitled ``Endorsements."

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract
a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an ``aggregate" if the copyright resulting from the compilation is not used to limit the legal rights of the compilation's users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may
be placed on
covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the

Document, and any Warranty Disclaimers, provided that you also include
the original English version of this License and the original versions
of those notices and disclaimers. In case of a disagreement between
the translation and the original version of this License or a notice
or disclaimer, the original
 version will prevail.

If a section in the Document is Entitled ``Acknowledgements'',
``Dedications'', or ``History'', the requirement (section 4) to Preserve
its Title (section 1) will typically require changing the actual
title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies
 you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See

@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that
a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'')
contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or
in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the
MMC is eligible for relicensing.

@end enumerate

@page
@heading ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group
 Copyright (C) @var{year} @var{your name}.
 Permission is granted to copy, distribute and/or modify this document
 under the terms of the GNU Free Documentation License, Version 1.3
 or any later version published by the Free Software Foundation;
 with no Invariant Sections, no Front-Cover Texts, and no Back-Cover
 Texts. A copy of the license is included in the section entitled ``GNU
 Free Documentation License".
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts." line with this:

@smallexample
@group
   with the Invariant Sections being @var{list their titles}, with
   the Front-Cover
 Texts being @var{list}, and with the Back-Cover Texts
   being @var{list}.
@end group
@end smallexample

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:
                GNU GENERAL PUBLIC LICENSE
                  Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying,

distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source

includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your

work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in

the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the

Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or
limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the

Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the

patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM

IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
Unless otherwise stated, all files in this directory are Copyright (C)
1991,1992,1993,1994,1995,1996,1997,1998,1999,2000,2001,2002,2003,
2004,2005,2006,2007,2008,2009,2010,2011
Free Software Foundation, Inc.

See the file COPYING in the bash distribution root directory for copying
and usage restrictions.

The file ifs-posix.tests is Copyright (C) 2005 Glen Fowler.

1.162 iproute 6.2.0-6.el9_4

1.162.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute
software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING

OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version
2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical
commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.163 librepo 1.14.5-2.el9

1.163.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the

Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the

ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must

be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or

collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that

uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood

that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our

decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey
the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.164 libsepol 3.6-1.el9

1.164.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your

freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot

effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits such linking only if the
entire combination fits
its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the free library to free
software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run

that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish

on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the

entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and

therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under

Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user
installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library

facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute

so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of
all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the

"copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.165 libnettle6 3.9.1-1.el9

1.165.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to

address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest

possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they

know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is
not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

"Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section

4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,

procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of

it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting

any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by the Library is
deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an
Application with the Library. The particular version of the Library
with which the Combined Work was made is also called the "Linked
Version".

The "Minimal Corresponding Source" for a Combined Work means the
Corresponding Source for the Combined Work, excluding any source code
for portions of the Combined Work that, considered in isolation, are
based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the
object code and/or source code for the Application, including any data
and utility programs needed for reproducing the Combined Work from the
Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License
without being bound by section 3 of the GNU GPL.

2. Conveying

Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is
necessary to install and execute a modified version of the
Combined Work produced by recombining or relinking the
Application with a modified version of the Linked Version. (If
you use option 4d0, the Installation Information must accompany
the Minimal Corresponding Source and Corresponding Application
Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

1.166 gnutls 3.8.3-4.el9_4

1.166.1 Available under license :

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons") that the public can reliably and without fear of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or

other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
moral rights retained by the original author(s) and/or performer(s);
publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
rights
protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
rights protecting the extraction, dissemination, use and reuse of data in a Work;
database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation thereof, including any amended or successor version of such directive); and
other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims
and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's
express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will
not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of

Purpose.

4. Limitations and Disclaimers.

No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document.

Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.

Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without
limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.

Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with respect to this CC0 or use of the Work.

The "inih" library is distributed under the New BSD license:

Copyright (c) 2009, Ben Hoyt
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
* Neither the name of Ben Hoyt nor the names of its contributors
  may be used to endorse or promote products derived from this software
  without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY BEN HOYT "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE
DISCLAIMED. IN NO EVENT SHALL BEN HOYT BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square

root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the

Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on

which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further

restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.

Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
LICENSING
=========

Since GnuTLS version 3.1.10, the core library is released under

the GNU Lesser General Public License (LGPL) version 2.1 or later
(see doc/COPYING.LESSER for the license terms).

The GNU LGPL applies to the main GnuTLS library, while the
included applications as well as gnutls-openssl
library are under the GNU GPL version 3. The gnutls library is
located in the lib/ and libdane/ directories, while the applications
in src/ and, the gnutls-openssl library is at extra/.

The documentation in doc/ is under the GNU FDL license 1.3.

Note, however, that the nettle and the gmp libraries which are
GnuTLS dependencies, they are distributed under a LGPLv3+ or GPLv2+ dual
license. As such binaries linking to them need to adhere to either LGPLv3+
or the GPLv2+ license.

For any copyright year range specified as YYYY-ZZZZ in this package
note that the range specifies every single year in that closed interval.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that

is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of
packaging a Major Component, but which is not part of that Major
Component, and (b) serves only to enable use of the work with that
Major Component, or to implement a Standard Interface for which an
implementation is available to the public in source code form. A
"Major Component", in this context, means a major essential component
(kernel, window system, and so on) of the specific operating system
(if any) on which the executable work runs, or a compiler used to
produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all
the source code needed to generate, install, and (for an executable
work) run the object code and to modify the work, including scripts to
control those activities. However, it does not include the work's
System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source
includes interface definition files associated with source files for
the work, and the source code for shared libraries and dynamically
linked subprograms that the work is specifically designed to require,
such as by intimate data communication or control flow between those
subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is
covered by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains

in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the

terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a

typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the

entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders of
that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains

a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work

occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor
version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of

this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work

conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public
License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the

GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
==========

Written by Andy Polyakov <appro@fy.chalmers.se> for the OpenSSL
project. The module is, however, dual licensed under OpenSSL and
CRYPTOGAMS licenses depending on where you obtain it. For further
details see https://www.openssl.org/~appro/cryptogams/.
==========

Copyright (c) 2006-2012, CRYPTOGAMS by <appro@openssl.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain copyright notices,
this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials
provided with the distribution.

* Neither the name of the CRYPTOGAMS nor
the names of its
copyright holder and contributors may be used to endorse or
promote products derived from this software without specific
prior written permission.

ALTERNATIVELY, provided that this notice is retained in full, this
product may be distributed under the terms of the GNU General Public
License (GPL), in which case the provisions of the GPL apply INSTEAD OF
those given above.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

##
Constant-time SSSE3 AES core implementation.
version 0.1
##
By Mike Hamburg (Stanford University), 2009
Public domain.
##
For details see https://shiftleft.org/papers/vector_aes/ and
https://crypto.stanford.edu/vpaes/.
The MIT License (MIT)

Copyright (c) 2016 Wrymouth Innovation Ltd

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL
THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

1.167 open-ldap 2.6.6-3.el9

1.167.1 Available under license :

Copyright 2011-2021 Howard Chu, Symas Corp.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted only as authorized by the OpenLDAP
Public License.

A copy of this license is available in the file LICENSE in the
top-level directory of the distribution or, alternatively, at
<http://www.OpenLDAP.org/license.html>.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Individual files and/or contributed packages may be copyright by
other parties and/or subject to additional restrictions.

This work also contains materials derived from public sources.

Additional information about OpenLDAP can be obtained at
<http://www.openldap.org/>.
Copyright 1998-2022 The OpenLDAP Foundation
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted only as authorized by the OpenLDAP
Public License.

A copy of this license is available in the file LICENSE in the
top-level directory of the distribution or, alternatively, at
<http://www.OpenLDAP.org/license.html>.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Individual files and/or contributed packages may be copyright by
other parties and/or subject to additional restrictions.

This work is derived from the University of Michigan LDAP v3.3
distribution. Information concerning this software is available
at <http://www.umich.edu/~dirsvcs/ldap/ldap.html>.

This work also contains materials derived from public sources.

Additional information about OpenLDAP can be obtained at
<http://www.openldap.org/>.

Portions Copyright 1998-2013 Kurt D. Zeilenga.
Portions Copyright 1998-2006 Net Boolean Incorporated.
Portions
 Copyright 2001-2006 IBM Corporation.
All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted only as authorized by the OpenLDAP
Public License.

Portions Copyright 1999-2008 Howard Y.H. Chu.
Portions Copyright 1999-2008 Symas Corporation.
Portions Copyright 1998-2003 Hallvard B. Furuseth.
Portions Copyright 2007-2011 Gavin Henry.
Portions Copyright 2007-2011 Suretec Systems Ltd.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that this notice is preserved.
The names of the copyright holders may not be used to endorse or
promote products derived from this software without their specific
prior written permission. This software is provided ``as is''
without express or implied warranty.

Portions Copyright (c) 1992-1996 Regents of the University of Michigan.
All rights reserved.

Redistribution and use in source and binary forms are
 permitted
provided that this notice is preserved and that due credit is given
to the University of Michigan at Ann Arbor. The name of the
University may not be used to endorse or promote products derived
from this software without specific prior written permission. This
software is provided ``as is'' without express or implied warranty.
Copyright 1998-2022 The OpenLDAP Foundation. All rights reserved.

COPYING RESTRICTIONS APPLY.

See COPYRIGHT and LICENSE files in the top-level directory of this
distribution (i.e., ../../COPYRIGHT and ../../LICENSE, respectively).

NeoSoft Tcl client extensions to Lightweight Directory Access Protocol.

Copyright (c) 1998-1999 NeoSoft, Inc.
All Rights Reserved.

This software may be used, modified, copied, distributed, and sold,
in both source and binary form provided that these copyrights are
retained and their terms are followed.

Under no circumstances are the authors or NeoSoft Inc. responsible
for the proper functioning of this software, nor do the authors
assume any liability for damages incurred with its use.

Redistribution and use in source and binary forms are permitted
provided that this notice is preserved and that due credit is given
to NeoSoft, Inc.

NeoSoft, Inc. may not be used to endorse or promote products derived
from this software without specific prior written
permission. This
software is provided ``as is'' without express or implied warranty.

Requests for permission may be sent to NeoSoft Inc, 1770 St. James Place,
Suite 500, Houston, TX, 77056.
OpenLDAP Public License

The OpenLDAP Public License
Version 2.8.1, 25 November 2003

Redistribution and use of this software and associated documentation
("Software"), with or without modification, are permitted provided
that the following conditions are met:

1. Redistributions in source form must retain copyright statements
and notices,

2. Redistributions in binary form must reproduce applicable copyright
statements and notices, this list of conditions, and the following
disclaimer in the documentation and/or other materials provided
with the distribution, and

3. Redistributions must contain a verbatim copy of this document.

The OpenLDAP Foundation may revise this license from time to time.
Each revision is distinguished by a version number. You may use
this Software under terms of this license revision or under the
terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS
CONTRIBUTORS ``AS IS'' AND ANY EXPRESSED
OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT
SHALL THE OPENLDAP FOUNDATION, ITS CONTRIBUTORS, OR THE AUTHOR(S)
OR OWNER(S) OF THE SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;

LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN
ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in
advertising or otherwise to promote the sale, use or other dealing
in this Software without specific, written prior permission. Title
to copyright in this Software shall at all times remain with copyright
holders.

OpenLDAP
is a registered trademark of the OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City,
California, USA. All rights reserved. Permission to copy and
distribute verbatim copies of this document is granted.
/**
*
* Copyright (C) 2000 Pierangelo Masarati, <ando@sys-net.it>
* All rights reserved.
*
* Permission is granted to anyone to use this software for any purpose
* on any computer system, and to alter it and redistribute it, subject
* to the following restrictions:
*
* 1. The author is not responsible for the consequences of use of this
* software, no matter how awful, even if they arise from flaws in it.
*
* 2. The origin of this software must not be misrepresented, either by
* explicit claim or by omission. Since few users ever read sources,
* credits should appear in the documentation.
*
* 3. Altered versions must be plainly marked as such, and must not be
* misrepresented as being the original software. Since few users
* ever read sources, credits should appear in the documentation.
*
* 4. This notice may not be removed or altered.
*
**/
Copyright 1998-2022 The OpenLDAP Foundation. All rights reserved.

COPYING RESTRICTIONS APPLY.

See COPYRIGHT and LICENSE files in the top-level directory of this
distribution (i.e., ../../COPYRIGHT and ../../LICENSE, respectively).

The OpenLDAP Public License
Version 2.8, 17 August 2003

Redistribution and use of this software and associated documentation
("Software"), with or without modification, are permitted provided
that the following conditions are met:

1. Redistributions in source form must retain copyright statements
and notices,

2. Redistributions in binary form must reproduce applicable copyright
statements and notices, this list of conditions, and the following
disclaimer in the documentation and/or other materials provided
with the distribution, and

3. Redistributions must contain a verbatim copy of this document.

The OpenLDAP Foundation may revise this license from time to time.
Each revision is distinguished by a version number. You may use
this Software under terms of this license revision or under the
terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS
CONTRIBUTORS ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES,
INCLUDING,
BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT
SHALL THE OPENLDAP FOUNDATION, ITS CONTRIBUTORS, OR THE AUTHOR(S)
OR OWNER(S) OF THE SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN
ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in
advertising or otherwise to promote the sale, use or other dealing
in this Software without specific, written prior permission. Title
to copyright in this Software shall at all times remain with copyright
holders.

OpenLDAP is a registered trademark
of the OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City,
California, USA. All Rights Reserved. Permission to copy and

distribute verbatim copies of this document is granted.

1.168 python-dateutil 2.8.1

1.168.1 Available under license :

Copyright 2017- Paul Ganssle <paul@ganssle.io>
Copyright 2017- dateutil contributors (see AUTHORS file)

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The above license applies to all contributions after 2017-12-01, as well as
all contributions that have been re-licensed (see AUTHORS file for the list of
contributors who have re-licensed their code).
----
dateutil - Extensions to the standard Python datetime module.

Copyright
(c) 2003-2011 - Gustavo Niemeyer <gustavo@niemeyer.net>
Copyright (c) 2012-2014 - Tomi Pievilinen <tomi.pievilainen@iki.fi>
Copyright (c) 2014-2016 - Yaron de Leeuw <me@jarondl.net>
Copyright (c) 2015- - Paul Ganssle <paul@ganssle.io>
Copyright (c) 2015- - dateutil contributors (see AUTHORS file)

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
  this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.
* Neither the name of the copyright holder nor the names of its
  contributors may be used to endorse or promote products derived from
  this software

without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The above BSD License Applies to all code, even that also covered by Apache 2.0.

1.169 mitchellh-mapstructure 1.5.0

1.169.1 Available under license :

The MIT License (MIT)

Copyright (c) 2013 Mitchell Hashimoto

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.170 pyinotify 0.9.6

1.170.1 Available under license :

Copyright (c) 2010 Sebastien Martini <seb@dbzteam.org>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.171 systemd-python 234-8.el8

1.171.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who

decide to use it. You
can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser

General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order

to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy,

and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application

to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any

other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision

will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or

modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.172 gopkg.in/evanphx/json-patch.v4 4.12.0

1.172.1 Available under license :

Copyright (c) 2014, Evan Phoenix
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the Evan Phoenix nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"

AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.173 go-toml 2.2.2

1.173.1 Available under license :

The MIT License (MIT)

go-toml v2
Copyright (c) 2021 - 2023 Thomas Pelletier

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.174 viper 1.19.0

1.174.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Steve Francia

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.175 go-restful 3.12.1

1.175.1 Available under license :

Copyright (c) 2012,2013 Ernest Micklei

MIT License

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.176 python3-idna 2.10-7.el9_4.1

1.176.1 Available under license :

BSD-style without advertising clause

1.177 python-idna 2.10-7.el9_4.1

1.177.1 Available under license :

BSD-style without advertising clause

1.178 kubernetes-klog 2.130.1

1.178.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by

combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to
in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.179 spf13-viper 1.19.0

1.179.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Steve Francia

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.180 cast 1.6.0

1.180.1 Available under license :

MIT
MIT License

Copyright (c) 2019 Andy Bettisworth

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) YYYY COPYRIGHT_HOLDER

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.181 gofuzz 1.2.0

1.181.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s)

with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.182 klog 2.130.1

1.182.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and
distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright

owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual

or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently
incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby
grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free,
irrevocable copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the Work and such
Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby
grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free,
irrevocable (except as stated in this section) patent license to make, have
made, use, offer to sell, sell, import, and otherwise transfer the Work, where
such license applies only to those patent claims licensable by such Contributor
that are necessarily infringed by their Contribution(s) alone or by
combination
of their Contribution(s) with the Work to which such Contribution(s) was
submitted. If You institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work or a
Contribution incorporated within the Work constitutes direct or contributory
patent infringement, then any patent licenses granted to You under this License
for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof
in any medium, with or without modifications, and in Source or Object form,
provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of
this License; and
You must cause any modified files to carry prominent notices stating that You
changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute,
all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the
Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any
Derivative Works that You distribute must include a readable copy of the
attribution notices contained within such NOTICE file, excluding those notices
that do not pertain to any part of the Derivative Works, in at least one of the
following places: within a NOTICE text file distributed as part of the

Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall

any Contributor be
liable to You for damages, including any direct, indirect, special, incidental,
or consequential damages of any character arising as a result of this License or
out of the use or inability to use the Work (including but not limited to
damages for loss of goodwill, work stoppage, computer failure or malfunction, or
any and all other commercial damages or losses), even if such Contributor has
been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to
offer, and charge a fee for, acceptance of support, warranty, indemnity, or
other liability obligations and/or rights consistent with this License. However,
in accepting such obligations, You may act only on Your own behalf and on Your
sole responsibility, not on behalf of any other Contributor, and only if You
agree to indemnify, defend, and hold each Contributor harmless for any liability
incurred by, or
claims asserted against, such Contributor by reason of your
accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate
notice, with the fields enclosed by brackets "[]" replaced with your own
identifying information. (Don't include the brackets!) The text should be
enclosed in the appropriate comment syntax for the file format. We also
recommend that a file or class name and description of purpose be included on
the same "printed page" as the copyright notice for easier identification within
third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to
in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.183 github.com/pelletier/go-toml/v2 2.2.2

1.183.1 Available under license :

The MIT License (MIT)

go-toml v2
Copyright (c) 2021 - 2023 Thomas Pelletier

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.184 websocket 1.5.3

1.184.1 Available under license :

Websocket: License

Websocket PHP is free software released under the following license:

[ISC License](http://en.wikipedia.org/wiki/ISC_license)

Permission to use, copy, modify, and/or distribute this software for any purpose with or without
fee is hereby granted, provided that the above copyright notice and this permission notice appear
in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
REGARD TO THIS
SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO
EVENT SHALL THE
AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR
ANY DAMAGES

WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
THIS SOFTWARE.

1.185 github.com/fxamacker/cbor/v2 2.7.0

1.185.1 Available under license :

MIT License

Copyright (c) 2019-present Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.186 alpine-keys 2.5-r0

1.186.1 Available under license :

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED,

INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE
OR OTHER DEALINGS IN THE SOFTWARE.
Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=alpine-keys
pkgver=2.5
pkgrel=0
pkgdesc="Public keys for Alpine Linux packages"
url="https://alpinelinux.org"
we install arch specific keys to /etc so we cannot do arch=noarch
arch="all"
license="MIT"
replaces="alpine-base"

1.187 unzip 6.0-r15

1.187.1 Available under license :

This is version 2009-Jan-02 of the Info-ZIP license.
The definitive version of this document should be available at
ftp://ftp.info-zip.org/pub/infozip/license.html indefinitely and
a copy at http://www.info-zip.org/pub/infozip/license.html.

Copyright (c) 1990-2009 Info-ZIP. All rights reserved.

For the purposes of this copyright and license, "Info-ZIP" is defined as
the following set of individuals:

Mark Adler, John Bush, Karl Davis, Harald Denker, Jean-Michel Dubois,
Jean-loup Gailly, Hunter Goatley, Ed Gordon, Ian Gorman, Chris Herborth,
Dirk Haase, Greg Hartwig, Robert Heath, Jonathan Hudson, Paul Kienitz,
David Kirschbaum, Johnny Lee, Onno van der Linden, Igor Mandrichenko,
Steve P. Miller, Sergio Monesi, Keith Owens, George Petrov, Greg Roelofs,
Kai Uwe Rommel, Steve Salisbury, Dave Smith, Steven M. Schweda,
Christian Spieler, Cosmin Truta, Antoine Verheijen, Paul von Behren,
Rich Wales, Mike White.

This software is provided "as is," without warranty of
any kind, express
or implied. In no event shall Info-ZIP or its contributors be held liable
for any direct, indirect, incidental, special or consequential damages
arising out of the use of or inability to use this software.

Permission is granted to anyone to use this software for any purpose,

including commercial applications, and to alter it and redistribute it
freely, subject to the above disclaimer and the following restrictions:

1. Redistributions of source code (in whole or in part) must retain
the above copyright notice, definition, disclaimer, and this list
of conditions.

2. Redistributions in binary form (compiled executables and libraries)
must reproduce the above copyright notice, definition, disclaimer,
and this list of conditions in documentation and/or other materials
provided with the distribution. Additional documentation is not needed
for executables where a command line license option provides these and
a
note regarding this option is in the executable's startup banner. The
sole exception to this condition is redistribution of a standard
UnZipSFX binary (including SFXWiz) as part of a self-extracting archive;
that is permitted without inclusion of this license, as long as the
normal SFX banner has not been removed from the binary or disabled.

3. Altered versions--including, but not limited to, ports to new operating
systems, existing ports with new graphical interfaces, versions with
modified or added functionality, and dynamic, shared, or static library
versions not from Info-ZIP--must be plainly marked as such and must not
be misrepresented as being the original source or, if binaries,
compiled from the original source. Such altered versions also must not
be misrepresented as being Info-ZIP releases--including, but not
limited to, labeling of the altered versions with the names "Info-ZIP"
(or any
variation thereof, including, but not limited to, different
capitalizations), "Pocket UnZip," "WiZ" or "MacZip" without the
explicit permission of Info-ZIP. Such altered versions are further
prohibited from misrepresentative use of the Zip-Bugs or Info-ZIP
e-mail addresses or the Info-ZIP URL(s), such as to imply Info-ZIP
will provide support for the altered versions.

4. Info-ZIP retains the right to use the names "Info-ZIP," "Zip," "UnZip,"
"UnZipSFX," "WiZ," "Pocket UnZip," "Pocket Zip," and "MacZip" for its
own source and binary releases.

This is the Info-ZIP file COPYING (for UnZip), last updated 17 Jul 2000.

FIRST NOTE:
This file contains some details about the copyright history of
contributions to the UnZip project.
Additionally, it summarises some exceptions to the general BSD-like
copyright found in LICENSE that covers our generic code and most of

the system specific ports.
Please read LICENSE first to find out what is allowed to do with
Info-ZIP's UnZip code.

- -

There are currently two explicit copyrights on portions of UnZip
code (at least, of which Info-ZIP is aware):
Jim Luther's Mac OS File Manager interface code; and Christopher Evans'
MacBinaryIII coding code (for the MacOS port).. These copyrights
are discussed in more detail below.

All remaining
code is now (starting with UnZip version 5.41) covered
by the new Info-ZIP license. For details, please read the acompaning
file LICENSE. The terms and conditions in this license supersede the
copyright conditions of the contributions by Igor Mandrichenko
(vms/vms.c), Greg Roelofs (zipinfo.c, new version of unshrink.c),
Mike White (Windows DLL code in "windll/*"), Steve P. Miller (Pocket
UnZip GUI "wince/*"), and Mark Adler (inflate/explode decompresseion
core routines, previously put into the public domain). All these
Info-ZIP contributors (or "primary" authors) have permitted us to
replace their copyright notes by the Info-ZIP License.

Frequently Asked Questions regarding (re)distribution of Zip and UnZip
are near the end of this file.

There are no known patents on any of the code in UnZip. Unisys
claims a patent on LZW encoding and on LZW decoding _in an apparatus
that performs LZW encoding_, but the patent appears to exempt a stand-
alone decoder (as in UnZip's unshrink.c). Unisys has publicly claimed
otherwise, but the issue has never been tested in court. Since this
point is unclear, unshrinking is not enabled by default. It is the
responsibility of the user to make his or her peace with Unisys and
its licensing requirements. (unshrink.c may be removed from future
releases altogether.)

The original unzip source code has been extensively modified and
almost entirely rewritten (changes include random zipfile access
rather than sequential; replacement of unimplode() with explode();
replacement of old unshrink() with new (unrelated) unshrink(); re-
placement of output routines; addition of inflate(), wildcards,
filename-mapping, text translation, ...; etc.). As far as we can
tell, only the core code of the unreduce method remained substantially
similar to Mr. Smith's original source. As of UnZip
5.42, the complete
core code is now covered by the Info-ZIP Licence. Therefore, support

for the reduce method has been removed.
The drop of the reduce method should only affect some test archives,
reducing was never used in any publically distributed Zip program.
For pathologic cases where support for reduced archive entries is
needed, the unreduce code copyrighted by Samuel H. Smith is available
as a separate distribution (the restricted copyright of this code is
cited below in the "historical" section).

The following copyright applies to the Mac OS File Manager interface code
(macos/source/macstuff.[ch]), distributed with UnZip 5.4 and later:

```
  * MoreFiles
  *
  * A collection of File Manager and related routines
  *
  * by Jim Luther (Apple Macintosh Developer Technical Support Emeritus)
  * with significant code contributions by Nitin Ganatra
  * (Apple Macintosh Developer Technical Support Emeritus)
  * Copyright  1992-1998
Apple Computer, Inc.
  * Portions copyright  1995 Jim Luther
  * All rights reserved.
  * The Package "More Files" is distributed under the following
  * license terms:
  *
  *         "You may incorporate this sample code into your
  *          applications without restriction, though the
  *          sample code has been provided "AS IS" and the
  *          responsibility for its operation is 100% yours.
  *          However, what you are not permitted to do is to
  *          redistribute the source as "DSC Sample Code" after
  *          having made changes. If you're going to
  *          redistribute the source, we require that you make
  *          it clear in the source that the code was descended
  *          from Apple Sample Code, but that you've made
  *          changes."
```

The usage terms of this copyright note are compatible with the
Info-ZIP license, they do not add further restrictions.

The following
copyright applies to the Mac OS "macbin3" decoding code
(extra field compatibility with ZipIt):

```
  *  MacBinaryIII.h
  *
  *  Copyright 1997 Christopher Evans (cevans@poppybank.com)
```

```
  *
  *  Basic encoding and decoding of Macintosh files to the
  *  MacBinary III spec.
  * ---------------------------------------------------------------------
  * This source is copyrighted by Christopher Evans (cevans@poppybank.com)
  * (available at ftp://ftp.lazerware.com/MacBinaryIII_src_C.sit
  * homepage of Leonard Rosenthol  leonardr@netcom.com)
```

This copyright note does not contain any usage terms. So, we assume that this code is freely reusable until we are proved wrong...

The remaining copyright notes have been superseeded by the new Info-ZIP license, with explicit permission from the respective original authors. They are cited here for historical reasons, only:

The following copyright applies to the full-featured unreduce.c (now distributed separately):

```
  * Copyright 1989 Samuel H. Smith;  All rights reserved
  *
  * Do not distribute modified versions without my permission.
  * Do not remove or alter this notice or any other copyright notice.
  * If you use this in your own program you must distribute source code.
  * Do not use any of this in a commercial product.
```

Regarding the first stipulation, Mr. Smith was tracked down in southern California some years back [Samuel H. Smith, The Tool Shop; as of mid-May 1994, (213) 851-9969 (voice), (213) 887-2127(?) (subscription BBS), 71150.2731@compuserve.com]:

"He says that he thought that whoever contacted him understood that he has no objection to the Info-ZIP group's inclusion of his code. His primary concern is that it remain freely distributable, he said."

Despite the fact that our "normal" code has been entirely rewritten and by default no longer contains any of Mr. Smith's code, Info-ZIP remains indebted and grateful to him. We hope he finds our contributions as useful as we have his.

Note that the third and fourth stipulations still apply to any company that wishes to incorporate the unreduce code into its products; if you wish to do so, you must contact Mr. Smith directly regarding licensing.

The following copyright applied to most of the VMS code in vms.c,
distributed with UnZip version 4.2 and later:

```
  * Copyright (c) 1992-93 Igor Mandrichenko.
  * Permission is granted to any individual or institution to use, copy,
  * or redistribute this software so long as all of the original files
  * are included unmodified and that this copyright notice is retained.
```

The following copyright applied to the new version of unshrink.c,
distributed with UnZip version 5.2 and later:

```
  * Copyright (c) 1994 Greg Roelofs.
  * Permission is granted to any individual/institution/corporate
   * entity to use, copy, redistribute or modify this software for
  * any purpose whatsoever, subject to the conditions noted in the
  * Frequently Asked Questions section below, plus one additional
  * condition:  namely, that my name not be removed from the source
  * code.  (Other names may, of course, be added as modifications
  * are made.)  Corporate legal staff (like at IBM :-) ) who have
  * problems understanding this can contact me through Zip-Bugs...
```

The following copyright applied to the Windows DLL code (windll/*),
distributed with UnZip version 5.2 and later:

```
  * Copyright (c) 1996 Mike White.
  * Permission is granted to any individual or institution to use,
  * copy, or redistribute this software so long as all of the original
  * files are included, that it is not sold for profit, and that this
  * copyright notice is retained.
```

The following copyright applied to the Windows
CE GUI port, ``Pocket
UnZip," distributed with UnZip version 5.3 and later:

```
  * All the source files for Pocket UnZip, except for components
  * written by the Info-ZIP group, are copyrighted 1997 by Steve P.
  * Miller.  The product "Pocket UnZip" itself is property of the
  * author and cannot be altered in any way without written consent
  * from Steve P. Miller.
```

The remaining code was written by many people associated with the
Info-ZIP group, with large contributions from (but not limited to):
Greg Roelofs (overall program logic, ZipInfo, unshrink, filename
mapping/portability, etc.), Mark Adler (inflate, explode, funzip),
Kai Uwe Rommel (OS/2), John Bush and Paul Kienitz (Amiga), Antoine
Verheijen (Macintosh), Hunter Goatley (more VMS), Mike White (Windows
DLLs), Christian Spieler (overall logic, optimization, VMS, etc.) and
others. See the file CONTRIBS in the source distribution for a much
more complete list of contributors.
 The decompression core code for the deflate method (inflate.[ch],
explode.c) was originally written by Mark Adler who submitted it
as public domain code.

1.188 logrus 1.9.3

1.188.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Simon Eskildsen

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
 OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.189 ca-certificates 2024.2.69_v8.0.303-91.4.el9_4

1.189.1 Available under license :

No license file was found, but licenses were detected in source scan.

////
Copyright (C) 2013 Red Hat, Inc.

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
////

update-ca-trust(8)
==========
:doctype: manpage
:man source: update-ca-trust

NAME
---
update-ca-trust - manage consolidated and dynamic configuration of CA
certificates and associated trust

SYNOPSIS
---
update-ca-trust [extract] [-o 'DIR'|--output='DIR']

DESCRIPTION
---
update-ca-trust(8) is used to manage a consolidated and dynamic configuration
feature of Certificate Authority
 (CA) certificates and associated trust.

The feature is available for new applications that read the
consolidated configuration files found in the /etc/pki/ca-trust/extracted directory
or that load the PKCS#11 module p11-kit-trust.so

Parts of the new feature are also provided in a way to make it useful
for legacy applications.

Many legacy applications expect CA certificates and trust configuration
in a fixed location, contained in files with particular path and name,
or by referring to a classic PKCS#11 trust module provided by the
NSS cryptographic library.

The dynamic configuration feature provides functionally compatible replacements
for classic configuration files and for the classic NSS trust module named libnssckbi.

In order to enable legacy applications, that read the classic files or
access the classic module, to make use of the new consolidated and dynamic configuration
feature, the classic filenames have been changed to symbolic links.
The symbolic links refer to
dynamically created and consolidated
output stored below the /etc/pki/ca-trust/extracted directory hierarchy.

The output is produced using the 'update-ca-trust' command (without parameters),
or using the 'update-ca-trust extract' command.
In order to produce the output, a flexible set of source configuration
is read, as described in section <<sourceconf,SOURCE CONFIGURATION>>.

In addition, the classic PKCS#11 module
is replaced with a new PKCS#11 module (p11-kit-trust.so) that dynamically
reads the same source configuration.

[[sourceconf]]
SOURCE CONFIGURATION

The dynamic configuration feature uses several source directories that
will be scanned for any number of source files. *It is important to select
the correct subdirectory for adding files, as the subdirectory defines how
contained certificates will be trusted or distrusted, and which file formats are read.*

Files in *subdirectories below the directory hierarchy /usr/share/pki/ca-trust-source/* contain
CA certificates and
trust settings in the PEM file format. The trust settings found here will be
interpreted with a *low priority*.

Files in *subdirectories below the directory hierarchy /etc/pki/ca-trust/source/* contain CA certificates and
trust settings in the PEM file format. The trust settings found here will be
interpreted with a *high priority*.

.You may use the following rules of thumb to decide, whether your configuration files should be added to the /etc or
rather to the /usr directory hierarchy:
* If you are manually adding a configuration file to a system, you probably
want it to override any other default configuration, and you most likely should
add it to the respective subdirectory in the /etc hierarchy.
* If you are creating a package that provides additional root CA certificates,

that is intended for distribution to several computer systems, but you still
want to allow the administrator to override your list, then your package should
add your files to the respective
subdirectory in the /usr hierarchy.
* If you are creating a package that is supposed to override the default system
trust settings, that is intended for distribution to several computer systems, then your package should install the files to the respective
subdirectory in the /etc hierarchy.

.*QUICK HELP 1*: To add a certificate in the simple PEM or DER file formats to the list of CAs trusted on the system:
* add it as a new file to directory /etc/pki/ca-trust/source/anchors/
* run 'update-ca-trust extract'

.*QUICK HELP 2*: If your certificate is in the extended BEGIN TRUSTED file format (which may contain distrust/blocklist trust flags, or trust flags for usages other than TLS) then:
* add it as a new file to directory /etc/pki/ca-trust/source/
* run 'update-ca-trust extract'

.In order to offer simplicity and flexibility, the way certificate files are treated depends on the subdirectory they are installed to.
* simple trust anchors subdirectory: /usr/share/pki/ca-trust-source/anchors/
or /etc/pki/ca-trust/source/anchors/
* simple blocklist (distrust) subdirectory: /usr/share/pki/ca-trust-source/blocklist/ or /etc/pki/ca-trust/source/blocklist/
* extended format directory: /usr/share/pki/ca-trust-source/ or /etc/pki/ca-trust/source/

.In the main directories /usr/share/pki/ca-trust-source/ or /etc/pki/ca-trust/source/ you may install one or multiple files in the following file formats:
* certificate files that include trust flags,
in the BEGIN/END TRUSTED CERTIFICATE file format
(any file name), which have been created using the openssl x509 tool
and the -addreject -addtrust options.
Bundle files with multiple certificates are supported.
* files in the p11-kit file format using the .p11-kit file name
extension, which can (e.g.) be used to distrust certificates
based on serial number and issuer name, without having the
full certificate available.
(This is currently an undocumented format, to be extended later.
For examples of the supported
formats, see the files
shipped with the ca-certificates package.)
* certificate files without trust flags in either the DER file format or in
the PEM (BEGIN/END CERTIFICATE) file format (any file name). Such files
will be added with neutral trust, neither trusted nor distrusted.
They will simply be known to the system, which might be helpful to
assist cryptographic software in constructing chains of certificates.
(If you want a CA certificate in these file formats to be trusted, you

should remove it from this directory and move it to the
./anchors subdirectory instead.)

In the anchors subdirectories /usr/share/pki/ca-trust-source/anchors/ or /etc/pki/ca-trust/source/anchors/
you may install one or multiple certificates in either the DER file
format or in the PEM (BEGIN/END CERTIFICATE) file format.
Each certificate will be treated as *trusted* for all purposes.

In the blocklist subdirectories /usr/share/pki/ca-trust-source/blocklist/ or /etc/pki/ca-trust/source/blocklist/
you
may install one or multiple certificates in either the DER file
format or in the PEM (BEGIN/END CERTIFICATE) file format.
Each certificate will be treated as *distrusted* for all purposes.

Please refer to the x509(1) manual page for the documentation of the
BEGIN/END CERTIFICATE and BEGIN/END TRUSTED CERTIFICATE file formats.

Applications that rely on a static file for a list of trusted CAs
may load one of the files found in the /etc/pki/ca-trust/extracted
directory. After modifying any file in the
/usr/share/pki/ca-trust-source/ or /etc/pki/ca-trust/source/
directories or in any of their subdirectories, or after adding a file,
it is necessary to run the 'update-ca-trust extract' command,
in order to update the consolidated files in /etc/pki/ca-trust/extracted/ .

Applications that load the classic PKCS#11 module using filename libnssckbi.so
(which has been converted into a symbolic link pointing to the new module)
and any application capable of
loading PKCS#11 modules
and loading p11-kit-trust.so, will benefit from
the dynamically merged set of certificates and trust information stored in the
/usr/share/pki/ca-trust-source/ and /etc/pki/ca-trust/source/ directories.

[[extractconf]]
EXTRACTED CONFIGURATION

The directory /etc/pki/ca-trust/extracted/ contains generated CA certificate
bundle files which are created and updated, based on the <<sourceconf,SOURCE CONFIGURATION>>
by running the 'update-ca-trust extract' command.

If your application isn't able to load the PKCS#11 module p11-kit-trust.so,
then you can use these files in your application to load a list of global
root CA certificates.

Please never manually edit the files stored in this directory,
because your changes will be lost and the files automatically overwritten,
each time the 'update-ca-trust extract' command gets executed.

In order to install new trusted or distrusted certificates,
please rather install them in the respective subdirectory below the
/usr/share/pki/ca-trust-source/
 or /etc/pki/ca-trust/source/
directories, as described in the <<sourceconf,SOURCE CONFIGURATION>> section.

The directory /etc/pki/ca-trust/extracted/java/ contains
a CA certificate bundle in the java keystore file format.
Distrust information cannot be represented in this file format,
and distrusted certificates are missing from these files.
File cacerts contains CA certificates trusted for TLS server authentication.

The directory /etc/pki/ca-trust/extracted/openssl/ contains
CA certificate bundle files in the extended BEGIN/END TRUSTED CERTIFICATE file format,
as described in the x509(1) manual page.
File ca-bundle.trust.crt contains the full set of all trusted
or distrusted certificates, including the associated trust flags.

The directory /etc/pki/ca-trust/extracted/pem/ contains
CA certificate bundle files in the simple BEGIN/END CERTIFICATE file format,
as described in the x509(1) manual page.
Distrust information cannot be represented in this
 file format,
and distrusted certificates are missing from these files.
File tls-ca-bundle.pem contains CA certificates
trusted for TLS server authentication.
File email-ca-bundle.pem contains CA certificates
trusted for E-Mail protection.
File objsign-ca-bundle.pem contains CA certificates
trusted for code signing.

The directory /etc/pki/ca-trust/extracted/edk2/ contains a CA
certificate bundle ("cacerts.bin") in the "sequence of
EFI_SIGNATURE_LISTs" format, defined in the UEFI-2.7 specification,
sections "31.4.1 Signature Database" and
"EFI_CERT_X509_GUID". Distrust information cannot be represented in
this file format, and distrusted certificates are missing from these
files. File "cacerts.bin" contains CA certificates trusted for TLS
server authentication.

COMMANDS

(absent/empty command)
~~~~~~~~~~~~~~~~~~~~~~
Same as the *extract* command described below. (However, the command may print
fewer warnings, as this command is being run during rpm package installation,
~~~~~~~~~~~~~~~~~~~~~~

where
non-fatal status output is undesired.)

extract
~~~~~~~
Instruct update-ca-trust to scan the <<sourceconf,SOURCE CONFIGURATION>> and
produce updated versions of the consolidated configuration files stored below
the /etc/pki/ca-trust/extracted directory hierarchy.

EXTRACT OPTIONS
^^^^^^^^^^^^^^^
-o DIR, *--output=DIR*::
Write the extracted trust store into the given directory instead of
updating /etc/pki/ca-trust/extracted.

FILES

/etc/pki/tls/certs/ca-bundle.crt::
Classic filename, file contains a list of CA certificates trusted for TLS server authentication usage, in the simple BEGIN/END CERTIFICATE file format, without distrust information.
This file is a symbolic link that refers to the consolidated output created by the update-ca-trust command.

/etc/pki/tls/certs/ca-bundle.trust.crt::
Classic filename, file contains a list of CA certificates in the extended BEGIN/END TRUSTED CERTIFICATE file format, which includes trust (and/or distrust) flags specific to certificate
usage.
This file is a symbolic link that refers to the consolidated output created by the update-ca-trust command.

/etc/pki/java/cacerts::
Classic filename, file contains a list of CA certificates trusted for TLS server authentication usage, in the Java keystore file format, without distrust information.
This file is a symbolic link that refers to the consolidated output created by the update-ca-trust command.

/usr/share/pki/ca-trust-source::
Contains multiple, low priority source configuration files as explained in section <<sourceconf,SOURCE CONFIGURATION>>. Please pay attention to the specific meanings of the respective subdirectories.

/etc/pki/ca-trust/source::
Contains multiple, high priority source configuration files as explained in section <<sourceconf,SOURCE CONFIGURATION>>. Please pay attention to the specific meanings of the respective subdirectories.

/etc/pki/ca-trust/extracted::
Contains consolidated and automatically generated configuration files for consumption
by applications,
which are created using the 'update-ca-trust extract' command. Don't edit files in this directory, because they will be overwritten.
See section <<extractconf,EXTRACTED CONFIGURATION>> for additional details.
~~~~~~~

AUTHOR

Written by Kai Engert and Stef Walter.

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/update-ca-trust.8.txt
No license file was found, but licenses were detected in source scan.

////
Copyright (C) 2013 Red Hat, Inc.

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
////

ca-legacy(8)
============
:doctype: manpage
:man source: ca-legacy

NAME
----
ca-legacy - Manage the system configuration for legacy CA certificates

SYNOPSIS
----
ca-legacy ['COMMAND']

DESCRIPTION
----
ca-legacy(8) is used to include or exclude a set of legacy Certificate Authority (CA)
certificates in the system's list of trusted CA certificates.

The list of CA certificates and trust flags
 included in the ca-certificates package
are based on the decisions made by Mozilla.org according to the Mozilla CA policy.

Occasionally, removal or distrust decisions made by Mozilla.org might be incompatible with the requirements or limitations of some applications that also use the CA certificates list in the Linux environment.

The ca-certificates package might keep some CA certificates included and trusted by default, as long as it is seen necessary by the maintainers, despite the fact that they have been removed by Mozilla. These certificates are called legacy CA certificates.

The general requirements to keep legacy CA certificates included and trusted might change over time, for example if functional limitations of software packages have been resolved. Future versions of the ca-certificates package might reduce the set of legacy CA certificates that are included and trusted by default.

The ca-legacy(8) command can be used to override the default behaviour.

The mechanisms
to individually trust or distrust CA certificates as described in update-ca-trust(8) still apply.

COMMANDS
---
check::
The current configuration will be shown.

default::
Configure the system to use the default configuration, as recommended by the package maintainers.

disable::
Configure the system to explicitly disable legacy CA certificates. Using this configuration, the system will use the set of included and trusted CA certificates as released by Mozilla.

install::
The configuration file will be read and the system configuration will be set accordingly. This command is executed automatically during upgrades of the ca-certificates package.

FILES

/etc/pki/ca-trust/ca-legacy.conf::
A configuration file that will be used and modified by the ca-legacy command. The contents of the configuration file will be read on package upgrades.

AUTHOR

Written by Kai Engert.

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/ca-legacy.8.txt
No license file was found, but licenses were detected in source scan.

```
#
# This Source Code Form is subject to the terms of the Mozilla Public
# License, v. 2.0. If a copy of the MPL was not distributed with this
# file, You can obtain one at http://mozilla.org/MPL/2.0/.

#
# certdata.txt
#
# This file contains the object definitions for the certs and other
# information "built into" NSS.
#
# Object definitions:
#
#    Certificates
#
#  -- Attribute --              -- type --          -- value --
#  CKA_CLASS                   CK_OBJECT_CLASS     CKO_CERTIFICATE
#  CKA_TOKEN                   CK_BBOOL            CK_TRUE
#  CKA_PRIVATE                 CK_BBOOL            CK_FALSE
#  CKA_MODIFIABLE              CK_BBOOL            CK_FALSE
#  CKA_LABEL                   UTF8                (varies)
#  CKA_CERTIFICATE_TYPE        CK_CERTIFICATE_TYPE CKC_X_509
#  CKA_SUBJECT                 DER+base64          (varies)
#  CKA_ID                      byte array          (varies)
#
  CKA_ISSUER                  DER+base64          (varies)
#  CKA_SERIAL_NUMBER           DER+base64          (varies)
#  CKA_VALUE                   DER+base64          (varies)
#  CKA_NSS_EMAIL               ASCII7              (unused here)
#  CKA_NSS_SERVER_DISTRUST_AFTER DER+base64        (varies)
#  CKA_NSS_EMAIL_DISTRUST_AFTER  DER+base64        (varies)
#
#    Trust
#
#  -- Attribute --              -- type --          -- value --
#  CKA_CLASS                   CK_OBJECT_CLASS     CKO_TRUST
#  CKA_TOKEN                   CK_BBOOL            CK_TRUE
#  CKA_PRIVATE                 CK_BBOOL            CK_FALSE
#  CKA_MODIFIABLE              CK_BBOOL            CK_FALSE
#  CKA_LABEL                   UTF8                (varies)
#  CKA_ISSUER                  DER+base64          (varies)
#  CKA_SERIAL_NUMBER           DER+base64          (varies)
#  CKA_CERT_HASH               binary+base64       (varies)
#  CKA_EXPIRES                 CK_DATE
```

```
 (not used here)
#  CKA_TRUST_DIGITAL_SIGNATURE  CK_TRUST          (varies)
#  CKA_TRUST_NON_REPUDIATION    CK_TRUST          (varies)
#  CKA_TRUST_KEY_ENCIPHERMENT   CK_TRUST          (varies)
#  CKA_TRUST_DATA_ENCIPHERMENT  CK_TRUST          (varies)
#  CKA_TRUST_KEY_AGREEMENT      CK_TRUST          (varies)
#  CKA_TRUST_KEY_CERT_SIGN      CK_TRUST          (varies)
#  CKA_TRUST_CRL_SIGN           CK_TRUST          (varies)
#  CKA_TRUST_SERVER_AUTH        CK_TRUST          (varies)
#  CKA_TRUST_CLIENT_AUTH        CK_TRUST          (varies)
#  CKA_TRUST_CODE_SIGNING       CK_TRUST          (varies)
#  CKA_TRUST_EMAIL_PROTECTION   CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_END_SYSTEM   CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_TUNNEL       CK_TRUST          (varies)
#  CKA_TRUST_IPSEC_USER         CK_TRUST          (varies)
#  CKA_TRUST_TIME_STAMPING      CK_TRUST          (varies)
#  CKA_TRUST_STEP_UP_APPROVED   CK_BBOOL          (varies)
#  (other
 trust attributes can be defined)
#

#
# The object to tell NSS that this is a root list and we don't
# have to go looking for others.
#
BEGINDATA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_BUILTIN_ROOT_LIST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Mozilla Builtin Roots"

#
# Certificate "GlobalSign Root CA"
#
# Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
# Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
# Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
# Not Valid Before: Tue Sep 01 12:00:00 1998
# Not Valid After : Fri Jan 28 12:00:00 2028
# Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
# Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign
```

Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\165\060\202\002\135\240\003\002\001\002\002\013\004
\000\000\000\000\001\025\113\132\303\224\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\127\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004
\012\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166
\055\163\141\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\033\060\031\006\003\125\004\003\023\022
\107\154\157\142\141\154\123\151\147\156\040\122\157\157\164\040
\103\101\060\036\027\015\071\070\060\071\060\061\061\062\060\060
\060\060\132\027\015\062\070\060\061\062\070\061\062\060\060\060
\060\132\060\127\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142
\141\154\123\151\147\156\040\156\166\055\163\141\061\020\060\016
\006\003\125\004\013\023\007\122\157\157\164\040\103\101\061\033
\060\031\006\003\125\004\003\023\022\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\332\016\346\231
\215\316\243\343\117\212\176\373\361\213\203\045\153\352\110\037
\361\052\260\271\225\021\004\275\360\143\321\342\147\146\317\034
\335\317\033\110\053\356\215\211\216\232\257\051\200\145\253\351
\307\055\022\313\253\034\114\160\007\241\075\012\060\315\025\215
\117\370\335\324\214\120\025\034\357\120\356\304\056\367\374\351
\122\362\221\175\340\155\325\065\060\216\136\103\163\362\101\351
\325\152\343\262\211\072\126\071\070\157\006\074\210\151\133\052

\115\305\247\124\270\154\211\314\233\371\074\312\345\375\211\365
\022\074\222\170\226\326\334\164\156\223\104\141\321\215\307\106
\262\165\016\206\350\031\212\325\155\154\325\170\026\225\242\351
\310\012\070\353\362\044\023\117\163\124\223\023\205\072\033\274
\036\064\265\213\005\214\271\167\213\261\333\037\040\221\253\011
\123\156\220\316\173\067\164\271\160\107\221\042\121\143\026\171
\256\261\256\101\046\010\310\031\053\321\106\252\110\326\144\052
\327\203\064\377\054\052\301\154\031\103\112\007\205\347\323\174
\366\041\150\357\352\362\122\237\177\223\220\317\002\003\001\000
\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\140\173\146\032\105\015\227\312\211\120\057\175\004\315\064
\250\377\374\375\113\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\326\163\347\174\117\166\320
\215\277\354\272\242\276\064\305\050\062\265\174\374\154\234\054
\053\275\011\236\123\277\153\136\252\021\110\266\345\010\243\263
\312\075\141\115\323\106\011\263\076\303\240\343\143\125\033\362
\272\357\255\071\341\103\271\070\243\346\057\212\046\073\357\240
\120\126\371\306\012\375\070\315\304\013\160\121\224\227\230\004
\337\303\137\224\325\025\311\024\101\234\304\135\165\144\025\015
\377\125\060\354\206\217\377\015\357\054\271\143\106\366\252\374
\337\274\151\375\056\022\110\144\232\340\225\360\246\357\051\217
\001\261\025\265\014\035\245\376\151\054\151\044\170\036\263\247
\034\161\142\356\312\310\227\254\027\135\212\302\370\107\206\156
\052\304\126\061\225\320\147\211\205\053\371\154\246\135\106\235
\014\252\202\344\231\121\335\160\267\333\126\075\141\344\152\341
\134\326\366\376\075\336\101\314\007\256\143\122\277\123\123\364
\053\351\307\375\266\367\202\137\205\322\101\030\333\201\263\004
\034\305\037\244\200\157\025\040\311\336\014\210\012\035\326\146
\125\342\374\110\311\051\046\151\340
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA"
Issuer: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Serial Number:04:00:00:00:00:01:15:4b:5a:c3:94
Subject: CN=GlobalSign Root CA,OU=Root CA,O=GlobalSign nv-sa,C=BE
Not Valid Before: Tue Sep 01 12:00:00 1998
#
Not Valid After : Fri Jan 28 12:00:00 2028
Fingerprint (SHA-256):
EB:D4:10:40:E4:BB:3E:C7:42:C9:E3:81:D3:1E:F2:A4:1A:48:B6:68:5C:96:E7:CE:F3:C1:DF:6C:D4:33:1C:99
Fingerprint (SHA1): B1:BC:96:8B:D4:F4:9D:62:2A:A8:9A:81:F2:15:01:52:A4:1D:82:9C
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\274\226\213\324\364\235\142\052\250\232\201\362\025\001\122
\244\035\202\234
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\105\122\025\011\121\222\341\267\135\067\237\261\207\051\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\020\060\016\006\003
\125\004\013\023\007\122\157\157\164\040\103\101\061\033\060\031
\006\003\125\004\003\023\022\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\025\113\132\303\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust.net Premium 2048 Secure Server CA"
#
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net
Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net
Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
Fingerprint (SHA1):
50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\052\060\202\003\022\240\003\002\001\002\002\004\070
\143\336\370\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\264\061\024\060\022\006\003\125\004\012\023\013
\105\156\164\162\165\163\164\056\156\145\164\061\100\060\076\006
\003\125\004\013\024\067\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\103\120\123\137\062\060\064\070\040\151
\156\143\157\162\160\056\040\142\171\040\162\145\146\056\040\050
\154\151\155\151\164\163\040\154\151\141\142\056\051\061\045\060
\043\006\003\125\004\013\023\034\050\143\051\040\061\071\071\071
\040\105\156\164\162\165\163\164\056\156\145\164\040\114\151\155
\151\164\145\144\061\063\060\061\006\003\125\004\003\023\052\105
\156\164\162\165\163\164\056\156\145\164\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\050\062\060\064\070\051\060\036\027\015\071\071\061

\062\062\064\061\067\065\060\065\061\132\027\015\062\071\060\067
\062\064\061\064\061\065\061\062\132\060\201\264\061\024\060\022
\006\003\125\004\012\023\013\105\156\164\162\165\163\164\056\156
\145\164\061\100\060\076\006\003\125\004\013\024\067\167\167\167
\056\145\156\164\162\165\163\164\056\156\145\164\057\103\120\123
\137\062\060\064\070\040\151\156\143\157\162\160\056\040\142\171
\040\162\145\146\056\040\050\154\151\155\151\164\163\040\154\151
\141\142\056\051\061\045\060\043\006\003\125\004\013\023\034\050
\143\051\040\061\071\071\071\040\105\156\164\162\165\163\164\056
\156\145\164\040\114\151\155\151\164\145\144\061\063\060\061\006
\003\125\004\003\023\052\105\156\164\162\165\163\164\056\156\145
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\050\062\060\064\070\051
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\255\115\113\251\022\206\262\352\243\040\007\025\026\144\052
\053\113\321\277\013\112\115\216\355\200\166\245\147\267\170\100
\300\163\102\310\150\300\333\123\053\335\136\270\166\230\065\223
\213\032\235\174\023\072\016\037\133\267\036\317\345\044\024\036
\261\201\251\215\175\270\314\153\113\003\361\002\014\334\253\245
\100\044\000\177\164\224\241\235\010\051\263\210\013\365\207\167
\235\125\315\344\303\176\327\152\144\253\205\024\206\225\133\227
\062\120\157\075\310\272\146\014\343\374\275\270\111\301\166\211
\111\031\375\300\250\275\211\243\147\057\306\237\274\161\031\140
\270\055\351\054\311\220\166\146\173\224\342\257\170\326\145\123
\135\074\326\234\262\317\051\003\371\057\244\120\262\324\110\316
\005\062\125\212\375\262\144\114\016\344\230\007\165\333\177\337
\271\010\125\140\205\060\051\371\173\110\244\151\206\343\065\077
\036\206\135\172\172\025\275\357\000\216\025\042\124\027\000\220
\046\223\274\016\111\150\221\277\370\107\323\235\225\102\301\016
\115\337\157\046\317\303\030\041\142\146\103\160\326\325\300\007
\341\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\125\344\201\321\021\200\276\330\211\271
\010\243\061\371\241\044\011\026\271\160\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\073\233
\217\126\233\060\347\123\231\174\172\171\247\115\227\327\031\225
\220\373\006\037\312\063\174\106\143\217\226\146\044\372\100\033
\041\047\312\346\162\163\362\117\376\061\231\375\310\014\114\150
\123\306\200\202\023\230\372\266\255\332\135\075\361\316\156\366
\025\021\224\202\014\356\077\225\257\021\253\017\327\057\336\037
\003\217\127\054\036\311\273\232\032\104\225\353\030\117\246\037
\315\175\127\020\057\233\004\011\132\204\265\156\330\035\072\341
\326\236\321\154\171\136\171\034\024\305\343\320\114\223\073\145
\074\355\337\075\276\246\345\225\032\303\265\031\303\275\136\133
\273\377\043\357\150\031\313\022\223\047\134\003\055\157\060\320
\036\266\032\254\336\132\367\321\252\250\047\246\376\171\201\304

\171\231\063\127\272\022\260\251\340\102\154\223\312\126\336\376
\155\204\013\010\213\176\215\352\327\230\041\306\363\347\074\171
\057\136\234\321\114\025\215\341\354\042\067\314\232\103\013\227
\334\200\220\215\263\147\233\157\110\010\025\126\317\277\361\053
\174\136\232\166\351\131\220\305\174\203\065\021\145\121
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust.net Premium 2048 Secure Server CA"
Issuer: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net
Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Serial Number: 946069240 (0x3863def8)
Subject: CN=Entrust.net Certification Authority (2048),OU=(c) 1999 Entrust.net
Limited,OU=www.entrust.net/CPS_2048 incorp. by ref. (limits liab.),O=Entrust.net
Not Valid Before: Fri Dec 24 17:50:51 1999
Not Valid After : Tue Jul 24 14:15:12 2029
Fingerprint (SHA-256):
6D:C4:71:72:E0:1C:BC:B0:BF:62:58:0D:89:5F:E2:B8:AC:9A:D4:F8:73:80:1E:0C:10:B9:C8:37:D2:1E:B1:77
#
Fingerprint (SHA1): 50:30:06:09:1D:97:D4:F5:AE:39:F7:CB:E7:92:7D:7D:65:2D:34:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust.net Premium 2048 Secure Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\120\060\006\011\035\227\324\365\256\071\367\313\347\222\175\175
\145\055\064\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\356\051\061\274\062\176\232\346\350\265\367\121\264\064\161\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\264\061\024\060\022\006\003\125\004\012\023\013\105\156
\164\162\165\163\164\056\156\145\164\061\100\060\076\006\003\125
\004\013\024\067\167\167\167\056\145\156\164\162\165\163\164\056
\156\145\164\057\103\120\123\137\062\060\064\070\040\151\156\143
\157\162\160\056\040\142\171\040\162\145\146\056\040\050\154\151
\155\151\164\163\040\154\151\141\142\056\051\061\045\060\043\006
\003\125\004\013\023\034\050\143\051\040\061\071\071\071\040\105
\156\164\162\165\163\164\056\156\145\164\040\114\151\155\151\164
\145\144\061\063\060\061\006\003\125\004\003\023\052\105\156\164
\162\165\163\164\056\156\145\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\050\062\060\064\070\051

END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\070\143\336\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Baltimore CyberTrust Root"
#
Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Serial Number: 33554617 (0x20000b9)
Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Not Valid Before: Fri May 12 18:46:00 2000
Not Valid After : Mon May 12 23:59:00 2025
Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
#
Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\002\000\000\271

END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\004\002
\000\000\271\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\111
\105\061\022\060\020\006\003\125\004\012\023\011\102\141\154\164
\151\155\157\162\145\061\023\060\021\006\003\125\004\013\023\012
\103\171\142\145\162\124\162\165\163\164\061\042\060\040\006\003
\125\004\003\023\031\102\141\154\164\151\155\157\162\145\040\103
\171\142\145\162\124\162\165\163\164\040\122\157\157\164\060\036
\027\015\060\060\060\065\061\062\061\070\064\066\060\060\132\027
\015\062\065\060\065\061\062\062\063\065\071\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\111\105\061\022\060
\020\006\003\125\004\012\023\011\102\141\154\164\151\155\157\162
\145\061\023\060\021\006\003\125\004\013\023\012\103\171\142\145
\162\124\162\165\163\164\061\042\060\040\006\003\125\004\003\023
\031\102\141\154\164\151\155\157\162\145\040\103\171\142\145\162
\124\162\165\163\164\040\122\157\157\164\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\243\004\273\042\253
\230\075\127\350\046\162\232\265\171\324\051\342\341\350\225\200
\261\260\343\133\216\053\051\232\144\337\241\135\355\260\011\005
\155\333\050\056\316\142\242\142\376\264\210\332\022\353\070\353
\041\235\300\101\053\001\122\173\210\167\323\034\217\307\272\271
\210\265\152\011\347\163\350\021\100\247\321\314\312\142\215\055
\345\217\013\246\120\322\250\120\303\050\352\365\253\045\207\212
\232\226\034\251\147\270\077\014\325\367\371\122\023\057\302\033
\325\160\160\360\217\300\022\312\006\313\232\341\331\312\063\172
\167\326\370\354\271\361\150\104\102\110\023\322\300\302\244\256
\136\140\376\266\246\005\374\264\335\007\131\002\324\131\030\230
\143\365\245\143\340\220\014\175\135\262\006\172\363\205\352\353
\324\003\256\136\204\076\137\377\025\355\151\274\371\071\066\162
\165\317\167\122\115\363\311\220\054\271\075\345\311\043\123\077
\037\044\230\041\134\007\231\051\275\306\072\354\347\156\206\072
\153\227\164\143\063\275\150\030\061\360\170\215\166\277\374\236
\216\135\052\206\247\115\220\334\047\032\071\002\003\001\000\001
\243\105\060\103\060\035\006\003\125\035\016\004\026\004\024\345
\235\131\060\202\107\130\314\254\372\010\124\066\206\173\072\265
\004\115\360\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\003\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\205\014\135\216\344
\157\121\150\102\005\240\335\273\117\047\045\204\003\275\367\144
\375\055\327\060\343\244\020\027\353\332\051\051\266\171\077\166
\366\031\023\043\270\020\012\371\130\244\324\141\160\275\004\141
\152\022\212\027\325\012\275\305\274\060\174\326\351\014\045\215
\206\100\117\354\314\243\176\070\306\067\021\117\355\335\150\061
\216\114\322\263\001\164\356\276\165\136\007\110\032\177\160\377

\026\134\204\300\171\205\270\005\375\177\276\145\021\243\017\300
\002\264\370\122\067\071\004\325\251\061\172\030\277\240\052\364
\022\231\367\243\105\202\343\074\136\365\235\236\265\310\236\174
\056\310\244\236\116\010\024\113\155\375\160\155\153\032\143\275
\144\346\037\267\316\360\362\237\056\273\033\267\362\120\210\163
\222\302\342\343\026\215\232\062\002\253\216\030\335\351\020\021
\356\176\065\253\220\257\076\060\224\172\320\063\075\247\145\017
\365\374\216\236\142\317\107\104\054\001\135\273\035\265\062\322
\107\322\070\056\320\376\201\334\062\152\036\265\356\074\325\374
\347\201\035\031\303\044\102\352\143\071\251
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
 CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Baltimore CyberTrust Root"
Issuer: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Serial Number: 33554617 (0x20000b9)
Subject: CN=Baltimore CyberTrust Root,OU=CyberTrust,O=Baltimore,C=IE
Not Valid Before: Fri May 12 18:46:00 2000
Not Valid After : Mon May 12 23:59:00 2025
Fingerprint (SHA-256):
16:AF:57:A9:F6:76:B0:AB:12:60:95:AA:5E:BA:DE:F2:2A:B3:11:19:D6:44:AC:95:CD:4B:93:DB:F3:F2:6A:EB
Fingerprint (SHA1): D4:DE:20:D0:5E:66:FC:53:FE:1A:50:88:2C:78:DB:28:52:CA:E4:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Baltimore CyberTrust Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\324\336\040\320\136\146\374\123\376\032\120\210\054\170\333\050
\122\312\344\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\254\266\224\245\234\027\340\327\221\122\233\261\227\006\246\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\111\105\061
\022\060\020\006\003\125\004\012\023\011\102\141\154\164\151\155
\157\162\145\061\023\060\021\006\003\125\004\013\023\012\103\171
\142\145\162\124\162\165\163\164\061\042\060\040\006\003\125\004
\003\023\031\102\141\154\164\151\155\157\162\145\040\103\171\142
\145\162\124\162\165\163\164\040\122\157\157\164
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\004\002\000\000\271
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority"
#
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156

\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\105\153\120\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\221\060\202\003\171\240\003\002\001\002\002\004\105
\153\120\124\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\260\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\071\060\067\006\003
\125\004\013\023\060\167\167\167\056\145\156\164\162\165\163\164
\056\156\145\164\057\103\120\123\040\151\163\040\151\156\143\157
\162\160\157\162\141\164\145\144\040\142\171\040\162\145\146\145
\162\145\156\143\145\061\037\060\035\006\003\125\004\013\023\026
\050\143\051\040\062\060\060\066\040\105\156\164\162\165\163\164
\054\040\111\156\143\056\061\055\060\053\006\003\125\004\003\023
\044\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\060\066\061\061\062\067\062
\060\062\063\064\062\132\027\015\062\066\061\061\062\067\062\060
\065\063\064\062\132\060\201\260\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015
\105\156\164\162\165\163\164\054\040\111\156\143\056\061\071\060
\067\006\003\125\004\013\023\060\167\167\167\056\145\156\164\162
\165\163\164\056\156\145\164\057\103\120\123\040\151\163\040\151
\156\143\157\162\160\157\162\141\164\145\144\040\142\171\040\162
\145\146\145\162\145\156\143\145\061\037\060\035\006\003\125\004
\013\023\026\050\143\051\040\062\060\060\066\040\105\156\164\162
\165\163\164\054\040\111\156\143\056\061\055\060\053\006\003\125
\004\003\023\044\105\156\164\162\165\163\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\266\225\266\103\102\372\306
\155\052\157\110\337\224\114\071\127\005\356\303\171\021\101\150
\066\355\354\376\232\001\217\241\070\050\374\367\020\106\146\056
\115\036\032\261\032\116\306\321\300\225\210\260\311\377\061\213
\063\003\333\267\203\173\076\040\204\136\355\262\126\050\247\370
\340\271\100\161\067\305\313\107\016\227\052\150\300\042\225\142

\025\333\107\331\365\320\053\377\202\113\311\255\076\336\114\333
\220\200\120\077\011\212\204\000\354\060\012\075\030\315\373\375
\052\131\232\043\225\027\054\105\236\037\156\103\171\155\014\134
\230\376\110\247\305\043\107\134\136\375\156\347\036\264\366\150
\105\321\206\203\133\242\212\215\261\343\051\200\376\045\161\210
\255\276\274\217\254\122\226\113\252\121\215\344\023\061\031\350
\116\115\237\333\254\263\152\325\274\071\124\161\312\172\172\177
\220\335\175\035\200\331\201\273\131\046\302\021\376\346\223\342
\367\200\344\145\373\064\067\016\051\200\160\115\257\070\206\056
\236\177\127\257\236\027\256\353\034\313\050\041\137\266\034\330
\347\242\004\042\371\323\332\330\313\002\003\001\000\001\243\201
\260\060\201\255\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\053\006\003\125\035\020\004\044\060\042
\200\017\062\060\060\066\061\061\062\067\062\060\062\063\064\062
\132\201\017\062\060\062\066\061\061\062\067\062\060\065\063\064
\062\132\060\037\006\003\125\035\043\004\030\060\026\200\024\150
\220\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373
\204\275\155\060\035\006\003\125\035\016\004\026\004\024\150\220
\344\147\244\246\123\200\307\206\146\244\361\367\113\103\373\204
\275\155\060\035\006\011\052\206\110\206\366\175\007\101\000\004
\020\060\016\033\010\126\067\056\061\072\064\056\060\003\002\004
\220\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\223\324\060\260\327\003\040\052\320\371\143
\350\221\014\005\040\251\137\031\312\173\162\116\324\261\333\320
\226\373\124\132\031\054\014\010\367\262\274\205\250\235\177\155
\073\122\263\052\333\347\324\204\214\143\366\017\313\046\001\221
\120\154\364\137\024\342\223\164\300\023\236\060\072\120\343\264
\140\305\034\360\042\104\215\161\107\254\310\032\311\351\233\232
\000\140\023\377\160\176\137\021\115\111\033\263\025\122\173\311
\124\332\277\235\225\257\153\232\330\236\351\361\344\103\215\342
\021\104\072\277\257\275\203\102\163\122\213\252\273\247\051\317
\365\144\034\012\115\321\274\252\254\237\052\320\377\177\177\332
\175\352\261\355\060\045\301\204\332\064\322\133\170\203\126\354
\234\066\303\046\342\021\366\147\111\035\222\253\214\373\353\377
\172\356\205\112\247\120\200\360\247\134\112\224\056\137\005\231
\074\122\101\340\315\264\143\317\001\103\272\234\203\334\217\140
\073\363\132\264\264\173\256\332\013\220\070\165\357\201\035\146
\322\367\127\160\066\263\277\374\050\257\161\045\205\133\023\376
\036\177\132\264\074
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority"
Issuer: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is

incorporated by reference,O="Entrust, Inc.",C=US
Serial Number: 1164660820 (0x456b5054)
Subject: CN=Entrust Root Certification Authority,OU="(c) 2006 Entrust, Inc.",OU=www.entrust.net/CPS is incorporated by reference,O="Entrust, Inc.",C=US
Not Valid Before: Mon Nov 27 20:23:42 2006
Not Valid After : Fri Nov 27 20:53:42 2026
Fingerprint (SHA-256):
73:C1:76:43:4F:1B:C6:D5:AD:F4:5B:0E:76:E7:27:28:7C:8D:E5:76:16:C1:E6:E6:14:1A:2B:2C:BC:7D:8E:4C
Fingerprint (SHA1): B3:1E:B1:B7:40:E3:6C:84:02:DA:DC:37:D4:4D:F5:D4:67:49:52:F9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority"
CKA_CERT_SHA1_HASH
MULTILINE_OCTAL
\263\036\261\267\100\343\154\204\002\332\334\067\324\115\365\324
\147\111\122\371
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\245\303\355\135\335\076\000\301\075\207\222\037\035\077\344
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\260\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\167\167\167\056\145\156\164\162\165\163\164\056\156
\145\164\057\103\120\123\040\151\163\040\151\156\143\157\162\160
\157\162\141\164\145\144\040\142\171\040\162\145\146\145\162\145
\156\143\145\061\037\060\035\006\003\125\004\013\023\026\050\143
\051\040\062\060\060\066\040\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\055\060\053\006\003\125\004\003\023\044\105
\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\105\153\120\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Root CA"
#

```
# Issuer: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
# Serial Number: 65568 (0x10020)
# Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
# Not Valid Before: Tue Jun 11 10:46:39 2002
# Not Valid After : Fri Jun 11 10:46:39 2027
# Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24
# Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\014\060\202\001\364\240\003\002\001\002\002\003\001
\000\040\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\036\027\015\060\062\060\066\061\061\061\060\064\066\063
\071\132\027\015\062\067\060\066\061\061\061\060\064\066\063\071
\132\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145
\164\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060
\020\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\316\261\301\056\323\117\174\315\045\316\030\076\117\304
\214\157\200\152\163\310\133\121\370\233\322\334\273\000\134\261
```

\240\374\165\003\356\201\360\210\356\043\122\351\346\025\063\215
\254\055\011\305\166\371\053\071\200\211\344\227\113\220\245\250
\170\370\163\103\173\244\141\260\330\130\314\341\154\146\176\234
\363\011\136\125\143\204\325\250\357\363\261\056\060\150\263\304
\074\330\254\156\215\231\132\220\116\064\334\066\232\217\201\210
\120\267\155\226\102\011\363\327\225\203\015\101\113\260\152\153
\370\374\017\176\142\237\147\304\355\046\137\020\046\017\010\117
\360\244\127\050\316\217\270\355\105\366\156\356\045\135\252\156
\071\276\344\223\057\331\107\240\162\353\372\246\133\257\312\123
\077\342\016\306\226\126\021\156\367\351\146\251\046\330\177\225
\123\355\012\205\210\272\117\051\245\102\214\136\266\374\205\040
\000\252\150\013\241\032\205\001\234\304\106\143\202\210\266\042
\261\356\376\252\106\131\176\317\065\054\325\266\332\135\367\110
\063\024\124\266\353\331\157\316\315\210\326\253\033\332\226\073
\035\131\002\003\001\000\001\243\023\060\021\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\270\215\316\357\347\024\272\317\356\260\104\222\154\264\071\076
\242\204\156\255\270\041\167\322\324\167\202\207\346\040\101\201
\356\342\370\021\267\143\321\027\067\276\031\166\044\034\004\032
\114\353\075\252\147\157\055\324\315\376\145\061\160\305\033\246
\002\012\272\140\173\155\130\302\232\111\376\143\062\013\153\343
\072\300\254\253\073\260\350\323\011\121\214\020\203\306\064\340
\305\053\340\032\266\140\024\047\154\062\167\214\274\262\162\230
\317\315\314\077\271\310\044\102\024\326\127\374\346\046\103\251
\035\345\200\220\316\003\124\050\076\367\077\323\370\115\355\152
\012\072\223\023\233\073\024\043\023\143\234\077\321\207\047\171
\345\114\121\343\001\255\205\135\032\073\261\325\163\020\244\323
\362\274\156\144\365\132\126\220\250\307\016\114\164\017\056\161
\073\367\310\107\364\151\157\025\362\021\136\203\036\234\174\122
\256\375\002\332\022\250\131\147\030\333\274\160\335\233\261\151
\355\200\316\211\100\110\152\016\065\312\051\146\025\041\224\054
\350\140\052\233\205\112\100\363\153\212\044\354\006\026\054\163
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Root CA"
Issuer:
CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Serial Number: 65568 (0x10020)
Subject: CN=Certum CA,O=Unizeto Sp. z o.o.,C=PL
Not Valid Before: Tue Jun 11 10:46:39 2002
Not Valid After : Fri Jun 11 10:46:39 2027
Fingerprint (SHA-256):
D8:E0:FE:BC:1D:B2:E3:8D:00:94:0F:37:D2:7D:41:34:4D:99:3E:73:4B:99:D5:65:6D:97:78:D4:D8:14:36:24

```
# Fingerprint (SHA1): 62:52:DC:40:F7:11:43:A2:2F:DE:9E:F7:34:8E:06:42:51:B1:81:18
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\122\334\100\367\021\103\242\057\336\236\367\064\216\006\102
\121\261\201\030
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\054\217\237\146\035\030\220\261\107\046\235\216\206\202\214\251
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\033\060\031\006\003\125\004\012\023\022\125\156\151\172\145\164
\157\040\123\160\056\040\172\040\157\056\157\056\061\022\060\020
\006\003\125\004\003\023\011\103\145\162\164\165\155\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\001\000\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Comodo AAA Services root"
#
# Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
# Serial Number: 1 (0x1)
# Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
# Not Valid Before: Thu Jan 01 00:00:00 2004
# Not Valid After : Sun Dec 31 23:59:59 2028
# Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
# Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
```

\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\062\060\202\003\032\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040\103
\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003\125
\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151\143
\141\164\145\040\123\145\162\166\151\143\145\163\060\036\027\015
\060\064\060\061\060\061\060\060\060\060\060\060\132\027\015\062
\070\061\062\063\061\062\063\065\071\065\071\132\060\173\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\014\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\014\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\014\021\103\157\155\157\144\157\040\103\101\040\114
\151\155\151\164\145\144\061\041\060\037\006\003\125\004\003\014
\030\101\101\101\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\276\100\235\364\156\341
\352\166\207\034\115\105\104\216\276\106\310\203\006\235\301\052
\376\030\037\216\344\002\372\363\253\135\120\212\026\061\013\232

\006\320\305\160\042\315\111\055\124\143\314\266\156\150\106\013
\123\352\313\114\044\300\274\162\116\352\361\025\256\364\124\232
\022\012\303\172\262\063\140\342\332\211\125\363\042\130\363\336
\334\317\357\203\206\242\214\224\117\237\150\362\230\220\106\204
\047\307\166\277\343\314\065\054\213\136\007\144\145\202\300\110
\260\250\221\371\141\237\166\040\120\250\221\307\146\265\353\170
\142\003\126\360\212\032\023\352\061\243\036\240\231\375\070\366
\366\047\062\130\157\007\365\153\270\373\024\053\257\267\252\314
\326\143\137\163\214\332\005\231\250\070\250\313\027\170\066\121
\254\351\236\364\170\072\215\317\017\331\102\342\230\014\253\057
\237\016\001\336\357\237\231\111\361\055\337\254\164\115\033\230
\265\107\305\345\051\321\371\220\030\307\142\234\276\203\307\046
\173\076\212\045\307\300\335\235\346\065\150\020\040\235\217\330
\336\322\303\204\234\015\136\350\057\311\002\003\001\000\001\243
\201\300\060\201\275\060\035\006\003\125\035\016\004\026\004\024
\240\021\012\043\076\226\361\007\354\342\257\051\357\202\245\177
\320\060\244\264\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\173\006\003\125\035\037\004\164\060\162
\060\070\240\066\240\064\206\062\150\164\164\160\072\057\057\143
\162\154\056\143\157\155\157\144\157\143\141\056\143\157\155\057
\101\101\101\103\145\162\164\151\146\151\143\141\164\145\123\145
\162\166\151\143\145\163\056\143\162\154\060\066\240\064\240\062
\206\060\150\164\164\160\072\057\057\143\162\154\056\143\157\155
\157\144\157\056\156\145\164\057\101\101\101\103\145\162\164\151
\146\151\143\141\164\145\123\145\162\166\151\143\145\163\056\143
\162\154\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\001\001\000\010\126\374\002\360\233\350\377\244\372
\326\173\306\104\200\316\117\304\305\366\000\130\314\246\266\274
\024\111\150\004\166\350\346\356\135\354\002\017\140\326\215\120
\030\117\046\116\001\343\346\260\245\356\277\274\164\124\101\277
\375\374\022\270\307\117\132\364\211\140\005\177\140\267\005\112
\363\366\361\302\277\304\271\164\206\266\055\175\153\314\322\363
\106\335\057\306\340\152\303\303\064\003\054\175\226\335\132\302
\016\247\012\231\301\005\213\253\014\057\363\134\072\317\154\067
\125\011\207\336\123\100\154\130\357\374\266\253\145\156\004\366
\033\334\074\340\132\025\306\236\331\361\131\110\060\041\145\003
\154\354\351\041\163\354\233\003\241\340\067\255\240\025\030\217
\372\272\002\316\247\054\251\020\023\054\324\345\010\046\253\042
\227\140\370\220\136\164\324\242\232\123\275\362\251\150\340\242
\156\302\327\154\261\243\017\236\277\353\150\347\126\362\256\362
\343\053\070\072\011\201\265\153\205\327\276\055\355\077\032\267
\262\143\342\365\142\054\202\324\152\000\101\120\361\071\203\237
\225\351\066\226\230\156
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "Comodo AAA Services root"
# Issuer: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
# Serial Number:
 1 (0x1)
# Subject: CN=AAA Certificate Services,O=Comodo CA Limited,L=Salford,ST=Greater Manchester,C=GB
# Not Valid Before: Thu Jan 01 00:00:00 2004
# Not Valid After : Sun Dec 31 23:59:59 2028
# Fingerprint (SHA-256):
D7:A7:A0:FB:5D:7E:27:31:D7:71:E9:48:4E:BC:DE:F7:1D:5F:0C:3E:0A:29:48:78:2B:C8:3E:E0:EA:69:9E:F4
# Fingerprint (SHA1): D1:EB:23:A4:6D:17:D6:8F:D9:25:64:C2:F1:F1:60:17:64:D8:E3:49
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Comodo AAA Services root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\353\043\244\155\027\326\217\331\045\144\302\361\361\140\027
\144\330\343\111
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\111\171\004\260\353\207\031\254\107\260\274\021\121\233\164\320
END
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\033\060\031\006\003\125\004\010\014\022\107\162\145\141\164\145
\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016
\006\003\125\004\007\014\007\123\141\154\146\157\162\144\061\032
\060\030\006\003\125\004\012\014\021\103\157\155\157\144\157\040
\103\101\040\114\151\155\151\164\145\144\061\041\060\037\006\003
\125\004\003\014\030\101\101\101\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "QuoVadis Root CA 2"
#
# Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
# Serial Number: 1289 (0x509)
```

Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
#
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\267\060\202\003\237\240\003\002\001\002\002\002\005
\011\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\060\036\027\015\060\066\061\061\062
\064\061\070\062\067\060\060\132\027\015\063\061\061\061\062\064
\061\070\062\063\063\063\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\062\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\232

\030\312\113\224\015\000\055\257\003\051\212\360\017\201\310\256
\114\031\205\035\010\237\253\051\104\205\363\057\201\255\062\036
\220\106\277\243\206\046\032\036\376\176\034\030\072\134\234\140
\027\052\072\164\203\063\060\175\141\124\021\313\355\253\340\346
\322\242\176\365\153\157\030\267\012\013\055\375\351\076\357\012
\306\263\020\351\334\302\106\027\370\135\375\244\332\377\236\111
\132\234\346\063\346\044\226\367\077\272\133\053\034\172\065\302
\326\147\376\253\146\120\213\155\050\140\053\357\327\140\303\307
\223\274\215\066\221\363\177\370\333\021\023\304\234\167\166\301
\256\267\002\152\201\172\251\105\203\342\005\346\271\126\301\224
\067\217\110\161\143\042\354\027\145\007\225\212\113\337\217\306
\132\012\345\260\343\137\136\153\021\253\014\371\205\353\104\351
\370\004\163\362\351\376\134\230\214\365\163\257\153\264\176\315
\324\134\002\053\114\071\341\262\225\225\055\102\207\327\325\263
\220\103\267\154\023\361\336\335\366\304\370\211\077\321\165\365
\222\303\221\325\212\210\320\220\354\334\155\336\211\302\145\161
\226\213\015\003\375\234\277\133\026\254\222\333\352\376\171\174
\255\353\257\367\026\313\333\315\045\053\345\037\373\232\237\342
\121\314\072\123\014\110\346\016\275\311\264\166\006\122\346\021
\023\205\162\143\003\004\340\004\066\053\040\031\002\350\164\247
\037\266\311\126\146\360\165\045\334\147\301\016\141\140\210\263
\076\321\250\374\243\332\035\260\321\261\043\124\337\104\166\155
\355\101\330\301\262\042\266\123\034\337\065\035\334\241\167\052
\061\344\055\365\345\345\333\310\340\377\345\200\327\013\143\240
\377\063\241\017\272\054\025\025\352\227\263\322\242\265\276\362
\214\226\036\032\217\035\154\244\141\067\271\206\163\063\327\227
\226\236\043\175\202\244\114\201\342\241\321\272\147\137\225\007
\243\047\021\356\026\020\173\274\105\112\114\262\004\322\253\357
\325\375\014\121\316\120\152\010\061\371\221\332\014\217\144\134
\003\303\072\213\040\077\156\215\147\075\072\326\376\175\133\210
\311\136\373\314\141\334\213\063\167\323\104\062\065\011\142\004
\222\026\020\330\236\047\107\373\073\041\343\370\353\035\133\002
\003\001\000\001\243\201\260\060\201\255\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003\125
\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\032\204\142\274\110\114\063\045\004\324\356\320\366
\003\304\031\106\321\224\153\060\156\006\003\125\035\043\004\147
\060\145\200\024\032\204\142\274\110\114\063\045\004\324\356\320
\366\003\304\031\106\321\224\153\241\111\244\107\060\105\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\033\060\031\006\003\125\004\003\023
\022\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\202\002\005\011\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\002\001\000\076\012\026\115\237
\006\133\250\256\161\135\057\005\057\147\346\023\105\203\304\066
\366\363\300\046\014\015\265\107\144\135\370\264\162\311\106\245
\003\030\047\125\211\170\175\166\352\226\064\200\027\040\334\347

\203\370\215\374\007\270\332\137\115\056\147\262\204\375\331\104
\374\167\120\201\346\174\264\311\015\013\162\123\370\166\007\007
\101\107\226\014\373\340\202\046\223\125\214\376\042\037\140\145
\174\137\347\046\263\367\062\220\230\120\324\067\161\125\366\222
\041\170\367\225\171\372\370\055\046\207\146\126\060\167\246\067
\170\063\122\020\130\256\077\141\216\362\152\261\357\030\176\112
\131\143\312\215\242\126\325\247\057\274\126\037\317\071\301\342
\373\012\250\025\054\175\115\172\143\306\154\227\104\074\322\157
\303\112\027\012\370\220\322\127\242\031\121\245\055\227\101\332
\007\117\251\120\332\220\215\224\106\341\076\360\224\375\020\000
\070\365\073\350\100\341\264\156\126\032\040\314\157\130\215\355
\056\105\217\326\351\223\077\347\261\054\337\072\326\042\214\334
\204\273\042\157\320\370\344\306\071\351\004\210\074\303\272\353
\125\172\155\200\231\044\365\154\001\373\370\227\260\224\133\353
\375\322\157\361\167\150\015\065\144\043\254\270\125\241\003\321
\115\102\031\334\370\165\131\126\243\371\250\111\171\370\257\016
\271\021\240\174\267\152\355\064\320\266\046\142\070\032\207\014
\370\350\375\056\323\220\177\007\221\052\035\326\176\134\205\203
\231\260\070\010\077\351\136\371\065\007\344\311\142\156\127\177
\247\120\225\367\272\310\233\346\216\242\001\305\326\146\277\171
\141\363\074\034\341\271\202\134\135\240\303\351\330\110\275\031
\242\021\024\031\156\262\206\033\150\076\110\067\032\210\267\135
\226\136\234\307\357\047\142\010\342\221\031\134\322\361\041\335
\272\027\102\202\227\161\201\123\061\251\237\366\175\142\277\162
\341\243\223\035\314\212\046\132\011\070\320\316\327\015\200\026
\264\170\245\072\207\114\215\212\245\325\106\227\362\054\020\271
\274\124\042\300\001\120\151\103\236\364\262\357\155\370\354\332
\361\343\261\357\337\221\217\124\052\013\045\301\046\031\304\122
\020\005\145\325\202\020\352\302\061\315\056
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2"
Issuer: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Serial Number: 1289 (0x509)
Subject: CN=QuoVadis Root CA 2,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 18:27:00 2006
Not Valid After : Mon Nov 24 18:23:33 2031
Fingerprint (SHA-256):
85:A0:DD:7D:D7:20:AD:B7:FF:05:F8:3D:54:2B:20:9D:C7:FF:45:28:F7:D6:77:B1:83:89:FE:A5:E5:C4:9E:86
Fingerprint (SHA1): CA:3A:FB:CF:12:40:36:4B:44:B2:16:20:88:80:48:39:19:93:7C:F7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "QuoVadis Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\312\072\373\317\022\100\066\113\104\262\026\040\210\200\110\071
\031\223\174\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\071\173\335\370\272\354\202\351\254\142\272\014\124\000\053
END
CKA_ISSUER
MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\011
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 3"
#
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint
(SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\005\306
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\006\235\060\202\004\205\240\003\002\001\002\002\002\005
\306\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\060\036\027\015\060\066\061\061\062
\064\061\071\061\061\062\063\132\027\015\063\061\061\061\062\064
\061\071\060\066\064\064\132\060\105\061\013\060\011\006\003\125
\004\006\023\002\102\115\061\031\060\027\006\003\125\004\012\023
\020\121\165\157\126\141\144\151\163\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\023\022\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\101\040\063\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\314
\127\102\026\124\234\346\230\323\323\115\356\376\355\307\237\103
\071\112\145\263\350\026\210\064\333\015\131\221\164\317\222\270
\004\100\255\002\113\061\253\274\215\221\150\330\040\016\032\001
\342\032\173\116\027\135\342\212\267\077\231\032\315\353\141\253
\302\145\246\037\267\267\275\267\217\374\375\160\217\013\240\147
\276\001\242\131\317\161\346\017\051\166\377\261\126\171\105\053
\037\236\172\124\350\243\051\065\150\244\001\117\017\244\056\067
\357\033\277\343\217\020\250\162\253\130\127\347\124\206\310\311
\363\133\332\054\332\135\216\156\074\243\076\332\373\202\345\335
\362\134\262\005\063\157\212\066\316\320\023\116\377\277\112\014
\064\114\246\303\041\275\120\004\125\353\261\273\235\373\105\036
\144\025\336\125\001\214\002\166\265\313\241\077\102\151\274\057
\275\150\103\026\126\211\052\067\141\221\375\246\256\116\300\313
\024\145\224\067\113\222\006\357\004\320\310\234\210\333\013\173
\201\257\261\075\052\304\145\072\170\266\356\334\200\261\322\323
\231\234\072\356\153\132\153\263\215\267\325\316\234\302\276\245
\113\057\026\261\236\150\073\006\157\256\175\237\370\336\354\314
\051\247\230\243\045\103\057\357\361\137\046\341\210\115\370\136
\156\327\331\024\156\031\063\151\247\073\204\211\223\304\123\125

\023\241\121\170\100\370\270\311\242\356\173\272\122\102\203\236
\024\355\005\122\132\131\126\247\227\374\235\077\012\051\330\334
\117\221\016\023\274\336\225\244\337\213\231\276\254\233\063\210
\357\265\201\257\033\306\042\123\310\366\307\356\227\024\260\305
\174\170\122\310\360\316\156\167\140\204\246\351\052\166\040\355
\130\001\027\060\223\351\032\213\340\163\143\331\152\222\224\111
\116\264\255\112\205\304\243\042\060\374\011\355\150\042\163\246
\210\014\125\041\130\305\341\072\237\052\335\312\341\220\340\331
\163\253\154\200\270\350\013\144\223\240\234\214\031\377\263\322
\014\354\221\046\207\212\263\242\341\160\217\054\012\345\315\155
\150\121\353\332\077\005\177\213\062\346\023\134\153\376\137\100
\342\042\310\264\264\144\117\326\272\175\110\076\250\151\014\327
\273\206\161\311\163\270\077\073\235\045\113\332\377\100\353\002
\003\001\000\001\243\202\001\225\060\202\001\221\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\201\341
\006\003\125\035\040\004\201\331\060\201\326\060\201\323\006\011
\053\006\001\004\001\276\130\000\003\060\201\305\060\201\223\006
\010\053\006\001\005\005\007\002\002\060\201\206\032\201\203\101
\156\171\040\165\163\145\040\157\146\040\164\150\151\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\143\157\156\163\164
\151\164\165\164\145\163\040\141\143\143\145\160\164\141\156\143
\145\040\157\146\040\164\150\145\040\121\165\157\126\141\144\151
\163\040\122\157\157\164\040\103\101\040\063\040\103\145\162\164
\151\146\151\143\141\164\145\040\120\157\154\151\143\171\040\057
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\120
\162\141\143\164\151\143\145\040\123\164\141\164\145\155\145\156
\164\056\060\055\006\010\053\006\001\005\005\007\002\001\026\041
\150\164\164\160\072\057\057\167\167\167\056\161\165\157\166\141
\144\151\163\147\154\157\142\141\154\056\143\157\155\057\143\160
\163\060\013\006\003\125\035\017\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\362\300\023\340\202\103\076
\373\356\057\147\062\226\065\134\333\270\313\002\320\060\156\006
\003\125\035\043\004\147\060\145\200\024\362\300\023\340\202\103
\076\373\356\057\147\062\226\065\134\333\270\313\002\320\241\111
\244\107\060\105\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\033\060\031
\006\003\125\004\003\023\022\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\202\002\005\306\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\117\255\240\054\114\372\300\362\157\367\146\125\253\043\064
\356\347\051\332\303\133\266\260\203\331\320\320\342\041\373\363
\140\247\073\135\140\123\047\242\233\366\010\042\052\347\277\240
\162\345\234\044\152\061\261\220\172\047\333\204\021\211\047\246
\167\132\070\327\277\254\206\374\356\135\203\274\006\306\321\167
\153\017\155\044\057\113\172\154\247\007\226\312\343\204\237\255
\210\213\035\253\026\215\133\146\027\331\026\364\213\200\322\335
\370\262\166\303\374\070\023\252\014\336\102\151\053\156\363\074

\353\200\047\333\365\246\104\015\237\132\125\131\013\325\015\122
\110\305\256\237\362\057\200\305\352\062\120\065\022\227\056\301
\341\377\361\043\210\121\070\237\362\146\126\166\347\017\121\227
\245\122\014\115\111\121\225\066\075\277\242\113\014\020\035\206
\231\114\252\363\162\021\223\344\352\366\233\332\250\135\247\115
\267\236\002\256\163\000\310\332\043\003\350\371\352\031\164\142
\000\224\313\042\040\276\224\247\131\265\202\152\276\231\171\172
\251\362\112\044\122\367\164\375\272\116\346\250\035\002\156\261
\015\200\104\301\256\323\043\067\137\273\205\174\053\222\056\350
\176\245\213\335\231\341\277\047\157\055\135\252\173\207\376\012
\335\113\374\216\365\046\344\156\160\102\156\063\354\061\236\173
\223\301\344\311\151\032\075\300\153\116\042\155\356\253\130\115
\306\320\101\301\053\352\117\022\207\136\353\105\330\154\365\230
\002\323\240\330\125\212\006\231\031\242\240\167\321\060\236\254
\314\165\356\203\365\260\142\071\317\154\127\342\114\322\221\013
\016\165\050\033\232\277\375\032\103\361\312\167\373\073\217\141
\270\151\050\026\102\004\136\160\052\034\041\330\217\341\275\043
\133\055\164\100\222\331\143\031\015\163\335\151\274\142\107\274
\340\164\053\262\353\175\276\101\033\265\300\106\305\241\042\313
\137\116\301\050\222\336\030\272\325\052\050\273\021\213\027\223
\230\231\140\224\134\043\317\132\047\227\136\013\005\006\223\067
\036\073\151\066\353\251\236\141\035\217\062\332\216\014\326\164
\076\173\011\044\332\001\167\107\304\073\315\064\214\231\365\312
\341\045\141\063\262\131\033\342\156\327\067\127\266\015\251\022
\332
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3"
Issuer: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Serial Number: 1478 (0x5c6)
Subject: CN=QuoVadis Root CA 3,O=QuoVadis Limited,C=BM
Not Valid Before: Fri Nov 24 19:11:23 2006
Not Valid After : Mon Nov 24 19:06:44 2031
Fingerprint (SHA-256):
18:F1:FC:7F:20:5D:F8:AD:DD:EB:7F:E0:07:DD:57:E3:AF:37:5A:9C:4D:8D:73:54:6B:F4:F1:FE:D1:E1:8D:35
Fingerprint (SHA1): 1F:49:14:F7:D8:74:95:1D:DD:AE:02:C0:BE:FD:3A:2D:82:75:51:85
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\111\024\367\330\164\225\035\335\256\002\300\276\375\072\055

\202\165\121\205
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\061\205\074\142\224\227\143\271\252\375\211\116\257\157\340\317
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\033\060\031\006\003
\125\004\003\023\022\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\002\005\306
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "XRamp Global CA Root"
#
Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services
Inc,OU=www.xrampsecurity.com,C=US
Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services
Inc,OU=www.xrampsecurity.com,C=US
Not Valid Before: Mon Nov 01 17:14:04 2004
Not Valid After : Mon Jan 01 05:37:19 2035
Fingerprint (SHA-256):
CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
#
Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023

\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\060\060\202\003\030\240\003\002\001\002\002\020\120
\224\154\354\030\352\325\234\115\325\227\357\165\217\240\255\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\202\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036
\060\034\006\003\125\004\013\023\025\167\167\167\056\170\162\141
\155\160\163\145\143\165\162\151\164\171\056\143\157\155\061\044
\060\042\006\003\125\004\012\023\033\130\122\141\155\160\040\123
\145\143\165\162\151\164\171\040\123\145\162\166\151\143\145\163
\040\111\156\143\061\055\060\053\006\003\125\004\003\023\044\130
\122\141\155\160\040\107\154\157\142\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\064\061\061\060\061\061\067\061
\064\060\064\132\027\015\063\065\060\061\060\061\060\065\063\067
\061\071\132\060\201\202\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\036\060\034\006\003\125\004\013\023\025\167\167
\167\056\170\162\141\155\160\163\145\143\165\162\151\164\171\056
\143\157\155\061\044\060\042\006\003\125\004\012\023\033\130\122
\141\155\160\040\123\145\143\165\162\151\164\171\040\123\145\162
\166\151\143\145\163\040\111\156\143\061\055\060\053\006\003\125
\004\003\023\044\130\122\141\155\160\040\107\154\157\142\141\154
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\230\044\036\275\025\264\272
\337\307\214\245\047\266\070\013\151\363\266\116\250\054\056\041
\035\134\104\337\041\135\176\043\164\376\136\176\264\112\267\246

\255\037\256\340\006\026\342\233\133\331\147\164\153\135\200\217
\051\235\206\033\331\234\015\230\155\166\020\050\130\344\145\260
\177\112\230\171\237\340\303\061\176\200\053\265\214\300\100\073
\021\206\320\313\242\206\066\140\244\325\060\202\155\331\156\320
\017\022\004\063\227\137\117\141\132\360\344\371\221\253\347\035
\073\274\350\317\364\153\055\064\174\342\110\141\034\216\363\141
\104\314\157\240\112\251\224\260\115\332\347\251\064\172\162\070
\250\101\314\074\224\021\175\353\310\246\214\267\206\313\312\063
\073\331\075\067\213\373\172\076\206\054\347\163\327\012\127\254
\144\233\031\353\364\017\004\010\212\254\003\027\031\144\364\132
\045\042\215\064\054\262\366\150\035\022\155\323\212\036\024\332
\304\217\246\342\043\205\325\172\015\275\152\340\351\354\354\027
\273\102\033\147\252\045\355\105\203\041\374\301\311\174\325\142
\076\372\362\305\055\323\375\324\145\002\003\001\000\001\243\201
\237\060\201\234\060\023\006\011\053\006\001\004\001\202\067\024
\002\004\006\036\004\000\103\000\101\060\013\006\003\125\035\017
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\306\117\242\075\006\143\204\011\234\316\142\344\004\254
\215\134\265\351\266\033\060\066\006\003\125\035\037\004\057\060
\055\060\053\240\051\240\047\206\045\150\164\164\160\072\057\057
\143\162\154\056\170\162\141\155\160\163\145\143\165\162\151\164
\171\056\143\157\155\057\130\107\103\101\056\143\162\154\060\020
\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\221\025\071\003\001\033\147\373\112\034\371\012
\140\133\241\332\115\227\142\371\044\123\047\327\202\144\116\220
\056\303\111\033\053\232\334\374\250\170\147\065\361\035\360\021
\275\267\110\343\020\366\015\337\077\322\311\266\252\125\244\110
\272\002\333\336\131\056\025\133\073\235\026\175\107\327\067\352
\137\115\166\022\066\273\037\327\241\201\004\106\040\243\054\155
\251\236\001\176\077\051\316\000\223\337\375\311\222\163\211\211
\144\236\347\053\344\034\221\054\322\271\316\175\316\157\061\231
\323\346\276\322\036\220\360\011\024\171\134\043\253\115\322\332
\041\037\115\231\171\235\341\317\047\237\020\233\034\210\015\260
\212\144\101\061\270\016\154\220\044\244\233\134\161\217\272\273
\176\034\033\333\152\200\017\041\274\351\333\246\267\100\364\262
\213\251\261\344\357\232\032\320\075\151\231\356\250\050\243\341
\074\263\360\262\021\234\317\174\100\346\335\347\103\175\242\330
\072\265\251\215\362\064\231\304\324\020\341\006\375\011\204\020
\073\356\304\114\364\354\047\174\102\302\164\174\202\212\011\311
\264\003\045\274
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Trust for "XRamp Global CA Root"
# Issuer: CN=XRamp Global Certification Authority,O=XRamp Security Services
Inc,OU=www.xrampsecurity.com,C=US
# Serial Number:50:94:6c:ec:18:ea:d5:9c:4d:d5:97:ef:75:8f:a0:ad
# Subject: CN=XRamp Global Certification Authority,O=XRamp Security Services
Inc,OU=www.xrampsecurity.com,C=US
# Not Valid Before: Mon Nov 01 17:14:04 2004
# Not Valid After : Mon Jan 01 05:37:19 2035
# Fingerprint (SHA-256):
CE:CD:DC:90:50:99:D8:DA:DF:C5:B1:D2:09:B7:37:CB:E2:C1:8C:FB:2C:10:C0:FF:0B:CF:0D:32:86:FC:1A:A2
# Fingerprint (SHA1): B8:01:86:D1:EB:9C:86:A5:41:04:CF:30:54:F3:4C:52:B7:E5:58:C6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "XRamp Global CA Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\001\206\321\353\234\206\245\101\004\317\060\124\363\114\122
\267\345\130\306
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\241\013\104\263\312\020\330\000\156\235\017\330\017\222\012\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\036\060\034\006\003\125\004\013\023\025\167\167\167\056\170
\162\141\155\160\163\145\143\165\162\151\164\171\056\143\157\155
\061\044\060\042\006\003\125\004\012\023\033\130\122\141\155\160
\040\123\145\143\165\162\151\164\171\040\123\145\162\166\151\143
\145\163\040\111\156\143\061\055\060\053\006\003\125\004\003\023
\044\130\122\141\155\160\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\224\154\354\030\352\325\234\115\325\227\357\165\217
\240\255
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Go Daddy Class 2 CA"
#
```

Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004
Not Valid After : Thu Jun 29 17:06:20 2034
Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\000\060\202\002\350\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041
\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157\040
\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156\143
\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040\104
\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\036\027\015\060\064\060\066\062\071\061\067
\060\066\062\060\132\027\015\063\064\060\066\062\071\061\067\060

\066\062\060\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\041\060\037\006\003\125\004\012\023\030\124\150
\145\040\107\157\040\104\141\144\144\171\040\107\162\157\165\160
\054\040\111\156\143\056\061\061\060\057\006\003\125\004\013\023
\050\107\157\040\104\141\144\144\171\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\202\001\040\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\015
\000\060\202\001\010\002\202\001\001\000\336\235\327\352\127\030
\111\241\133\353\327\137\110\206\352\276\335\377\344\357\147\034
\364\145\150\263\127\161\240\136\167\273\355\233\111\351\160\200
\075\126\030\143\010\157\332\362\314\320\077\177\002\124\042\124
\020\330\262\201\324\300\165\075\113\177\307\167\303\076\170\253
\032\003\265\040\153\057\152\053\261\305\210\176\304\273\036\260
\301\330\105\047\157\252\067\130\367\207\046\327\330\055\366\251
\027\267\037\162\066\116\246\027\077\145\230\222\333\052\156\135
\242\376\210\340\013\336\177\345\215\025\341\353\313\072\325\342
\022\242\023\055\330\216\257\137\022\075\240\010\005\010\266\134
\245\145\070\004\105\231\036\243\140\140\164\305\101\245\162\142
\033\142\305\037\157\137\032\102\276\002\121\145\250\256\043\030
\152\374\170\003\251\115\177\200\303\372\253\132\374\241\100\244
\312\031\026\376\262\310\357\136\163\015\356\167\275\232\366\171
\230\274\261\007\147\242\025\015\335\240\130\306\104\173\012\076
\142\050\137\272\101\007\123\130\317\021\176\070\164\305\370\377
\265\151\220\217\204\164\352\227\033\257\002\001\003\243\201\300
\060\201\275\060\035\006\003\125\035\016\004\026\004\024\322\304
\260\322\221\324\114\021\161\263\141\313\075\241\376\335\250\152
\324\343\060\201\215\006\003\125\035\043\004\201\205\060\201\202
\200\024\322\304\260\322\221\324\114\021\161\263\141\313\075\241
\376\335\250\152\324\343\241\147\244\145\060\143\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\041\060\037\006\003\125
\004\012\023\030\124\150\145\040\107\157\040\104\141\144\144\171
\040\107\162\157\165\160\054\040\111\156\143\056\061\061\060\057
\006\003\125\004\013\023\050\107\157\040\104\141\144\144\171\040
\103\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202
\001\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\062\113\363\262\312\076\221\374\022\306\241\007
\214\216\167\240\063\006\024\134\220\036\030\367\010\246\075\012
\031\371\207\200\021\156\151\344\226\027\060\377\064\221\143\162
\070\356\314\034\001\243\035\224\050\244\061\366\172\304\124\327
\366\345\061\130\003\242\314\316\142\333\224\105\163\265\277\105
\311\044\265\325\202\002\255\043\171\151\215\270\266\115\316\317
\114\312\063\043\350\034\210\252\235\213\101\156\026\311\040\345
\211\236\315\073\332\160\367\176\231\046\040\024\124\045\253\156
\163\205\346\233\041\235\012\154\202\016\250\370\302\014\372\020
\036\154\226\357\207\015\304\017\141\213\255\356\203\053\225\370

\216\222\204\162\071\353\040\352\203\355\203\315\227\156\010\274
\353\116\046\266\163\053\344\323\366\114\376\046\161\342\141\021
\164\112\377\127\032\207\017\165\110\056\317\121\151\027\240\002
\022\141\225\325\321\100\262\020\114\356\304\254\020\103\246\245
\236\012\325\225\142\232\015\317\210\202\305\062\014\344\053\237
\105\346\015\237\050\234\261\271\052\132\127\255\067\017\257\035
\177\333\275\237
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Class 2 CA"
Issuer: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Go Daddy Class 2 Certification Authority,O="The Go Daddy Group, Inc.",C=US
Not Valid Before: Tue Jun 29 17:06:20 2004
Not Valid After : Thu Jun 29 17:06:20 2034
Fingerprint (SHA-256):
C3:84:6B:F2:4B:9E:93:CA:64:27:4C:0E:C6:7C:1E:CC:5E:02:4F:FC:AC:D2:D7:40:19:35:0E:81:FE:54:6A:E4
Fingerprint (SHA1): 27:96:BA:E6:3F:18:01:E2:77:26:1B:A0:D7:77:70:02:8F:20:EE:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\047\226\272\346\077\030\001\342\167\046\033\240\327\167\160\002
\217\040\356\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\221\336\006\045\253\332\375\062\027\014\273\045\027\052\204\147
END
CKA_ISSUER
MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\124\150\145\040\107\157
\040\104\141\144\144\171\040\107\162\157\165\160\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\013\023\050\107\157\040
\104\141\144\144\171\040\103\154\141\163\163\040\062\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Class 2 CA"
#
Issuer: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield
 Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\017\060\202\002\367\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060

\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061\045
\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151\145
\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163\054
\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023\051
\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163\040
\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\036\027\015\060\064\060
\066\062\071\061\067\063\071\061\066\132\027\015\063\064\060\066
\062\071\061\067\063\071\061\066\132\060\150\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\045\060\043\006\003\125\004
\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\013\023\051\123\164\141\162\146\151
\145\154\144\040\103\154\141\163\163\040\062\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\202\001\040\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\015\000\060\202\001\010\002
\202\001\001\000\267\062\310\376\351\161\246\004\205\255\014\021
\144\337\316\115\357\310\003\030\207\077\241\253\373\074\246\237
\360\303\241\332\324\330\156\053\123\220\373\044\244\076\204\360
\236\350\137\354\345\047\104\365\050\246\077\173\336\340\052\360
\310\257\123\057\236\312\005\001\223\036\217\146\034\071\247\115
\372\132\266\163\004\045\146\353\167\177\347\131\306\112\231\045
\024\124\353\046\307\363\177\031\325\060\160\217\257\260\106\052
\377\255\353\051\355\327\237\252\004\207\243\324\371\211\245\064
\137\333\103\221\202\066\331\146\074\261\270\271\202\375\234\072
\076\020\310\073\357\006\145\146\172\233\031\030\075\377\161\121
\074\060\056\137\276\075\167\163\262\135\006\154\303\043\126\232
\053\205\046\222\034\247\002\263\344\077\015\257\010\171\202\270
\066\075\352\234\323\065\263\274\151\312\365\314\235\350\375\144
\215\027\200\063\156\136\112\135\231\311\036\207\264\235\032\300
\325\156\023\065\043\136\337\233\137\075\357\326\367\166\302\352
\076\273\170\015\034\102\147\153\004\330\370\326\332\157\213\362
\104\240\001\253\002\001\003\243\201\305\060\201\302\060\035\006
\003\125\035\016\004\026\004\024\277\137\267\321\316\335\037\206
\364\133\125\254\334\327\020\302\016\251\210\347\060\201\222\006
\003\125\035\043\004\201\212\060\201\207\200\024\277\137\267\321
\316\335\037\206\364\133\125\254\334\327\020\302\016\251\210\347
\241\154\244\152\060\150\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\045\060\043\006\003\125\004\012\023\034\123\164
\141\162\146\151\145\154\144\040\124\145\143\150\156\157\154\157
\147\151\145\163\054\040\111\156\143\056\061\062\060\060\006\003
\125\004\013\023\051\123\164\141\162\146\151\145\154\144\040\103
\154\141\163\163\040\062\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\202\001
\000\060\014\006\003\125\035\023\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\005\235\077\210\235\321\311\032\125\241\254\151\363

\363\131\332\233\001\207\032\117\127\251\241\171\011\052\333\367
\057\262\036\314\307\136\152\330\203\207\241\227\357\111\065\076
\167\006\101\130\142\277\216\130\270\012\147\077\354\263\335\041
\146\037\311\124\372\162\314\075\114\100\330\201\257\167\236\203
\172\273\242\307\365\064\027\216\331\021\100\364\374\054\052\115
\025\177\247\142\135\056\045\323\000\013\040\032\035\150\371\027
\270\364\275\213\355\050\131\335\115\026\213\027\203\310\262\145
\307\055\172\245\252\274\123\206\155\335\127\244\312\370\040\101
\013\150\360\364\373\164\276\126\135\172\171\365\371\035\205\343
\055\225\276\365\161\220\103\314\215\037\232\000\012\207\051\351
\125\042\130\000\043\352\343\022\103\051\133\107\010\335\214\101
\152\145\006\250\345\041\252\101\264\225\041\225\271\175\321\064
\253\023\326\255\274\334\342\075\071\315\275\076\165\160\241\030
\131\003\311\042\264\217\234\325\136\052\327\245\266\324\012\155
\370\267\100\021\106\232\037\171\016\142\277\017\227\354\340\057
\037\027\224
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Class 2 CA"
Issuer: OU=Starfield
Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Serial Number: 0 (0x0)
Subject: OU=Starfield Class 2 Certification Authority,O="Starfield Technologies, Inc.",C=US
Not Valid Before: Tue Jun 29 17:39:16 2004
Not Valid After : Thu Jun 29 17:39:16 2034
Fingerprint (SHA-256):
14:65:FA:20:53:97:B8:76:FA:A6:F0:A9:95:8E:55:90:E4:0F:CC:7F:AA:4F:B7:C2:C8:67:75:21:FB:5F:B6:58
Fingerprint (SHA1): AD:7E:1C:28:B0:64:EF:8F:60:03:40:20:14:C3:D0:E3:37:0E:B5:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Class 2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\255\176\034\050\260\144\357\217\140\003\100\040\024\303\320\343
\067\016\265\212
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\062\112\113\273\310\143\151\233\276\164\232\306\335\035\106\044
END
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\045\060\043\006\003\125\004\012\023\034\123\164\141\162\146\151
\145\154\144\040\124\145\143\150\156\157\154\157\147\151\145\163

\054\040\111\156\143\056\061\062\060\060\006\003\125\004\013\023
\051\123\164\141\162\146\151\145\154\144\040\103\154\141\163\163
\040\062\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root CA"
#
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C
Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040

\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\267\060\202\002\237\240\003\002\001\002\002\020\014
\347\340\345\027\330\106\376\217\345\140\374\033\360\060\071\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\103\101\060\036\027\015\060\066\061\061\061\060\060
\060\060\060\060\060\132\027\015\063\061\061\061\061\060\060\060
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145
\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145
\144\040\111\104\040\122\157\157\164\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\255\016\025
\316\344\103\200\134\261\207\363\267\140\371\161\022\245\256\334
\046\224\210\252\364\316\365\040\071\050\130\140\014\370\200\332
\251\025\225\062\141\074\265\261\050\204\212\212\334\237\012\014
\203\027\172\217\220\254\212\347\171\123\134\061\204\052\366\017
\230\062\066\166\314\336\335\074\250\242\357\152\373\041\362\122
\141\337\237\040\327\037\342\261\331\376\030\144\322\022\133\137
\371\130\030\065\274\107\315\241\066\371\153\177\324\260\070\076
\301\033\303\214\063\331\330\057\030\376\050\017\263\247\203\326
\303\156\104\300\141\065\226\026\376\131\234\213\166\155\327\361
\242\113\015\053\377\013\162\332\236\140\320\216\220\065\306\170
\125\207\040\241\317\345\155\012\310\111\174\061\230\063\154\042
\351\207\320\062\132\242\272\023\202\021\355\071\027\235\231\072
\162\241\346\372\244\331\325\027\061\165\256\205\175\042\256\077
\001\106\206\366\050\171\310\261\332\344\127\027\304\176\034\016
\260\264\222\246\126\263\275\262\227\355\252\247\360\267\305\250
\077\225\026\320\377\241\226\353\010\137\030\167\117\002\003\001
\000\001\243\143\060\141\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\105\353\242\257\364\222\313\202\061\055\121\213\247\247

\041\235\363\155\310\017\060\037\006\003\125\035\043\004\030\060
\026\200\024\105\353\242\257\364\222\313\202\061\055\121\213\247
\247\041\235\363\155\310\017\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\242\016\274\337\342
\355\360\343\162\163\172\144\224\277\367\162\146\330\062\344\102
\165\142\256\207\353\362\325\331\336\126\263\237\314\316\024\050
\271\015\227\140\134\022\114\130\344\323\075\203\111\105\130\227
\065\151\032\250\107\352\126\306\171\253\022\330\147\201\204\337
\177\011\074\224\346\270\046\054\040\275\075\263\050\211\367\137
\377\042\342\227\204\037\351\145\357\207\340\337\301\147\111\263
\135\353\262\011\052\353\046\355\170\276\175\077\053\363\267\046
\065\155\137\211\001\266\111\133\237\001\005\233\253\075\045\301
\314\266\177\302\361\157\206\306\372\144\150\353\201\055\224\353
\102\267\372\214\036\335\142\361\276\120\147\267\154\275\363\361
\037\153\014\066\007\026\177\067\174\251\133\155\172\361\022\106
\140\203\327\047\004\276\113\316\227\276\303\147\052\150\021\337
\200\347\014\063\146\277\023\015\024\156\363\177\037\143\020\036
\372\215\033\045\155\154\217\245\267\141\001\261\322\243\046\241
\020\161\235\255\342\303\371\303\231\121\267\053\007\010\316\056
\346\120\262\247\372\012\105\057\242\360\362
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root CA"
Issuer: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0c:e7:e0:e5:17:d8:46:fe:8f:e5:60:fc:1b:f0:30:39
Subject: CN=DigiCert Assured ID Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
3E:90:99:B5:01:5E:8F:48:6C:00:BC:EA:9D:11:1E:E7:21:FA:BA:35:5A:89:BC:F1:DF:69:56:1E:3D:C6:32:5C
Fingerprint (SHA1): 05:63:B8:63:0D:62:D7:5A:BB:C8:AB:1E:4B:DF:B5:A8:99:B2:4D:43
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\005\143\270\143\015\142\327\132\273\310\253\036\113\337\265\250
\231\262\115\103
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\207\316\013\173\052\016\111\000\341\130\161\233\067\250\223\162
END

CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\347\340\345\027\330\106\376\217\345\140\374\033\360
\060\071
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root CA"
#
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE
 CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\003\257\060\202\002\227\240\003\002\001\002\002\020\010
\073\340\126\220\102\106\261\241\165\152\311\131\221\307\112\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\060\036\027\015\060\066\061\061\061\060\060\060\060\060\060
\060\132\027\015\063\061\061\061\061\060\060\060\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147
\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\103\101\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\342\073\341\021\162\336\250\244\323\243\127
\252\120\242\217\013\167\220\311\242\245\356\022\316\226\133\001
\011\040\314\001\223\247\116\060\267\123\367\103\304\151\000\127
\235\342\215\042\335\207\006\100\000\201\011\316\316\033\203\277
\337\315\073\161\106\342\326\146\307\005\263\166\047\026\217\173
\236\036\225\175\356\267\110\243\010\332\326\257\172\014\071\006
\145\177\112\135\037\274\027\370\253\276\356\050\327\164\177\172
\170\231\131\205\150\156\134\043\062\113\277\116\300\350\132\155
\343\160\277\167\020\277\374\001\366\205\331\250\104\020\130\062
\251\165\030\325\321\242\276\107\342\047\152\364\232\063\370\111
\010\140\213\324\137\264\072\204\277\241\252\112\114\175\076\317
\117\137\154\166\136\240\113\067\221\236\334\042\346\155\316\024
\032\216\152\313\376\315\263\024\144\027\307\133\051\236\062\277
\362\356\372\323\013\102\324\253\267\101\062\332\014\324\357\370
\201\325\273\215\130\077\265\033\350\111\050\242\160\332\061\004

\335\367\262\026\362\114\012\116\007\250\355\112\075\136\265\177
\243\220\303\257\047\002\003\001\000\001\243\143\060\141\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\003\336\120\065\126\321
\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060\037
\006\003\125\035\043\004\030\060\026\200\024\003\336\120\065\126
\321\114\273\146\360\243\342\033\033\303\227\262\075\321\125\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\313\234\067\252\110\023\022\012\372\335\104\234\117
\122\260\364\337\256\004\365\171\171\010\243\044\030\374\113\053
\204\300\055\271\325\307\376\364\301\037\130\313\270\155\234\172
\164\347\230\051\253\021\265\343\160\240\241\315\114\210\231\223
\214\221\160\342\253\017\034\276\223\251\377\143\325\344\007\140
\323\243\277\235\133\011\361\325\216\343\123\364\216\143\372\077
\247\333\264\146\337\142\146\326\321\156\101\215\362\055\265\352
\167\112\237\235\130\342\053\131\300\100\043\355\055\050\202\105
\076\171\124\222\046\230\340\200\110\250\067\357\360\326\171\140
\026\336\254\350\016\315\156\254\104\027\070\057\111\332\341\105
\076\052\271\066\123\317\072\120\006\367\056\350\304\127\111\154
\141\041\030\325\004\255\170\074\054\072\200\153\247\353\257\025
\024\351\330\211\301\271\070\154\342\221\154\212\377\144\271\167
\045\127\060\300\033\044\243\341\334\351\337\107\174\265\264\044
\010\005\060\354\055\275\013\277\105\277\120\271\251\363\353\230
\001\022\255\310\210\306\230\064\137\215\012\074\306\351\325\225
\225\155\336
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root CA"
Issuer: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Subject: CN=DigiCert Global Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
43:48:A0:E9:44:4C:78:CB:26:5E:05:8D:5E:89:44:B4:D8:4F:96:62:BD:26:DB:25:7F:89:34:A4:43:C7:01:61
Fingerprint (SHA1): A8:98:5D:3A:65:E5:E5:C4:B2:D7:D6:6D:40:C6:DD:2F:B1:9C:54:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\250\230\135\072\145\345\345\304\262\327\326\155\100\306\335\057
\261\234\124\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\171\344\251\204\015\175\072\226\327\300\117\342\103\114\211\056
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\010\073\340\126\220\102\106\261\241\165\152\311\131\221
\307\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert High Assurance EV Root CA"
#
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert
 Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF
Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157

\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\020\002
\254\134\046\152\013\100\233\217\013\171\362\256\106\045\167\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\053\060\051\006\003\125\004\003\023\042\104\151\147\151\103\145
\162\164\040\110\151\147\150\040\101\163\163\165\162\141\156\143
\145\040\105\126\040\122\157\157\164\040\103\101\060\036\027\015
\060\066\061\061\061\060\060\060\060\060\060\060\132\027\015\063
\061\061\061\061\060\060\060\060\060\060\060\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006
\003\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111
\156\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167
\056\144\151\147\151\143\145\162\164\056\143\157\155\061\053\060
\051\006\003\125\004\003\023\042\104\151\147\151\103\145\162\164
\040\110\151\147\150\040\101\163\163\165\162\141\156\143\145\040
\105\126\040\122\157\157\164\040\103\101\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\306\314\345\163\346
\373\324\273\345\055\055\062\246\337\345\201\077\311\315\045\111
\266\161\052\303\325\224\064\147\242\012\034\260\137\151\246\100
\261\304\267\262\217\320\230\244\251\101\131\072\323\334\224\326
\074\333\164\070\244\112\314\115\045\202\367\112\245\123\022\070
\356\363\111\155\161\221\176\143\266\253\246\137\303\244\204\370
\117\142\121\276\370\305\354\333\070\222\343\006\345\010\221\014
\304\050\101\125\373\313\132\211\025\176\161\350\065\277\115\162

\011\075\276\072\070\120\133\167\061\033\215\263\307\044\105\232
\247\254\155\000\024\132\004\267\272\023\353\121\012\230\101\101
\042\116\145\141\207\201\101\120\246\171\134\211\336\031\112\127
\325\056\346\135\034\123\054\176\230\315\032\006\026\244\150\163
\320\064\004\023\134\241\161\323\132\174\125\333\136\144\341\067
\207\060\126\004\345\021\264\051\200\022\361\171\071\210\242\002
\021\174\047\146\267\210\267\170\362\312\012\250\070\253\012\144
\302\277\146\135\225\204\301\241\045\036\207\135\032\120\013\040
\022\314\101\273\156\013\121\070\270\113\313\002\003\001\000\001
\243\143\060\141\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002\357
\143\144\053\303\060\037\006\003\125\035\043\004\030\060\026\200
\024\261\076\303\151\003\370\277\107\001\324\230\046\032\010\002
\357\143\144\053\303\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\034\032\006\227\334\327\234
\237\074\210\146\006\010\127\041\333\041\107\370\052\147\252\277
\030\062\166\100\020\127\301\212\363\172\331\021\145\216\065\372
\236\374\105\265\236\331\114\061\113\270\221\350\103\054\216\263
\170\316\333\343\123\171\161\326\345\041\224\001\332\125\207\232
\044\144\366\212\146\314\336\234\067\315\250\064\261\151\233\043
\310\236\170\042\053\160\103\343\125\107\061\141\031\357\130\305
\205\057\116\060\366\240\061\026\043\310\347\342\145\026\063\313
\277\032\033\240\075\370\312\136\213\061\213\140\010\211\055\014
\006\134\122\267\304\371\012\230\321\025\137\237\022\276\174\066
\143\070\275\104\244\177\344\046\053\012\304\227\151\015\351\214
\342\300\020\127\270\310\166\022\221\125\362\110\151\330\274\052
\002\133\017\104\324\040\061\333\364\272\160\046\135\220\140\236
\274\113\027\011\057\264\313\036\103\150\311\007\047\301\322\134
\367\352\041\271\150\022\234\074\234\277\236\374\200\134\233\143
\315\354\107\252\045\047\147\240\067\363\000\202\175\124\327\251
\370\351\056\023\243\167\350\037\112
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert High Assurance EV Root CA"
Issuer: CN=DigiCert High Assurance EV Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:02:ac:5c:26:6a:0b:40:9b:8f:0b:79:f2:ae:46:25:77
Subject: CN=DigiCert High Assurance EV
Root CA,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Fri Nov 10 00:00:00 2006
Not Valid After : Mon Nov 10 00:00:00 2031
Fingerprint (SHA-256):
74:31:E5:F4:C3:C1:CE:46:90:77:4F:0B:61:E0:54:40:88:3B:A9:A0:1E:D0:0B:A6:AB:D7:80:6E:D3:B1:18:CF

Fingerprint (SHA1): 5F:B7:EE:06:33:E2:59:DB:AD:0C:4C:9A:E6:D3:8F:1A:61:C7:DC:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert High Assurance EV Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\267\356\006\063\342\131\333\255\014\114\232\346\323\217\032
\141\307\334\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\324\164\336\127\134\071\262\323\234\205\203\305\300\145\111\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\053\060\051\006\003\125\004\003\023\042\104\151\147\151
\103\145\162\164\040\110\151\147\150\040\101\163\163\165\162\141
\156\143\145\040\105\126\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\002\254\134\046\152\013\100\233\217\013\171\362\256\106
\045\167
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Gold CA - G2"
#
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\005\272\060\202\003\242\240\003\002\001\002\002\011\000
\273\100\034\103\365\136\117\260\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\105\061\013\060\011\006\003\125
\004\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023
\014\123\167\151\163\163\123\151\147\156\040\101\107\061\037\060
\035\006\003\125\004\003\023\026\123\167\151\163\163\123\151\147
\156\040\107\157\154\144\040\103\101\040\055\040\107\062\060\036
\027\015\060\066\061\060\062\065\060\070\063\060\063\065\132\027
\015\063\066\061\060\062\065\060\070\063\060\063\065\132\060\105
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025\060
\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151\147
\156\040\101\107\061\037\060\035\006\003\125\004\003\023\026\123
\167\151\163\163\123\151\147\156\040\107\157\154\144\040\103\101
\040\055\040\107\062\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\257\344\356\176\213\044\016\022\156\251
\120\055\026\104\073\222\222\134\312\270\135\204\222\102\023\052
\274\145\127\202\100\076\127\044\315\120\213\045\052\267\157\374
\357\242\320\300\037\002\044\112\023\226\217\043\023\346\050\130
\000\243\107\307\006\247\204\043\053\273\275\226\053\177\125\314
\213\301\127\037\016\142\145\017\335\075\126\212\163\332\256\176
\155\272\201\034\176\102\214\040\065\331\103\115\204\372\204\333
\122\054\363\016\047\167\013\153\277\021\057\162\170\237\056\330
\076\346\030\067\132\052\162\371\332\142\220\222\225\312\037\234
\351\263\074\053\313\363\001\023\277\132\317\301\265\012\140\275
\335\265\231\144\123\270\240\226\263\157\342\046\167\221\214\340

\142\020\002\237\064\017\244\325\222\063\121\336\276\215\272\204
\172\140\074\152\333\237\053\354\336\336\001\077\156\115\345\120
\206\313\264\257\355\104\100\305\312\132\214\332\322\053\174\250
\356\276\246\345\012\252\016\245\337\005\122\267\125\307\042\135
\062\152\227\227\143\023\333\311\333\171\066\173\205\072\112\305
\122\211\371\044\347\235\167\251\202\377\125\034\245\161\151\053
\321\002\044\362\263\046\324\153\332\004\125\345\301\012\307\155
\060\067\220\052\344\236\024\063\136\026\027\125\305\133\265\313
\064\211\222\361\235\046\217\241\007\324\306\262\170\120\333\014
\014\013\174\013\214\101\327\271\351\335\214\210\367\243\115\262
\062\314\330\027\332\315\267\316\146\235\324\375\136\377\275\227
\076\051\165\347\176\247\142\130\257\045\064\245\101\307\075\274
\015\120\312\003\003\017\010\132\037\225\163\170\142\277\257\162
\024\151\016\245\345\003\016\170\216\046\050\102\360\007\013\142
\040\020\147\071\106\372\251\003\314\004\070\172\146\357\040\203
\265\214\112\126\216\221\000\374\216\134\202\336\210\240\303\342
\150\156\175\215\357\074\335\145\364\135\254\121\357\044\200\256
\252\126\227\157\371\255\175\332\141\077\230\167\074\245\221\266
\034\214\046\332\145\242\011\155\301\342\124\343\271\312\114\114
\200\217\167\173\140\232\036\337\266\362\110\036\016\272\116\124
\155\230\340\341\242\032\242\167\120\317\304\143\222\354\107\031
\235\353\346\153\316\301\002\003\001\000\001\243\201\254\060\201
\251\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\133\045\173
\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347\360
\356\060\037\006\003\125\035\043\004\030\060\026\200\024\133\045
\173\226\244\145\121\176\270\071\363\300\170\146\136\350\072\347
\360\356\060\106\006\003\125\035\040\004\077\060\075\060\073\006
\011\140\205\164\001\131\001\002\001\001\060\056\060\054\006\010
\053\006\001\005\005\007\002\001\026\040\150\164\164\160\072\057
\057\162\145\160\157\163\151\164\157\162\171\056\163\167\151\163
\163\163\151\147\156\056\143\157\155\057\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\047\272
\343\224\174\361\256\300\336\027\346\345\330\325\365\124\260\203
\364\273\315\136\005\173\117\237\165\146\257\074\350\126\176\374
\162\170\070\003\331\053\142\033\000\271\370\351\140\315\314\316
\121\212\307\120\061\156\341\112\176\030\057\151\131\266\075\144
\201\053\343\203\204\346\042\207\216\175\340\356\002\231\141\270
\036\364\270\053\210\022\026\204\302\061\223\070\226\061\246\271
\073\123\077\303\044\223\126\133\151\222\354\305\301\273\070\000
\343\354\027\251\270\334\307\174\001\203\237\062\107\272\122\042
\064\035\062\172\011\126\247\174\045\066\251\075\113\332\300\202
\157\012\273\022\310\207\113\047\021\371\036\055\307\223\077\236
\333\137\046\153\122\331\056\212\361\024\306\104\215\025\251\267
\277\275\336\246\032\356\256\055\373\110\167\027\376\273\354\257
\030\365\052\121\360\071\204\227\225\154\156\033\303\053\304\164
\140\171\045\260\012\047\337\337\136\322\071\317\105\175\102\113

\337\263\054\036\305\306\135\312\125\072\240\234\151\232\217\332
\357\262\260\074\237\207\154\022\053\145\160\025\122\061\032\044
\317\157\061\043\120\037\214\117\217\043\303\164\101\143\034\125
\250\024\335\076\340\121\120\317\361\033\060\126\016\222\260\202
\205\330\203\313\042\144\274\055\270\045\325\124\242\270\006\352
\255\222\244\044\240\301\206\265\112\023\152\107\317\056\013\126
\225\124\313\316\232\333\152\264\246\262\333\101\010\206\047\167
\367\152\240\102\154\013\070\316\327\165\120\062\222\302\337\053
\060\042\110\320\325\101\070\045\135\244\351\135\237\306\224\165
\320\105\375\060\227\103\217\220\253\012\307\206\163\140\112\151
\055\336\245\170\327\006\332\152\236\113\076\167\072\040\023\042
\001\320\277\150\236\143\140\153\065\115\013\155\272\241\075\300
\223\340\177\043\263\125\255\162\045\116\106\371\322\026\357\260
\144\301\001\236\351\312\240\152\230\016\317\330\140\362\057\111
\270\344\102\341\070\065\026\364\310\156\117\367\201\126\350\272
\243\276\043\257\256\375\157\003\340\002\073\060\166\372\033\155
\101\317\001\261\351\270\311\146\364\333\046\363\072\244\164\362
\111\044\133\311\260\320\127\301\372\076\172\341\227\311
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SwissSign Gold CA - G2"
Issuer: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Serial Number:00:bb:40:1c:43:f5:5e:4f:b0
Subject: CN=SwissSign Gold CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:30:35 2006
Not Valid After : Sat Oct 25 08:30:35 2036
Fingerprint (SHA-256):
62:DD:0B:E9:B9:F5:0A:16:3E:A0:F8:E7:5C:05:3B:1E:CA:57:EA:55:C8:68:8F:64:7C:68:81:F2:C8:35:7B:95
Fingerprint (SHA1): D8:C5:38:8A:B7:30:1B:1B:6E:D4:7A:E6:45:25:3A:6F:9F:1A:27:61
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\305\070\212\267\060\033\033\156\324\172\346\105\045\072\157
\237\032\047\141
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\044\167\331\250\221\321\073\372\210\055\302\377\370\315\063\223
END
CKA_ISSUER
MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\103\110\061

\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\037\060\035\006\003\125\004\003\023
\026\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\273\100\034\103\365\136\117\260
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SwissSign Silver CA - G2"
#
Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Serial Number:4f:1b:d4:2f:54:bb:2f:4b
Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:32:46 2006
Not Valid After : Sat Oct 25 08:32:46 2036
Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
#
 Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\275\060\202\003\245\240\003\002\001\002\002\010\117
\033\324\057\124\273\057\113\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\107\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\041\060\037
\006\003\125\004\003\023\030\123\167\151\163\163\123\151\147\156
\040\123\151\154\166\145\162\040\103\101\040\055\040\107\062\060
\036\027\015\060\066\061\060\062\065\060\070\063\062\064\066\132
\027\015\063\066\061\060\062\065\060\070\063\062\064\066\132\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061\025
\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123\151
\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023\030
\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145\162
\040\103\101\040\055\040\107\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\304\361\207\177\323\170\061
\367\070\311\370\303\231\103\274\307\367\274\067\347\116\161\272
\113\217\245\163\035\134\156\230\256\003\127\256\070\067\103\057
\027\075\037\310\316\150\020\301\170\256\031\003\053\020\372\054
\171\203\366\350\271\150\271\125\362\004\104\247\071\371\374\004
\213\036\361\242\115\047\371\141\173\272\267\345\242\023\266\353
\141\076\320\154\321\346\373\372\136\355\035\264\236\240\065\133
\241\222\313\360\111\222\376\205\012\005\076\346\331\013\342\117
\273\334\225\067\374\221\351\062\065\042\321\037\072\116\047\205
\235\260\025\224\062\332\141\015\107\115\140\102\256\222\107\350
\203\132\120\130\351\212\213\271\135\241\334\335\231\112\037\066
\147\273\110\344\203\266\067\353\110\072\257\017\147\217\027\007
\350\004\312\357\152\061\207\324\300\266\371\224\161\173\147\144
\270\266\221\112\102\173\145\056\060\152\014\365\220\356\225\346
\362\315\202\354\331\241\112\354\366\262\113\345\105\205\346\155
\170\223\004\056\234\202\155\066\251\304\061\144\037\206\203\013
\052\364\065\012\170\311\125\317\101\260\107\351\060\237\231\276
\141\250\006\204\271\050\172\137\070\331\033\251\070\260\203\177
\163\301\303\073\110\052\202\017\041\233\270\314\250\065\303\204
\033\203\263\076\276\244\225\151\001\072\211\000\170\004\331\311
\364\231\031\253\126\176\133\213\206\071\025\221\244\020\054\011
\062\200\140\263\223\300\052\266\030\013\235\176\215\111\362\020
\112\177\371\325\106\057\031\222\243\231\247\046\254\273\214\074
\346\016\274\107\007\334\163\121\361\160\144\057\010\371\264\107
\035\060\154\104\352\051\067\205\222\150\146\274\203\070\376\173
\071\056\323\120\360\037\373\136\140\266\251\246\372\047\101\361
\233\030\162\362\365\204\164\112\311\147\304\124\256\110\144\337
\214\321\156\260\035\341\007\217\010\036\231\234\161\351\114\330
\245\367\107\022\037\164\321\121\236\206\363\302\242\043\100\013

\163\333\113\246\347\163\006\214\301\240\351\301\131\254\106\372
\346\057\370\317\161\234\106\155\271\304\025\215\070\171\003\105
\110\357\304\135\327\010\356\207\071\042\206\262\015\017\130\103
\367\161\251\110\056\375\352\326\037\002\003\001\000\001\243\201
\254\060\201\251\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034\302
\230\372\206\130\060\037\006\003\125\035\043\004\030\060\026\200
\024\027\240\315\301\344\101\266\072\133\073\313\105\235\275\034
\302\230\372\206\130\060\106\006\003\125\035\040\004\077\060\075
\060\073\006\011\140\205\164\001\131\001\003\001\001\060\056\060
\054\006\010\053\006\001\005\005\007\002\001\026\040\150\164\164
\160\072\057\057\162\145\160\157\163\151\164\157\162\171\056\163
\167\151\163\163\163\151\147\156\056\143\157\155\057\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001
\000\163\306\201\340\047\322\055\017\340\225\060\342\232\101\177
\120\054\137\137\142\141\251\206\152\151\030\014\164\111\326\135
\204\352\101\122\030\157\130\255\120\126\040\152\306\275\050\151
\130\221\334\221\021\065\251\072\035\274\032\245\140\236\330\037
\177\105\221\151\331\176\273\170\162\301\006\017\052\316\217\205
\160\141\254\240\315\013\270\071\051\126\204\062\116\206\273\075
\304\052\331\327\037\162\356\376\121\241\042\101\261\161\002\143
\032\202\260\142\253\136\127\022\037\337\313\335\165\240\300\135
\171\220\214\033\340\120\346\336\061\376\230\173\160\137\245\220
\330\255\370\002\266\157\323\140\335\100\113\042\305\075\255\072
\172\237\032\032\107\221\171\063\272\202\334\062\151\003\226\156
\037\113\360\161\376\343\147\162\240\261\277\134\213\344\372\231
\042\307\204\271\033\215\043\227\077\355\045\340\317\145\273\365
\141\004\357\335\036\262\132\101\042\132\241\237\135\054\350\133
\311\155\251\014\014\170\252\140\306\126\217\001\132\014\150\274
\151\031\171\304\037\176\227\005\277\305\351\044\121\136\324\325
\113\123\355\331\043\132\066\003\145\243\301\003\255\101\060\363
\106\033\205\220\257\145\265\325\261\344\026\133\170\165\035\227
\172\155\131\251\052\217\173\336\303\207\211\020\231\111\163\170
\310\075\275\121\065\164\052\325\361\176\151\033\052\273\073\275
\045\270\232\132\075\162\141\220\146\207\356\014\326\115\324\021
\164\013\152\376\013\003\374\243\125\127\211\376\112\313\256\133
\027\005\310\362\215\043\061\123\070\322\055\152\077\202\271\215
\010\152\367\136\101\164\156\303\021\176\007\254\051\140\221\077
\070\312\127\020\015\275\060\057\307\245\346\101\240\332\256\005
\207\232\240\244\145\154\114\011\014\211\272\270\323\271\300\223
\212\060\372\215\345\232\153\025\001\116\147\252\332\142\126\076
\204\010\146\322\304\066\175\247\076\020\374\210\340\324\200\345
\000\275\252\363\116\006\243\172\152\371\142\162\343\011\117\353
\233\016\001\043\361\237\273\174\334\334\154\021\227\045\262\362
\264\143\024\322\006\052\147\214\203\365\316\352\007\330\232\152
\036\354\344\012\273\052\114\353\011\140\071\316\312\142\330\056

```
\156
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "SwissSign Silver CA - G2"
# Issuer: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
# Serial Number:4f:1b:d4:2f:54:bb:2f:4b
# Subject: CN=SwissSign Silver CA - G2,O=SwissSign AG,C=CH
# Not Valid Before: Wed Oct 25 08:32:46 2006
# Not Valid After : Sat Oct 25 08:32:46 2036
# Fingerprint (SHA-256):
BE:6C:4D:A2:BB:B9:BA:59:B6:F3:93:97:68:37:42:46:C3:C0:05:99:3F:A9:8F:02:0D:1D:ED:BE:D4:8A:81:D5
# Fingerprint (SHA1): 9B:AA:E5:9F:56:EE:21:CB:43:5A:BE:25:93:DF:A7:F0:40:D1:1D:CB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\233\252\345\237\126\356\041\313\103\132\276\045\223\337\247\360
\100\321\035\313
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\340\006\241\311\175\317\311\374\015\300\126\165\226\330\142\023
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\041\060\037\006\003\125\004\003\023
\030\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\117\033\324\057\124\273\057\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "SecureTrust CA"
#
# Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
```

Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust
Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73
Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\270\060\202\002\240\240\003\002\001\002\002\020\014
\360\216\134\010\026\245\255\102\177\360\353\047\030\131\320\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\110
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\027\060\025\006\003\125\004\003\023\016\123\145\143\165\162\145
\124\162\165\163\164\040\103\101\060\036\027\015\060\066\061\061
\060\067\061\071\063\061\061\070\132\027\015\062\071\061\062\063
\061\061\071\064\060\065\065\132\060\110\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\040\060\036\006\003\125\004\012
\023\027\123\145\143\165\162\145\124\162\165\163\164\040\103\157
\162\160\157\162\141\164\151\157\156\061\027\060\025\006\003\125

\004\003\023\016\123\145\143\165\162\145\124\162\165\163\164\040
\103\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\253\244\201\345\225\315\365\366\024\216\302\117\312
\324\342\170\225\130\234\101\341\015\231\100\044\027\071\221\063
\146\351\276\341\203\257\142\134\211\321\374\044\133\141\263\340
\021\021\101\034\035\156\360\270\273\370\336\247\201\272\246\110
\306\237\035\275\276\216\251\101\076\270\224\355\051\032\324\216
\322\003\035\003\357\155\015\147\034\127\327\006\255\312\310\365
\376\016\257\146\045\110\004\226\013\135\243\272\026\303\010\117
\321\106\370\024\134\362\310\136\001\231\155\375\210\314\206\250
\301\157\061\102\154\122\076\150\313\363\031\064\337\273\207\030
\126\200\046\304\320\334\300\157\337\336\240\302\221\026\240\144
\021\113\104\274\036\366\347\372\143\336\146\254\166\244\161\243
\354\066\224\150\172\167\244\261\347\016\057\201\172\342\265\162
\206\357\242\153\213\360\017\333\323\131\077\272\162\274\104\044
\234\343\163\263\367\257\127\057\102\046\235\251\164\272\000\122
\362\113\315\123\174\107\013\066\205\016\146\251\010\227\026\064
\127\301\146\367\200\343\355\160\124\307\223\340\056\050\025\131
\207\272\273\002\003\001\000\001\243\201\235\060\201\232\060\023
\006\011\053\006\001\004\001\202\067\024\002\004\006\036\004\000
\103\000\101\060\013\006\003\125\035\017\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\102\062\266\026
\372\004\375\376\135\113\172\303\375\367\114\100\035\132\103\257
\060\064\006\003\125\035\037\004\055\060\053\060\051\240\047\240
\045\206\043\150\164\164\160\072\057\057\143\162\154\056\163\145
\143\165\162\145\164\162\165\163\164\056\143\157\155\057\123\124
\103\101\056\143\162\154\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\060\355\117\112
\341\130\072\122\162\133\265\246\243\145\030\246\273\121\073\167
\351\235\352\323\237\134\340\105\145\173\015\312\133\342\160\120
\262\224\005\024\256\111\307\215\101\007\022\163\224\176\014\043
\041\375\274\020\177\140\020\132\162\365\230\016\254\354\271\177
\335\172\157\135\323\034\364\377\210\005\151\102\251\005\161\310
\267\254\046\350\056\264\214\152\377\161\334\270\261\337\231\274
\174\041\124\053\344\130\242\273\127\051\256\236\251\243\031\046
\017\231\056\010\260\357\375\151\317\231\032\011\215\343\247\237
\053\311\066\064\173\044\263\170\114\225\027\244\006\046\036\266
\144\122\066\137\140\147\331\234\305\005\164\013\347\147\043\322
\010\374\210\351\256\213\177\341\060\364\067\176\375\306\062\332
\055\236\104\060\060\154\356\007\336\322\064\374\322\377\100\366
\113\364\146\106\006\124\246\362\062\012\143\046\060\153\233\321
\334\213\107\272\341\271\325\142\320\242\240\364\147\005\170\051
\143\032\157\004\326\370\306\114\243\232\261\067\264\215\345\050
\113\035\236\054\302\270\150\274\355\002\356\061
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureTrust CA"
Issuer: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Serial Number:0c:f0:8e:5c:08:16:a5:ad:42:7f:f0:eb:27:18:59:d0
Subject: CN=SecureTrust CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:31:18 2006
Not Valid After : Mon Dec 31 19:40:55 2029
Fingerprint (SHA-256):
F1:C1:B5:0A:E5:A2:0D:D8:03:0E:C9:F6:BC:24:82:3D:D3:67:B5:25:57:59:B4:E7:1B:61:FC:E9:F7:37:5D:73
Fingerprint (SHA1): 87:82:C6:C3:04:35:3B:CF:D2:96:92:D2:59:3E:7D:44:D9:34:FF:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL
CK_FALSE
CKA_LABEL UTF8 "SecureTrust CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\207\202\306\303\004\065\073\317\322\226\222\322\131\076\175\104
\331\064\377\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\334\062\303\247\155\045\127\307\150\011\235\352\055\251\242\321
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\027\060\025\006\003\125\004\003\023\016\123\145\143\165
\162\145\124\162\165\163\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\360\216\134\010\026\245\255\102\177\360\353\047\030
\131\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Secure Global CA"
#
Issuer: CN=Secure Global CA,O=SecureTrust

Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Secure Global CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\274\060\202\002\244\240\003\002\001\002\002\020\007
\126\042\244\350\324\212\211\115\364\023\310\360\370\352\245\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\040\060
\036\006\003\125\004\012\023\027\123\145\143\165\162\145\124\162
\165\163\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\031\060\027\006\003\125\004\003\023\020\123\145\143\165\162\145
\040\107\154\157\142\141\154\040\103\101\060\036\027\015\060\066
\061\061\060\067\061\071\064\062\062\070\132\027\015\062\071\061
\062\063\061\061\071\065\062\060\066\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\040\060\036\006\003\125
\004\012\023\027\123\145\143\165\162\145\124\162\165\163\164\040
\103\157\162\160\157\162\141\164\151\157\156\061\031\060\027\006

\003\125\004\003\023\020\123\145\143\165\162\145\040\107\154\157
\142\141\154\040\103\101\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\257\065\056\330\254\154\125\151\006
\161\345\023\150\044\263\117\330\314\041\107\370\361\140\070\211
\211\003\351\275\352\136\106\123\011\334\134\365\132\350\367\105
\052\002\353\061\141\327\051\063\114\316\307\174\012\067\176\017
\272\062\230\341\035\227\257\217\307\334\311\070\226\363\333\032
\374\121\355\150\306\320\156\244\174\044\321\256\102\310\226\120
\143\056\340\376\165\376\230\247\137\111\056\225\343\071\063\144
\216\036\244\137\220\322\147\074\262\331\376\101\271\125\247\011
\216\162\005\036\213\335\104\205\202\102\320\111\300\035\140\360
\321\027\054\225\353\366\245\301\222\243\305\302\247\010\140\015
\140\004\020\226\171\236\026\064\346\251\266\372\045\105\071\310
\036\145\371\223\365\252\361\122\334\231\230\075\245\206\032\014
\065\063\372\113\245\004\006\025\034\061\200\357\252\030\153\302
\173\327\332\316\371\063\040\325\365\275\152\063\055\201\004\373
\260\134\324\234\243\342\134\035\343\251\102\165\136\173\324\167
\357\071\124\272\311\012\030\033\022\231\111\057\210\113\375\120
\142\321\163\347\217\172\103\002\003\001\000\001\243\201\235\060
\201\232\060\023\006\011\053\006\001\004\001\202\067\024\002\004
\006\036\004\000\103\000\101\060\013\006\003\125\035\017\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\257\104\004\302\101\176\110\203\333\116\071\002\354\354\204\172
\346\316\311\244\060\064\006\003\125\035\037\004\055\060\053\060
\051\240\047\240\045\206\043\150\164\164\160\072\057\057\143\162
\154\056\163\145\143\165\162\145\164\162\165\163\164\056\143\157
\155\057\123\107\103\101\056\143\162\154\060\020\006\011\053\006
\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\143\032\010\100\175\244\136\123\015\167\330\172\256\037\015\013
\121\026\003\357\030\174\310\343\257\152\130\223\024\140\221\262
\204\334\210\116\276\071\212\072\363\346\202\211\135\001\067\263
\253\044\244\025\016\222\065\132\112\104\136\116\127\372\165\316
\037\110\316\146\364\074\100\046\222\230\154\033\356\044\106\014
\027\263\122\245\333\245\221\221\317\067\323\157\347\047\010\072
\116\031\037\072\247\130\134\027\317\171\077\213\344\247\323\046
\043\235\046\017\130\151\374\107\176\262\320\215\213\223\277\051
\117\103\151\164\166\147\113\317\007\214\346\002\367\265\341\264
\103\265\113\055\024\237\371\334\046\015\277\246\107\164\006\330
\210\321\072\051\060\204\316\322\071\200\142\033\250\307\127\111
\274\152\125\121\147\025\112\276\065\007\344\325\165\230\067\171
\060\024\333\051\235\154\305\151\314\107\125\242\060\367\314\134
\177\302\303\230\034\153\116\026\200\353\172\170\145\105\242\000
\032\257\014\015\125\144\064\110\270\222\271\361\264\120\051\362
\117\043\037\332\154\254\037\104\341\335\043\170\121\133\307\026
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Secure Global CA"
Issuer: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Serial Number:07:56:22:a4:e8:d4:8a:89:4d:f4:13:c8:f0:f8:ea:a5
Subject: CN=Secure Global CA,O=SecureTrust Corporation,C=US
Not Valid Before: Tue Nov 07 19:42:28 2006
Not Valid After : Mon Dec 31 19:52:06 2029
Fingerprint (SHA-256):
42:00:F5:04:3A:C8:59:0E:BB:52:7D:20:9E:D1:50:30:29:FB:CB:D4:1C:A1:B5:06:EC:27:F1:5A:DE:7D:AC:69
Fingerprint (SHA1): 3A:44:73:5A:E5:81:90:1F:24:86:61:46:1E:3B:9C:C4:5F:F5:3A:1B
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Secure Global CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\072\104\163\132\345\201\220\037\044\206\141\106\036\073\234\304
\137\365\072\033
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\317\364\047\015\324\355\334\145\026\111\155\075\332\277\156\336
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\040\060\036\006\003\125\004\012\023\027\123\145\143\165\162\145
\124\162\165\163\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\031\060\027\006\003\125\004\003\023\020\123\145\143\165
\162\145\040\107\154\157\142\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\007\126\042\244\350\324\212\211\115\364\023\310\360\370
\352\245
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO Certification Authority"
#
Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater

Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\035\060\202\003\005\240\003\002\001\002\002\020\116
\201\055\212\202\145\340\013\002\356\076\065\002\106\345\075\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201

\201\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\047\060\045\006\003\125
\004\003\023\036\103\117\115\117\104\117\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\060\066\061\062\060\061\060\060\060\060
\060\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065
\071\132\060\201\201\061\013\060\011\006\003\125\004\006\023\002
\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162\145
\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162\061
\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157\162
\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115\117
\104\117\040\103\101\040\114\151\155\151\164\145\144\061\047\060
\045\006\003\125\004\003\023\036\103\117\115\117\104\117\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\320\100\213\213\162\343\221\033\367
\121\301\033\124\004\230\323\251\277\301\346\212\135\073\207\373
\273\210\316\015\343\057\077\006\226\360\242\051\120\231\256\333
\073\241\127\260\164\121\161\315\355\102\221\115\101\376\251\310
\330\152\206\167\104\273\131\146\227\120\136\264\324\054\160\104
\317\332\067\225\102\151\074\060\304\161\263\122\360\041\115\241
\330\272\071\174\034\236\243\044\235\362\203\026\230\252\026\174
\103\233\025\133\267\256\064\221\376\324\142\046\030\106\232\077
\353\301\371\361\220\127\353\254\172\015\213\333\162\060\152\146
\325\340\106\243\160\334\150\331\377\004\110\211\167\336\265\351
\373\147\155\101\351\274\071\275\062\331\142\002\361\261\250\075
\156\067\234\342\057\342\323\242\046\213\306\270\125\103\210\341
\043\076\245\322\044\071\152\107\253\000\324\241\263\251\045\376
\015\077\247\035\272\323\121\301\013\244\332\254\070\357\125\120
\044\005\145\106\223\064\117\055\215\255\306\324\041\031\322\216
\312\005\141\161\007\163\107\345\212\031\022\275\004\115\316\116
\234\245\110\254\273\046\367\002\003\001\000\001\243\201\216\060
\201\213\060\035\006\003\125\035\016\004\026\004\024\013\130\345
\213\306\114\025\067\244\100\251\060\251\041\276\107\066\132\126
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\111\006\003\125\035\037\004\102\060\100\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\143\157\155\157\144\157\143\141\056\143\157\155\057\103\117\115
\117\104\117\103\145\162\164\151\146\151\143\141\164\151\157\156
\101\165\164\150\157\162\151\164\171\056\143\162\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\076\230\236\233\366\033\351\327\071\267\170\256\035\162\030

\111\323\207\344\103\202\353\077\311\252\365\250\265\357\125\174
\041\122\145\371\325\015\341\154\364\076\214\223\163\221\056\002
\304\116\007\161\157\300\217\070\141\010\250\036\201\012\300\057
\040\057\101\213\221\334\110\105\274\361\306\336\272\166\153\063
\310\000\055\061\106\114\355\347\235\317\210\224\377\063\300\126
\350\044\206\046\270\330\070\070\337\052\153\335\022\314\307\077
\107\027\114\242\302\006\226\011\326\333\376\077\074\106\101\337
\130\342\126\017\074\073\301\034\223\065\331\070\122\254\356\310
\354\056\060\116\224\065\264\044\037\113\170\151\332\362\002\070
\314\225\122\223\360\160\045\131\234\040\147\304\356\371\213\127
\141\364\222\166\175\077\204\215\125\267\350\345\254\325\361\365
\031\126\246\132\373\220\034\257\223\353\345\034\324\147\227\135
\004\016\276\013\203\246\027\203\271\060\022\240\305\063\025\005
\271\015\373\307\005\166\343\330\112\215\374\064\027\243\306\041
\050\276\060\105\061\036\307\170\276\130\141\070\254\073\342\001
\145
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO Certification Authority"
Issuer: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4e:81:2d:8a:82:65:e0:0b:02:ee:3e:35:02:46:e5:3d
Subject: CN=COMODO Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
#
Not Valid Before: Fri Dec 01 00:00:00 2006
Not Valid After : Mon Dec 31 23:59:59 2029
Fingerprint (SHA-256):
0C:2C:D6:3D:F7:80:6F:A3:99:ED:E8:09:11:6B:57:5B:F8:79:89:F0:65:18:F9:80:8C:86:05:03:17:8B:AF:66
Fingerprint (SHA1): 66:31:BF:9E:F7:4F:9E:B6:C9:D5:A6:0C:BA:6A:BE:D1:F7:BD:EF:7B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\146\061\277\236\367\117\236\266\311\325\246\014\272\152\276\321
\367\275\357\173
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\134\110\334\367\102\162\354\126\224\155\034\314\161\065\200\165
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\201\061\013\060\011\006\003\125\004\006\023\002\107\102

\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\047\060\045\006
\003\125\004\003\023\036\103\117\115\117\104\117\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\116\201\055\212\202\145\340\013\002\356\076\065\002\106
\345\075
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO ECC Certification Authority"
#
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater
Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater
Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan
 18 23:59:59 2038
Fingerprint (SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101

\165\164\150\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\211\060\202\002\017\240\003\002\001\002\002\020\037
\107\257\252\142\000\160\120\124\114\001\236\233\143\231\052\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\205\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\033\060\031\006
\003\125\004\010\023\022\107\162\145\141\164\145\162\040\115\141
\156\143\150\145\163\164\145\162\061\020\060\016\006\003\125\004
\007\023\007\123\141\154\146\157\162\144\061\032\060\030\006\003
\125\004\012\023\021\103\117\115\117\104\117\040\103\101\040\114
\151\155\151\164\145\144\061\053\060\051\006\003\125\004\003\023
\042\103\117\115\117\104\117\040\105\103\103\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\070\060\063\060\066\060\060\060
\060\060\060\132\027\015\063\070\060\061\061\070\062\063\065\071
\065\071\132\060\201\205\061\013\060\011\006\003\125\004\006\023
\002\107\102\061\033\060\031\006\003\125\004\010\023\022\107\162
\145\141\164\145\162\040\115\141\156\143\150\145\163\164\145\162
\061\020\060\016\006\003\125\004\007\023\007\123\141\154\146\157
\162\144\061\032\060\030\006\003\125\004\012\023\021\103\117\115
\117\104\117\040\103\101\040\114\151\155\151\164\145\144\061\053
\060\051\006\003\125\004\003\023\042\103\117\115\117\104\117\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\003\107\173\057\165\311\202\025\205\373\165\344\221
\026\324\253\142\231\365\076\122\013\006\316\101\000\177\227\341
\012\044\074\035\001\004\356\075\322\215\011\227\014\340\165\344
\372\373\167\212\052\365\003\140\113\066\213\026\043\026\255\011
\161\364\112\364\050\120\264\376\210\034\156\077\154\057\057\011

\131\133\245\133\013\063\231\342\303\075\211\371\152\054\357\262
\323\006\351\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\165\161\247\031\110\031\274\235\235\352\101\107\337\224
\304\110\167\231\323\171\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\357\003\133\172\254
\267\170\012\162\267\210\337\377\265\106\024\011\012\372\240\346
\175\010\306\032\207\275\030\250\163\275\046\312\140\014\235\316
\231\237\317\134\017\060\341\276\024\061\352\002\060\024\364\223
\074\111\247\063\172\220\106\107\263\143\175\023\233\116\267\157
\030\067\200\123\376\335\040\340\065\232\066\321\307\001\271\346
\334\335\363\377\035\054\072\026\127\331\222\071\326
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO ECC Certification Authority"
Issuer: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:1f:47:af:aa:62:00:70:50:54:4c:01:9e:9b:63:99:2a
Subject: CN=COMODO ECC Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Thu Mar 06 00:00:00 2008
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint
(SHA-256):
17:93:92:7A:06:14:54:97:89:AD:CE:2F:8F:34:F7:F0:B6:6D:0F:3A:E3:A3:B8:4D:21:EC:15:DB:BA:4F:AD:C7
Fingerprint (SHA1): 9F:74:4E:9F:2B:4D:BA:EC:0F:31:2C:50:B6:56:3B:8E:2D:93:C3:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO ECC Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\164\116\237\053\115\272\354\017\061\054\120\266\126\073\216
\055\223\303\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\142\377\164\235\061\123\136\150\112\325\170\252\036\277\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061

\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\105\103\103
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\037\107\257\252\142\000\160\120\124\114\001\236\233\143
\231\052
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GA CA"
#
Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c) 2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037
Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
#
Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_ID UTF8

"0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\361\060\202\002\331\240\003\002\001\002\002\020\101
\075\162\307\364\153\037\201\103\175\361\322\050\124\337\232\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\212\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020
\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171
\061\033\060\031\006\003\125\004\013\023\022\103\157\160\171\162
\151\147\150\164\040\050\143\051\040\062\060\060\065\061\042\060
\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157
\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145
\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124
\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154
\040\122\157\157\164\040\107\101\040\103\101\060\036\027\015\060
\065\061\062\061\061\061\066\060\063\064\064\132\027\015\063\067
\061\062\061\061\061\066\060\071\065\061\132\060\201\212\061\013
\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006
\003\125\004\012\023\007\127\111\123\145\113\145\171\061\033\060
\031\006\003\125\004\013\023\022\103\157\160\171\162\151\147\150
\164\040\050\143\051\040\062\060\060\065\061\042\060\040\006\003
\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156\144
\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061\050
\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040\127
\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122\157
\157\164\040\107\101\040\103\101\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\313\117\263\000\233\075\066
\335\371\321\111\152\153\020\111\037\354\330\053\262\306\370\062
\201\051\103\225\114\232\031\043\041\025\105\336\343\310\034\121
\125\133\256\223\350\067\377\053\153\351\324\352\276\052\335\250
\121\053\327\146\303\141\134\140\002\310\365\316\162\173\073\270
\362\116\145\010\232\315\244\152\031\301\001\273\163\246\327\366
\303\335\315\274\244\213\265\231\141\270\001\242\243\324\115\324

\005\075\221\255\370\264\010\161\144\257\160\361\034\153\176\366
\303\167\235\044\163\173\344\014\214\341\331\066\341\231\213\005
\231\013\355\105\061\011\312\302\000\333\367\162\240\226\252\225
\207\320\216\307\266\141\163\015\166\146\214\334\033\264\143\242
\237\177\223\023\060\361\241\047\333\331\377\054\125\210\221\240
\340\117\007\260\050\126\214\030\033\227\104\216\211\335\340\027
\156\347\052\357\217\071\012\061\204\202\330\100\024\111\056\172
\101\344\247\376\343\144\314\301\131\161\113\054\041\247\133\175
\340\035\321\056\201\233\303\330\150\367\275\226\033\254\160\261
\026\024\013\333\140\271\046\001\005\002\003\001\000\001\243\121
\060\117\060\013\006\003\125\035\017\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\263\003\176\256\066
\274\260\171\321\334\224\046\266\021\276\041\262\151\206\224\060
\020\006\011\053\006\001\004\001\202\067\025\001\004\003\002\001
\000\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\113\241\377\013\207\156\263\371\301\103\261
\110\363\050\300\035\056\311\011\101\372\224\000\034\244\244\253
\111\117\217\075\036\357\115\157\275\274\244\366\362\046\060\311
\020\312\035\210\373\164\031\037\205\105\275\260\154\121\371\066
\176\333\365\114\062\072\101\117\133\107\317\350\013\055\266\304
\031\235\164\305\107\306\073\152\017\254\024\333\074\364\163\234
\251\005\337\000\334\164\170\372\370\065\140\131\002\023\030\174
\274\373\115\260\040\155\103\273\140\060\172\147\063\134\305\231
\321\370\055\071\122\163\373\214\252\227\045\134\162\331\010\036
\253\116\074\343\201\061\237\003\246\373\300\376\051\210\125\332
\204\325\120\003\266\342\204\243\246\066\252\021\072\001\341\030
\113\326\104\150\263\075\371\123\164\204\263\106\221\106\226\000
\267\200\054\266\341\343\020\342\333\242\347\050\217\001\226\142
\026\076\000\343\034\245\066\201\030\242\114\122\166\300\021\243
\156\346\035\272\343\132\276\066\123\305\076\165\217\206\151\051
\130\123\265\234\273\157\237\134\305\030\354\335\057\341\230\311
\374\276\337\012\015
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

#
 Trust for "OISTE WISeKey Global Root GA CA"
Issuer: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c)
2005,O=WISeKey,C=CH
Serial Number:41:3d:72:c7:f4:6b:1f:81:43:7d:f1:d2:28:54:df:9a
Subject: CN=OISTE WISeKey Global Root GA CA,OU=OISTE Foundation Endorsed,OU=Copyright (c)
2005,O=WISeKey,C=CH
Not Valid Before: Sun Dec 11 16:03:44 2005
Not Valid After : Fri Dec 11 16:09:51 2037

```
# Fingerprint (SHA-256):
41:C9:23:86:6A:B4:CA:D6:B7:AD:57:80:81:58:2E:02:07:97:A6:CB:DF:4F:FF:78:CE:83:96:B3:89:37:D7:F5
# Fingerprint (SHA1): 59:22:A1:E1:5A:EA:16:35:21:F8:98:39:6A:46:46:B0:44:1B:0F:A9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GA CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\042\241\341\132\352\026\065\041\370\230\071\152\106\106\260
\104\033\017\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\274\154\121\063\247\351\323\146\143\124\025\162\033\041\222\223
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113
\145\171\061\033\060\031\006\003\125\004\013\023\022\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\062\060\060\065\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\101\075\162\307\364\153\037\201\103\175\361\322\050\124
\337\232
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Certigna"
#
#
 Issuer: CN=Certigna,O=Dhimyotis,C=FR
# Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
# Subject: CN=Certigna,O=Dhimyotis,C=FR
# Not Valid Before: Fri Jun 29 15:13:05 2007
# Not Valid After : Tue Jun 29 15:13:05 2027
# Fingerprint (SHA-256):
E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
# Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
```

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\250\060\202\002\220\240\003\002\001\002\002\011\000
\376\334\343\001\017\311\110\377\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\064\061\013\060\011\006\003\125
\004\006\023\002\106\122\061\022\060\020\006\003\125\004\012\014
\011\104\150\151\155\171\157\164\151\163\061\021\060\017\006\003
\125\004\003\014\010\103\145\162\164\151\147\156\141\060\036\027
\015\060\067\060\066\062\071\061\065\061\063\060\065\132\027\015
\062\067\060\066\062\071\061\065\061\063\060\065\132\060\064\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\022\060\020
\006\003\125\004\012\014\011\104\150\151\155\171\157\164\151\163
\061\021\060\017\006\003\125\004\003\014\010\103\145\162\164\151
\147\156\141\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\310\150\361\311\326\326\263\064\165\046\202\036
\354\264\276\352\134\341\046\355\021\107\141\341\242\174\026\170
\100\041\344\140\236\132\310\143\341\304\261\226\222\377\030\155
\151\043\341\053\142\367\335\342\066\057\221\007\271\110\317\016
\354\171\266\054\347\064\113\160\010\045\243\074\207\033\031\362
\201\007\017\070\220\031\323\021\376\206\264\362\321\136\036\036
\226\315\200\154\316\073\061\223\266\362\240\320\251\225\022\175
\245\232\314\153\310\204\126\212\063\251\347\042\025\123\026\360
\314\027\354\127\137\351\242\012\230\011\336\343\137\234\157\334
\110\343\205\013\025\132\246\272\237\254\110\343\011\262\367\364
\062\336\136\064\276\034\170\135\102\133\316\016\042\217\115\220

\327\175\062\030\263\013\054\152\277\216\077\024\021\211\040\016
\167\024\265\075\224\010\207\367\045\036\325\262\140\000\354\157
\052\050\045\156\052\076\030\143\027\045\077\076\104\040\026\366
\046\310\045\256\005\112\264\347\143\054\363\214\026\123\176\134
\373\021\032\010\301\106\142\237\042\270\361\302\215\151\334\372
\072\130\006\337\002\003\001\000\001\243\201\274\060\201\271\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\032\355\376\101\071
\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021\060
\144\006\003\125\035\043\004\135\060\133\200\024\032\355\376\101
\071\220\264\044\131\276\001\362\122\325\105\366\132\071\334\021
\241\070\244\066\060\064\061\013\060\011\006\003\125\004\006\023
\002\106\122\061\022\060\020\006\003\125\004\012\014\011\104\150
\151\155\171\157\164\151\163\061\021\060\017\006\003\125\004\003
\014\010\103\145\162\164\151\147\156\141\202\011\000\376\334\343
\001\017\311\110\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\021\006\011\140\206\110\001\206\370\102
\001\001\004\004\003\002\000\007\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\205\003\036\222
\161\366\102\257\341\243\141\236\353\363\300\017\362\245\324\332
\225\346\326\276\150\066\075\176\156\037\114\212\357\321\017\041
\155\136\245\122\143\316\022\370\357\052\332\157\353\067\376\023
\002\307\313\073\076\042\153\332\141\056\177\324\162\075\335\060
\341\036\114\100\031\214\017\327\234\321\203\060\173\230\131\334
\175\306\271\014\051\114\241\063\242\353\147\072\145\204\323\226
\342\355\166\105\160\217\265\053\336\371\043\326\111\156\074\024
\265\306\237\065\036\120\320\301\217\152\160\104\002\142\313\256
\035\150\101\247\252\127\350\123\252\007\322\006\366\325\024\006
\013\221\003\165\054\154\162\265\141\225\232\015\213\271\015\347
\365\337\124\315\336\346\330\326\011\010\227\143\345\301\056\260
\267\104\046\300\046\300\257\125\060\236\073\325\066\052\031\004
\364\134\036\377\317\054\267\377\320\375\207\100\021\325\021\043
\273\110\300\041\251\244\050\055\375\025\370\260\116\053\364\060
\133\041\374\021\221\064\276\101\357\173\235\227\165\377\227\225
\300\226\130\057\352\273\106\327\273\344\331\056
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna"
Issuer: CN=Certigna,O=Dhimyotis,C=FR
Serial Number:00:fe:dc:e3:01:0f:c9:48:ff
Subject: CN=Certigna,O=Dhimyotis,C=FR
Not Valid Before: Fri Jun 29 15:13:05 2007
Not Valid After : Tue Jun 29 15:13:05 2027
Fingerprint (SHA-256):

E3:B6:A2:DB:2E:D7:CE:48:84:2F:7A:C5:32:41:C7:B7:1D:54:14:4B:FB:40:C1:1F:3F:1D:0B:42:F5:EE:A1:2D
Fingerprint (SHA1): B1:2E:13:63:45:86:A4:6F:1A:B2:60:68:37:58:2D:C4:AC:FD:94:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\261\056\023\143\105\206\244\157\032\262\140\150\067\130\055\304
\254\375\224\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\253\127\246\133\175\102\202\031\265\330\130\046\050\136\375\377
END
CKA_ISSUER
MULTILINE_OCTAL
\060\064\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\021\060\017\006\003\125\004\003\014\010\103\145
\162\164\151\147\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\376\334\343\001\017\311\110\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ePKI Root Certification Authority"
#
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
#
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\260\060\202\003\230\240\003\002\001\002\002\020\025
\310\275\145\107\134\257\270\227\000\136\344\006\322\274\235\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113
\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036
\027\015\060\064\061\062\062\060\060\062\063\061\062\067\132\027
\015\063\064\061\062\062\060\060\062\063\061\062\067\132\060\136
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\052\060\050\006\003\125\004\013\014\041\145\120\113
\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\341
\045\017\356\215\333\210\063\165\147\315\255\037\175\072\116\155
\235\323\057\024\363\143\164\313\001\041\152\067\352\204\120\007
\113\046\133\011\103\154\041\236\152\310\325\003\365\140\151\217
\314\360\042\344\037\347\367\152\042\061\267\054\025\362\340\376
\000\152\103\377\207\145\306\265\032\301\247\114\155\042\160\041
\212\061\362\227\164\211\011\022\046\034\236\312\331\022\242\225
\074\332\351\147\277\010\240\144\343\326\102\267\105\357\227\364

\366\365\327\265\112\025\002\130\175\230\130\113\140\274\315\327
\015\232\023\063\123\321\141\371\172\325\327\170\263\232\063\367
\000\206\316\035\115\224\070\257\250\354\170\121\160\212\134\020
\203\121\041\367\021\075\064\206\136\345\110\315\227\201\202\065
\114\031\354\145\366\153\305\005\241\356\107\023\326\263\041\047
\224\020\012\331\044\073\272\276\104\023\106\060\077\227\074\330
\327\327\152\356\073\070\343\053\324\227\016\271\033\347\007\111
\177\067\052\371\167\170\317\124\355\133\106\235\243\200\016\221
\103\301\326\133\137\024\272\237\246\215\044\107\100\131\277\162
\070\262\066\154\067\377\231\321\135\016\131\012\253\151\367\300
\262\004\105\172\124\000\256\276\123\366\265\347\341\370\074\243
\061\322\251\376\041\122\144\305\246\147\360\165\007\006\224\024
\201\125\306\047\344\001\217\027\301\152\161\327\276\113\373\224
\130\175\176\021\063\261\102\367\142\154\030\326\317\011\150\076
\177\154\366\036\217\142\255\245\143\333\011\247\037\042\102\101
\036\157\231\212\076\327\371\077\100\172\171\260\245\001\222\322
\235\075\010\025\245\020\001\055\263\062\166\250\225\015\263\172
\232\373\007\020\170\021\157\341\217\307\272\017\045\032\164\052
\345\034\230\101\231\337\041\207\350\225\006\152\012\263\152\107
\166\145\366\072\317\217\142\027\031\173\012\050\315\032\322\203
\036\041\307\054\277\276\377\141\150\267\147\033\273\170\115\215
\316\147\345\344\301\216\267\043\146\342\235\220\165\064\230\251
\066\053\212\232\224\271\235\354\314\212\261\370\045\211\134\132
\266\057\214\037\155\171\044\247\122\150\303\204\065\342\146\215
\143\016\045\115\325\031\262\346\171\067\247\042\235\124\061\002
\003\001\000\001\243\152\060\150\060\035\006\003\125\035\016\004
\026\004\024\036\014\367\266\147\362\341\222\046\011\105\300\125
\071\056\167\077\102\112\242\060\014\006\003\125\035\023\004\005
\060\003\001\001\377\060\071\006\004\147\052\007\000\004\061\060
\057\060\055\002\001\000\060\011\006\005\053\016\003\002\032\005
\000\060\007\006\005\147\052\003\000\000\004\024\105\260\302\307
\012\126\174\356\133\170\014\225\371\030\123\301\246\034\330\020
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\002\001\000\011\263\203\123\131\001\076\225\111\271\361\201
\272\371\166\040\043\265\047\140\164\324\152\231\064\136\154\000
\123\331\237\362\246\261\044\007\104\152\052\306\245\216\170\022
\350\107\331\130\033\023\052\136\171\233\237\012\052\147\246\045
\077\006\151\126\163\303\212\146\110\373\051\201\127\164\006\312
\234\352\050\350\070\147\046\053\361\325\265\077\145\223\370\066
\135\216\215\215\100\040\207\031\352\357\047\300\075\264\071\017
\045\173\150\120\164\125\234\014\131\175\132\075\101\224\045\122
\010\340\107\054\025\061\031\325\277\007\125\306\273\022\265\227
\364\137\203\205\272\161\301\331\154\201\021\166\012\012\260\277
\202\227\367\352\075\372\372\354\055\251\050\224\073\126\335\322
\121\056\256\300\275\010\025\214\167\122\064\226\326\233\254\323
\035\216\141\017\065\173\233\256\071\151\013\142\140\100\040\066
\217\257\373\066\356\055\010\112\035\270\277\233\134\370\352\245
\033\240\163\246\330\370\156\340\063\004\137\150\252\047\207\355

\331\301\220\234\355\275\343\152\065\257\143\337\253\030\331\272
\346\351\112\352\120\212\017\141\223\036\342\055\031\342\060\224
\065\222\135\016\266\007\257\031\200\217\107\220\121\113\056\115
\335\205\342\322\012\122\012\027\232\374\032\260\120\002\345\001
\243\143\067\041\114\104\304\233\121\231\021\016\163\234\006\217
\124\056\247\050\136\104\071\207\126\055\067\275\205\104\224\341
\014\113\054\234\303\222\205\064\141\313\017\270\233\112\103\122
\376\064\072\175\270\351\051\334\166\251\310\060\370\024\161\200
\306\036\066\110\164\042\101\134\207\202\350\030\161\213\101\211
\104\347\176\130\133\250\270\215\023\351\247\154\303\107\355\263
\032\235\142\256\215\202\352\224\236\335\131\020\303\255\335\342
\115\343\061\325\307\354\350\362\260\376\222\036\026\012\032\374
\331\363\370\047\266\311\276\035\264\154\144\220\177\364\344\304
\133\327\067\256\102\016\335\244\032\157\174\210\124\305\026\156
\341\172\150\056\370\072\277\015\244\074\211\073\170\247\116\143
\203\004\041\010\147\215\362\202\111\320\133\375\261\315\017\203
\204\324\076\040\205\367\112\075\053\234\375\052\012\011\115\352
\201\370\021\234
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ePKI Root Certification Authority"
Issuer: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:15:c8:bd:65:47:5c:af:b8:97:00:5e:e4:06:d2:bc:9d
Subject: OU=ePKI Root Certification Authority,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Mon Dec 20 02:31:27 2004
Not Valid After : Wed Dec 20 02:31:27 2034
Fingerprint (SHA-256):
C0:A6:F4:DC:63:A2:4B:FD:CF:54:EF:2A:6A:08:2A:0A:72:DE:35:80:3E:2F:F5:FF:52:7A:E5:D8:72:06:DF:D5
Fingerprint (SHA1): 67:65:0D:F1:7E:8E:7E:5B:82:40:A4:F4:56:4B:CF:E2:3D:69:C6:F0
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\147\145\015\361\176\216\176\133\202\100\244\364\126\113\317\342
\075\151\306\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\056\000\312\046\006\220\075\255\376\157\025\150\323\153\263
END
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\124\127\061

\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\052\060\050\006\003\125\004\013\014\041\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\310\275\145\107\134\257\270\227\000\136\344\006\322
\274\235
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "certSIGN ROOT CA"
#
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\006\040\006\005\026\160\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\070\060\202\002\040\240\003\002\001\002\002\006\040
\006\005\026\160\002\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\060\073\061\013\060\011\006\003\125\004\006\023
\002\122\117\061\021\060\017\006\003\125\004\012\023\010\143\145
\162\164\123\111\107\116\061\031\060\027\006\003\125\004\013\023
\020\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103
\101\060\036\027\015\060\066\060\067\060\064\061\067\062\060\060
\064\132\027\015\063\061\060\067\060\064\061\067\062\060\060\064
\132\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117
\061\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123
\111\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145
\162\164\123\111\107\116\040\122\117\117\124\040\103\101\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\267
\063\271\176\310\045\112\216\265\333\264\050\033\252\127\220\350
\321\042\323\144\272\323\223\350\324\254\206\141\100\152\140\127
\150\124\204\115\274\152\124\002\005\377\337\233\232\052\256\135
\007\217\112\303\050\177\357\373\053\372\171\361\307\255\360\020
\123\044\220\213\146\311\250\210\253\257\132\243\000\351\276\272
\106\356\133\163\173\054\027\202\201\136\142\054\241\002\145\263
\275\305\053\000\176\304\374\003\063\127\015\355\342\372\316\135
\105\326\070\315\065\266\262\301\320\234\201\112\252\344\262\001
\134\035\217\137\231\304\261\255\333\210\041\353\220\010\202\200
\363\060\243\103\346\220\202\256\125\050\111\355\133\327\251\020
\070\016\376\217\114\133\233\106\352\101\365\260\010\164\303\320
\210\063\266\174\327\164\337\334\204\321\103\016\165\071\241\045
\100\050\352\170\313\016\054\056\071\235\214\213\156\026\034\057
\046\202\020\342\343\145\224\012\004\300\136\367\135\133\370\020
\342\320\272\172\113\373\336\067\000\000\032\133\050\343\322\234
\163\076\062\207\230\241\311\121\057\327\336\254\063\263\117\002
\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\306\060\035\006\003\125\035\016
\004\026\004\024\340\214\233\333\045\111\263\361\174\206\326\262
\102\207\013\320\153\240\331\344\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\076\322\034\211
\056\065\374\370\165\335\346\177\145\210\364\162\114\311\054\327
\062\116\363\335\031\171\107\275\216\073\133\223\017\120\111\044
\023\153\024\006\162\357\011\323\241\241\343\100\204\311\347\030
\062\164\074\110\156\017\237\113\324\367\036\323\223\206\144\124
\227\143\162\120\325\125\317\372\040\223\002\242\233\303\043\223
\116\026\125\166\240\160\171\155\315\041\037\317\057\055\274\031
\343\210\061\370\131\032\201\011\310\227\246\164\307\140\304\133
\314\127\216\262\165\375\033\002\011\333\131\157\162\223\151\367
\061\101\326\210\070\277\207\262\275\026\171\371\252\344\276\210

\045\335\141\047\043\034\265\061\007\004\066\264\032\220\275\240
\164\161\120\211\155\274\024\343\017\206\256\361\253\076\307\240
\011\314\243\110\321\340\333\144\347\222\265\317\257\162\103\160
\213\371\303\204\074\023\252\176\222\233\127\123\223\372\160\302
\221\016\061\371\233\147\135\351\226\070\136\137\263\163\116\210
\025\147\336\236\166\020\142\040\276\125\151\225\103\000\071\115
\366\356\260\132\116\111\104\124\130\137\102\203
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN ROOT CA"
Issuer: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Serial Number:20:06:05:16:70:02
Subject: OU=certSIGN ROOT CA,O=certSIGN,C=RO
Not Valid Before: Tue Jul 04 17:20:04 2006
Not Valid After : Fri Jul 04 17:20:04 2031
Fingerprint (SHA-256):
EA:A9:62:C4:FA:4A:6B:AF:EB:E4:15:19:6D:35:1C:CD:88:8D:4F:53:F3:FA:8A:E6:D7:C4:66:A9:4E:60:42:BB
Fingerprint (SHA1): FA:B7:EE:36:97:26:62:FB:2D:B0:2A:F6:BF:03:FD:E8:7C:4B:2F:9B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN ROOT CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\372\267\356\066\227\046\142\373\055\260\052\366\277\003\375\350
\174\113\057\233
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\030\230\300\326\351\072\374\371\260\365\014\367\113\001\104\027
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\021\060\017\006\003\125\004\012\023\010\143\145\162\164\123\111
\107\116\061\031\060\027\006\003\125\004\013\023\020\143\145\162
\164\123\111\107\116\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\006\040\006\005\026\160\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NetLock Arany (Class Gold) Ftanúsítvány"
#
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256): 6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
#
 Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303

\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\025\060\202\002\375\240\003\002\001\002\002\006\111
\101\054\344\000\020\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\060\201\247\061\013\060\011\006\003\125\004\006
\023\002\110\125\061\021\060\017\006\003\125\004\007\014\010\102
\165\144\141\160\145\163\164\061\025\060\023\006\003\125\004\012
\014\014\116\145\164\114\157\143\153\040\113\146\164\056\061\067
\060\065\006\003\125\004\013\014\056\124\141\156\303\272\163\303
\255\164\166\303\241\156\171\153\151\141\144\303\263\153\040\050
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\051\061\065\060\063\006\003\125\004\003
\014\054\116\145\164\114\157\143\153\040\101\162\141\156\171\040
\050\103\154\141\163\163\040\107\157\154\144\051\040\106\305\221
\164\141\156\303\272\163\303\255\164\166\303\241\156\171\060\036
\027\015\060\070\061\062\061\061\061\065\060\070\062\061\132\027
\015\062\070\061\062\060\066\061\065\060\070\062\061\132\060\201
\247\061\013\060\011\006\003\125\004\006\023\002\110\125\061\021
\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145\163
\164\061\025\060\023\006\003\125\004\012\014\014\116\145\164\114
\157\143\153\040\113\146\164\056\061\067\060\065\006\003\125\004
\013\014\056\124\141\156\303\272\163\303\255\164\166\303\241\156
\171\153\151\141\144\303\263\153\040\050\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163
\051\061\065\060\063\006\003\125\004\003\014\054\116\145\164\114
\157\143\153\040\101\162\141\156\171\040\050\103\154\141\163\163
\040\107\157\154\144\051\040\106\305\221\164\141\156\303\272\163
\303\255\164\166\303\241\156\171\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\304\044\136\163\276\113\155
\024\303\241\364\343\227\220\156\322\060\105\036\074\356\147\331
\144\340\032\212\177\312\060\312\203\343\040\301\343\364\072\323
\224\137\032\174\133\155\277\060\117\204\047\366\237\037\111\274
\306\231\012\220\362\017\365\177\103\204\067\143\121\213\172\245
\160\374\172\130\315\216\233\355\303\106\154\204\160\135\332\363
\001\220\043\374\116\060\251\176\341\047\143\347\355\144\074\240
\270\311\063\143\376\026\220\377\260\270\375\327\250\300\300\224
\103\013\266\325\131\246\236\126\320\044\037\160\171\257\333\071
\124\015\145\165\331\025\101\224\001\257\136\354\366\215\361\377
\255\144\376\040\232\327\134\353\376\246\037\010\144\243\213\166
\125\255\036\073\050\140\056\207\045\350\252\257\037\306\144\106
\040\267\160\177\074\336\110\333\226\123\267\071\167\344\032\342
\307\026\204\166\227\133\057\273\031\025\205\370\151\205\365\231
\247\251\362\064\247\251\266\246\003\374\157\206\075\124\174\166

\004\233\153\371\100\135\000\064\307\056\231\165\235\345\210\003
\252\115\370\003\322\102\166\300\033\002\003\000\250\213\243\105
\060\103\060\022\006\003\125\035\023\001\001\377\004\010\060\006
\001\001\377\002\001\004\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\314\372\147\223\360\266\270\320\245\300\036\363\123\375\214
\123\337\203\327\226\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\253\177\356\034\026\251\234
\074\121\000\240\300\021\010\005\247\231\346\157\001\210\124\141
\156\361\271\030\255\112\255\376\201\100\043\224\057\373\165\174
\057\050\113\142\044\201\202\013\365\141\361\034\156\270\141\070
\353\201\372\142\241\073\132\142\323\224\145\304\341\346\155\202
\370\057\045\160\262\041\046\301\162\121\037\214\054\303\204\220
\303\132\217\272\317\364\247\145\245\353\230\321\373\005\262\106
\165\025\043\152\157\205\143\060\200\360\325\236\037\051\034\302
\154\260\120\131\135\220\133\073\250\015\060\317\277\175\177\316
\361\235\203\275\311\106\156\040\246\371\141\121\272\041\057\173
\276\245\025\143\241\324\225\207\361\236\271\363\211\363\075\205
\270\270\333\276\265\271\051\371\332\067\005\000\111\224\003\204
\104\347\277\103\061\317\165\213\045\321\364\246\144\365\222\366
\253\005\353\075\351\245\013\066\142\332\314\006\137\066\213\266
\136\061\270\052\373\136\366\161\337\104\046\236\304\346\015\221
\264\056\165\225\200\121\152\113\060\246\260\142\241\223\361\233
\330\316\304\143\165\077\131\107\261
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NetLock Arany (Class Gold) Ftanúsítvány"
Issuer: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2c:e4:00:10
Subject: CN=NetLock Arany (Class Gold) F..tan..s..tv..ny,OU=Tan..s..tv..nykiad..k (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:08:21 2008
Not Valid After : Wed Dec 06 15:08:21 2028
Fingerprint (SHA-256):
6C:61:DA:C3:A2:DE:F0:31:50:6B:E0:36:D2:A6:FE:40:19:94:FB:D1:3D:F9:C8:D4:66:59:92:74:C4:46:EC:98
Fingerprint (SHA1): 06:08:3F:59:3F:15:A1:04:A0:69:A4:6B:A9:03:D0:06:B7:97:09:91
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Arany (Class Gold) Ftanúsítvány"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\006\010\077\131\077\025\241\004\240\151\244\153\251\003\320\006
\267\227\011\221
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\241\267\377\163\335\326\327\064\062\030\337\374\074\255\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\065\060\063\006\003\125\004\003\014\054\116\145
\164\114\157\143\153\040\101\162\141\156\171\040\050\103\154\141
\163\163\040\107\157\154\144\051\040\106\305\221\164\141\156\303
\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\006\111\101\054\344\000\020
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SecureSign RootCA11"
#
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL
 CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061

\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\003\155\060\202\002\125\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061\053
\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145\162
\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032\006
\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147\156
\040\122\157\157\164\103\101\061\061\060\036\027\015\060\071\060
\064\060\070\060\064\065\066\064\067\132\027\015\062\071\060\064
\060\070\060\064\065\066\064\067\132\060\130\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\053\060\051\006\003\125\004
\012\023\042\112\141\160\141\156\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163\054
\040\111\156\143\056\061\034\060\032\006\003\125\004\003\023\023
\123\145\143\165\162\145\123\151\147\156\040\122\157\157\164\103
\101\061\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\375\167\252\245\034\220\005\073\313\114\233\063
\213\132\024\105\244\347\220\026\321\337\127\322\041\020\244\027
\375\337\254\326\037\247\344\333\174\367\354\337\270\003\332\224
\130\375\135\162\174\214\077\137\001\147\164\025\226\343\002\074
\207\333\256\313\001\216\302\363\146\306\205\105\364\002\306\072
\265\142\262\257\372\234\277\244\346\324\200\060\230\363\015\266
\223\217\251\324\330\066\362\260\374\212\312\054\241\025\063\225
\061\332\300\033\362\356\142\231\206\143\077\277\335\223\052\203
\250\166\271\023\037\267\316\116\102\205\217\042\347\056\032\362
\225\011\262\005\265\104\116\167\241\040\275\251\362\116\012\175
\120\255\365\005\015\105\117\106\161\375\050\076\123\373\004\330

\055\327\145\035\112\033\372\317\073\260\061\232\065\156\310\213
\006\323\000\221\362\224\010\145\114\261\064\006\000\172\211\342
\360\307\003\131\317\325\326\350\247\062\263\346\230\100\206\305
\315\047\022\213\314\173\316\267\021\074\142\140\007\043\076\053
\100\156\224\200\011\155\266\263\157\167\157\065\010\120\373\002
\207\305\076\211\002\003\001\000\001\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\133\370\115\117\262\245\206\324
\072\322\361\143\232\240\276\011\366\127\267\336\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\240\241\070\026\146\056\247\126\037\041\234\006\372\035\355
\271\042\305\070\046\330\116\117\354\243\177\171\336\106\041\241
\207\167\217\007\010\232\262\244\305\257\017\062\230\013\174\146
\051\266\233\175\045\122\111\103\253\114\056\053\156\172\160\257
\026\016\343\002\154\373\102\346\030\235\105\330\125\310\350\073
\335\347\341\364\056\013\034\064\134\154\130\112\373\214\210\120
\137\225\034\277\355\253\042\265\145\263\205\272\236\017\270\255
\345\172\033\212\120\072\035\275\015\274\173\124\120\013\271\102
\257\125\240\030\201\255\145\231\357\276\344\234\277\304\205\253
\101\262\124\157\334\045\315\355\170\342\216\014\215\011\111\335
\143\173\132\151\226\002\041\250\275\122\131\351\175\065\313\310
\122\312\177\201\376\331\153\323\367\021\355\045\337\370\347\371
\244\372\162\227\204\123\015\245\320\062\030\121\166\131\024\154
\017\353\354\137\200\214\165\103\203\303\205\230\377\114\236\055
\015\344\167\203\223\116\265\226\007\213\050\023\233\214\031\215
\101\047\111\100\356\336\346\043\104\071\334\241\042\326\272\003
\362
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SecureSign RootCA11"
Issuer: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Serial Number: 1 (0x1)
Subject: CN=SecureSign RootCA11,O="Japan Certification Services, Inc.",C=JP
Not Valid
Before: Wed Apr 08 04:56:47 2009
Not Valid After : Sun Apr 08 04:56:47 2029
Fingerprint (SHA-256):
BF:0F:EE:FB:9E:3A:58:1A:D5:F9:E9:DB:75:89:98:57:43:D2:61:08:5C:4D:31:4F:6F:5D:72:59:AA:42:16:12
Fingerprint (SHA1): 3B:C4:9F:48:F8:F3:73:A0:9C:1E:BD:F8:5B:B1:C3:65:C7:D8:11:B3
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "SecureSign RootCA11"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\073\304\237\110\370\363\163\240\234\036\275\370\133\261\303\145
\307\330\021\263
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\122\164\342\222\264\200\223\362\165\344\314\327\362\352\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\053\060\051\006\003\125\004\012\023\042\112\141\160\141\156\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\054\040\111\156\143\056\061\034\060\032
\006\003\125\004\003\023\023\123\145\143\165\162\145\123\151\147
\156\040\122\157\157\164\103\101\061\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsec e-Szigno Root CA 2009"
#
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009
Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006

\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\012\060\202\002\362\240\003\002\001\002\002\011\000
\302\176\103\004\116\107\077\031\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003
\125\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007
\014\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003
\125\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164
\144\056\061\047\060\045\006\003\125\004\003\014\036\115\151\143
\162\157\163\145\143\040\145\055\123\172\151\147\156\157\040\122
\157\157\164\040\103\101\040\062\060\060\071\061\037\060\035\006
\011\052\206\110\206\367\015\001\011\001\026\020\151\156\146\157
\100\145\055\163\172\151\147\156\157\056\150\165\060\036\027\015
\060\071\060\066\061\066\061\061\063\060\061\070\132\027\015\062
\071\061\062\063\060\061\061\063\060\061\070\132\060\201\202\061
\013\060\011\006\003\125\004\006\023\002\110\125\061\021\060\017
\006\003\125\004\007\014\010\102\165\144\141\160\145\163\164\061
\026\060\024\006\003\125\004\012\014\015\115\151\143\162\157\163
\145\143\040\114\164\144\056\061\047\060\045\006\003\125\004\003
\014\036\115\151\143\162\157\163\145\143\040\145\055\123\172\151
\147\156\157\040\122\157\157\164\040\103\101\040\062\060\060\071
\061\037\060\035\006\011\052\206\110\206\367\015\001\011\001\026
\020\151\156\146\157\100\145\055\163\172\151\147\156\157\056\150
\165\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\351\370\217\363\143\255\332\206\330\247\340\102\373\317
\221\336\246\046\370\231\245\143\160\255\233\256\312\063\100\175

\155\226\156\241\016\104\356\341\023\235\224\102\122\232\275\165
\205\164\054\250\016\035\223\266\030\267\214\054\250\317\373\134
\161\271\332\354\376\350\176\217\344\057\035\262\250\165\207\330
\267\241\345\073\317\231\112\106\320\203\031\175\300\241\022\034
\225\155\112\364\330\307\245\115\063\056\205\071\100\165\176\024
\174\200\022\230\120\307\101\147\270\240\200\141\124\246\154\116
\037\340\235\016\007\351\311\272\063\347\376\300\125\050\054\002
\200\247\031\365\236\334\125\123\003\227\173\007\110\377\231\373
\067\212\044\304\131\314\120\020\143\216\252\251\032\260\204\032
\206\371\137\273\261\120\156\244\321\012\314\325\161\176\037\247
\033\174\365\123\156\042\137\313\053\346\324\174\135\256\326\302
\306\114\345\005\001\331\355\127\374\301\043\171\374\372\310\044
\203\225\363\265\152\121\001\320\167\326\351\022\241\371\032\203
\373\202\033\271\260\227\364\166\006\063\103\111\240\377\013\265
\372\265\002\003\001\000\001\243\201\200\060\176\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\313\017\306\337\102\103\314\075
\313\265\110\043\241\032\172\246\052\273\064\150\060\037\006\003
\125\035\043\004\030\060\026\200\024\313\017\306\337\102\103\314
\075\313\265\110\043\241\032\172\246\052\273\064\150\060\033\006
\003\125\035\021\004\024\060\022\201\020\151\156\146\157\100\145
\055\163\172\151\147\156\157\056\150\165\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\001\001\000\311\321
\016\136\056\325\314\263\174\076\313\374\075\377\015\050\225\223
\004\310\277\332\315\171\270\103\220\360\244\276\357\362\357\041
\230\274\324\324\135\006\366\356\102\354\060\154\240\252\251\312
\361\257\212\372\077\013\163\152\076\352\056\100\176\037\256\124
\141\171\353\056\010\067\327\043\363\214\237\276\035\261\341\244
\165\333\240\342\124\024\261\272\034\051\244\030\366\022\272\242
\024\024\343\061\065\310\100\377\267\340\005\166\127\301\034\131
\362\370\277\344\355\045\142\134\204\360\176\176\037\263\276\371
\267\041\021\314\003\001\126\160\247\020\222\036\033\064\201\036
\255\234\032\303\004\074\355\002\141\326\036\006\363\137\072\207
\362\053\361\105\207\345\075\254\321\307\127\204\275\153\256\334
\330\371\266\033\142\160\013\075\066\311\102\362\062\327\172\141
\346\322\333\075\317\310\251\311\233\334\333\130\104\327\157\070
\257\177\170\323\243\255\032\165\272\034\301\066\174\217\036\155
\034\303\165\106\256\065\005\246\366\134\075\041\356\126\360\311
\202\042\055\172\124\253\160\303\175\042\145\202\160\226
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsec e-Szigno Root CA 2009"
Issuer: E=info@e-szigno.hu,CN=Microsec e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU

Serial Number:00:c2:7e:43:04:4e:47:3f:19
Subject: E=info@e-szigno.hu,CN=Microsec
e-Szigno Root CA 2009,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Jun 16 11:30:18 2009
Not Valid After : Sun Dec 30 11:30:18 2029
Fingerprint (SHA-256):
3C:5F:81:FE:A5:FA:B8:2C:64:BF:A2:EA:EC:AF:CD:E8:E0:77:FC:86:20:A7:CA:E5:37:16:3D:F3:6E:DB:F3:78
Fingerprint (SHA1): 89:DF:74:FE:5C:F4:0F:4A:80:F9:E3:37:7D:54:DA:91:E1:01:31:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\337\164\376\134\364\017\112\200\371\343\067\175\124\332\221
\341\001\061\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\111\364\003\274\104\055\203\276\110\151\175\051\144\374\261
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151
\143\162\157\163\145\143\040\114\164\144\056\061\047\060\045\006
\003\125\004\003\014\036\115\151\143\162\157\163\145\143\040\145
\055\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040
\062\060\060\071\061\037\060\035\006\011\052\206\110\206\367\015
\001\011\001\026\020\151\156\146\157\100\145\055\163\172\151\147
\156\157\056\150\165
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\302\176\103\004\116\107\077\031
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R3"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029

Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
#
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\137\060\202\002\107\240\003\002\001\002\002\013\004
\000\000\000\000\001\041\130\123\010\242\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\114\061\040\060\036\006
\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147\156
\040\122\157\157\164\040\103\101\040\055\040\122\063\061\023\060
\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123\151
\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154\157
\142\141\154\123\151\147\156\060\036\027\015\060\071\060\063\061
\070\061\060\060\060\060\060\132\027\015\062\071\060\063\061\070
\061\060\060\060\060\060\132\060\114\061\040\060\036\006\003\125
\004\013\023\027\107\154\157\142\141\154\123\151\147\156\040\122
\157\157\164\040\103\101\040\055\040\122\063\061\023\060\021\006
\003\125\004\012\023\012\107\154\157\142\141\154\123\151\147\156
\061\023\060\021\006\003\125\004\003\023\012\107\154\157\142\141
\154\123\151\147\156\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\314\045\166\220\171\006\170\042\026\365
\300\203\266\204\312\050\236\375\005\166\021\305\255\210\162\374

\106\002\103\307\262\212\235\004\137\044\313\056\113\341\140\202
\106\341\122\253\014\201\107\160\154\335\144\321\353\365\054\243
\017\202\075\014\053\256\227\327\266\024\206\020\171\273\073\023
\200\167\214\010\341\111\322\152\142\057\037\136\372\226\150\337
\211\047\225\070\237\006\327\076\311\313\046\131\015\163\336\260
\310\351\046\016\203\025\306\357\133\213\322\004\140\312\111\246
\050\366\151\073\366\313\310\050\221\345\235\212\141\127\067\254
\164\024\334\164\340\072\356\162\057\056\234\373\320\273\277\365
\075\000\341\006\063\350\202\053\256\123\246\072\026\163\214\335
\101\016\040\072\300\264\247\241\351\262\117\220\056\062\140\351
\127\313\271\004\222\150\150\345\070\046\140\165\262\237\167\377
\221\024\357\256\040\111\374\255\100\025\110\321\002\061\141\031
\136\270\227\357\255\167\267\144\232\172\277\137\301\023\357\233
\142\373\015\154\340\124\151\026\251\003\332\156\351\203\223\161
\166\306\151\205\202\027\002\003\001\000\001\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\217\360\113\177\250
\056\105\044\256\115\120\372\143\232\213\336\342\335\033\274\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\100\333\300\120\252\376\310\014\357\367\226\124
\105\111\273\226\000\011\101\254\263\023\206\206\050\007\063\312
\153\346\164\271\272\000\055\256\244\012\323\365\361\361\017\212
\277\163\147\112\203\307\104\173\170\340\257\156\154\157\003\051
\216\063\071\105\303\216\344\271\127\154\252\374\022\226\354\123
\306\055\344\044\154\271\224\143\373\334\123\150\147\126\076\203
\270\317\065\041\303\311\150\376\316\332\302\123\252\314\220\212
\351\360\135\106\214\225\335\172\130\050\032\057\035\336\315\000
\067\101\217\355\104\155\327\123\050\227\176\363\147\004\036\025
\327\212\226\264\323\336\114\047\244\114\033\163\163\166\364\027
\231\302\037\172\016\343\055\010\255\012\034\054\377\074\253\125
\016\017\221\176\066\353\303\127\111\276\341\056\055\174\140\213
\303\101\121\023\043\235\316\367\062\153\224\001\250\231\347\054
\063\037\072\073\045\322\206\100\316\073\054\206\170\311\141\057
\024\272\356\333\125\157\337\204\356\005\011\115\275\050\330\162
\316\323\142\120\145\036\353\222\227\203\061\331\263\265\312\107
\130\077\137
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R3"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Serial Number:04:00:00:00:00:01:21:58:53:08:a2
#

Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R3
Not Valid Before: Wed Mar 18 10:00:00 2009
Not Valid After : Sun Mar 18 10:00:00 2029
Fingerprint (SHA-256):
CB:B5:22:D7:B7:F1:27:AD:6A:01:13:86:5B:DF:1C:D4:10:2E:7D:07:59:AF:63:5A:7C:F4:72:0D:C9:63:C5:3B
Fingerprint (SHA1): D6:9B:56:11:48:F0:1C:77:C5:45:78:C1:09:26:DF:5B:85:69:76:AD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\233\126\021\110\360\034\167\305\105\170\301\011\046\337\133
\205\151\166\255
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\337\270\111\312\005\023\125\356\055\272\032\303\076\260\050
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\063\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\041\130\123\010\242
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Izenpe.com"
#
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL

CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\260\267\132\026\110\137\277\341\313\365\213\327\031
\346\175
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\361\060\202\003\331\240\003\002\001\002\002\020\000
\260\267\132\026\110\137\277\341\313\365\213\327\031\346\175\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\070
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\024\060
\022\006\003\125\004\012\014\013\111\132\105\116\120\105\040\123
\056\101\056\061\023\060\021\006\003\125\004\003\014\012\111\172
\145\156\160\145\056\143\157\155\060\036\027\015\060\067\061\062
\061\063\061\063\060\070\062\070\132\027\015\063\067\061\062\061
\063\060\070\062\067\062\065\132\060\070\061\013\060\011\006\003
\125\004\006\023\002\105\123\061\024\060\022\006\003\125\004\012
\014\013\111\132\105\116\120\105\040\123\056\101\056\061\023\060
\021\006\003\125\004\003\014\012\111\172\145\156\160\145\056\143
\157\155\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\311\323\172\312\017\036\254\247\206\350\026\145\152
\261\302\033\105\062\161\225\331\376\020\133\314\257\347\245\171
\001\217\211\303\312\362\125\161\367\167\276\167\224\363\162\244
\054\104\330\236\222\233\024\072\241\347\044\220\012\012\126\216
\305\330\046\224\341\331\110\341\055\076\332\012\162\335\243\231
\025\332\201\242\207\364\173\156\046\167\211\130\255\326\353\014
\262\101\172\163\156\155\333\172\170\101\351\010\210\022\176\207
\056\146\021\143\154\124\373\074\235\162\300\274\056\377\302\267
\335\015\166\343\072\327\367\264\150\276\242\365\343\201\156\301
\106\157\135\215\340\115\306\124\125\211\032\063\061\012\261\127
\271\243\212\230\303\354\073\064\305\225\101\151\176\165\302\074
\040\305\141\272\121\107\240\040\220\223\241\220\113\363\116\174

\205\105\124\232\321\005\046\101\260\265\115\035\063\276\304\003
\310\045\174\301\160\333\073\364\011\055\124\047\110\254\057\341
\304\254\076\310\313\222\114\123\071\067\043\354\323\001\371\340
\011\104\115\115\144\300\341\015\132\207\042\274\255\033\243\376
\046\265\025\363\247\374\204\031\351\354\241\210\264\104\151\204
\203\363\211\321\164\006\251\314\013\326\302\336\047\205\120\046
\312\027\270\311\172\207\126\054\032\001\036\154\276\023\255\020
\254\265\044\365\070\221\241\326\113\332\361\273\322\336\107\265
\361\274\201\366\131\153\317\031\123\351\215\025\313\112\313\251
\157\104\345\033\101\317\341\206\247\312\320\152\237\274\114\215
\006\063\132\242\205\345\220\065\240\142\134\026\116\360\343\242
\372\003\032\264\054\161\263\130\054\336\173\013\333\032\017\353
\336\041\037\006\167\006\003\260\311\357\231\374\300\271\117\013
\206\050\376\322\271\352\343\332\245\303\107\151\022\340\333\360
\366\031\213\355\173\160\327\002\326\355\207\030\050\054\004\044
\114\167\344\110\212\032\306\073\232\324\017\312\372\165\322\001
\100\132\215\171\277\213\317\113\317\252\026\301\225\344\255\114
\212\076\027\221\324\261\142\345\202\345\200\004\244\003\176\215
\277\332\177\242\017\227\117\014\323\015\373\327\321\345\162\176
\034\310\167\377\133\232\017\267\256\005\106\345\361\250\026\354
\107\244\027\002\003\001\000\001\243\201\366\060\201\363\060\201
\260\006\003\125\035\021\004\201\250\060\201\245\201\017\151\156
\146\157\100\151\172\145\156\160\145\056\143\157\155\244\201\221
\060\201\216\061\107\060\105\006\003\125\004\012\014\076\111\132
\105\116\120\105\040\123\056\101\056\040\055\040\103\111\106\040
\101\060\061\063\063\067\062\066\060\055\122\115\145\162\143\056
\126\151\164\157\162\151\141\055\107\141\163\164\145\151\172\040
\124\061\060\065\065\040\106\066\062\040\123\070\061\103\060\101
\006\003\125\004\011\014\072\101\166\144\141\040\144\145\154\040
\115\145\144\151\164\145\162\162\141\156\145\157\040\105\164\157
\162\142\151\144\145\141\040\061\064\040\055\040\060\061\060\061
\060\040\126\151\164\157\162\151\141\055\107\141\163\164\145\151
\172\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\035\034\145
\016\250\362\045\173\264\221\317\344\261\261\346\275\125\164\154
\005\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\170\246\014\026\112\237\114\210\072\300\313
\016\245\026\175\237\271\110\137\030\217\015\142\066\366\315\031
\153\254\253\325\366\221\175\256\161\363\077\263\016\170\205\233
\225\244\047\041\107\102\112\174\110\072\365\105\174\263\014\216
\121\170\254\225\023\336\306\375\175\270\032\220\114\253\222\003
\307\355\102\001\316\017\330\261\372\242\222\341\140\155\256\172
\153\011\252\306\051\356\150\111\147\060\200\044\172\061\026\071
\133\176\361\034\056\335\154\011\255\362\061\301\202\116\271\273
\371\276\277\052\205\077\300\100\243\072\131\374\131\113\074\050
\044\333\264\025\165\256\015\210\272\056\163\300\275\130\207\345
\102\362\353\136\356\036\060\042\231\313\067\321\304\041\154\201

\354\276\155\046\346\034\344\102\040\236\107\260\254\203\131\160
\054\065\326\257\066\064\264\315\073\370\062\250\357\343\170\211
\373\215\105\054\332\234\270\176\100\034\141\347\076\242\222\054
\113\362\315\372\230\266\051\377\363\362\173\251\037\056\240\223
\127\053\336\205\003\371\151\067\313\236\170\152\005\264\305\061
\170\211\354\172\247\205\341\271\173\074\336\276\036\171\204\316
\237\160\016\131\302\065\056\220\052\061\331\344\105\172\101\244
\056\023\233\064\016\146\173\111\253\144\227\320\106\303\171\235
\162\120\143\246\230\133\006\275\110\155\330\071\203\160\350\065
\360\005\321\252\274\343\333\310\002\352\174\375\202\332\302\133
\122\065\256\230\072\255\272\065\223\043\247\037\110\335\065\106
\230\262\020\150\344\245\061\302\012\130\056\031\201\020\311\120
\165\374\352\132\026\316\021\327\356\357\120\210\055\141\377\077
\102\163\005\224\103\325\216\074\116\001\072\031\245\037\106\116
\167\320\135\345\201\042\041\207\376\224\175\204\330\223\255\326
\150\103\110\262\333\353\163\044\347\221\177\124\244\266\200\076
\235\243\074\114\162\302\127\304\240\324\314\070\047\316\325\006
\236\242\110\331\351\237\316\202\160\066\223\232\073\337\226\041
\343\131\267\014\332\221\067\360\375\131\132\263\231\310\151\154
\103\046\001\065\143\140\125\211\003\072\165\330\272\112\331\124
\377\356\336\200\330\055\321\070\325\136\055\013\230\175\076\154
\333\374\046\210\307
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Izenpe.com"
Issuer: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Serial Number:00:b0:b7:5a:16:48:5f:bf:e1:cb:f5:8b:d7:19:e6:7d
Subject: CN=Izenpe.com,O=IZENPE S.A.,C=ES
Not Valid Before: Thu Dec 13 13:08:28 2007
Not Valid After : Sun Dec 13 08:27:25 2037
Fingerprint (SHA-256):
25:30:CC:8E:98:32:15:02:BA:D9:6F:9B:1F:BA:1B:09:9E:2D:29:9E:0F:45:48:BB:91:4F:36:3B:C0:D4:53:1F
Fingerprint (SHA1): 2F:78:3D:25:52:18:A7:4A:65:39:71:B5:2C:A2:9C:45:15:6F:E9:19
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Izenpe.com"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\170\075\045\122\030\247\112\145\071\161\265\054\242\234\105
\025\157\351\031
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\260\315\205\200\332\134\120\064\243\071\220\057\125\147\163

END
CKA_ISSUER
MULTILINE_OCTAL
\060\070\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\024\060\022\006\003\125\004\012\014\013\111\132\105\116\120\105
\040\123\056\101\056\061\023\060\021\006\003\125\004\003\014\012
\111\172\145\156\160\145\056\143\157\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\260\267\132\026\110\137\277\341\313\365\213\327\031
\346\175
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Go Daddy Root Certificate Authority - G2"
#
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint
(SHA-256):
45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_ID

UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\305\060\202\002\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012\023
\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157\040
\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\036\027\015\060\071\060\071\060\061\060
\060\060\060\060\060\132\027\015\063\067\061\062\063\061\062\063
\065\071\065\071\132\060\201\203\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\020\060\016\006\003\125\004\010\023\007
\101\162\151\172\157\156\141\061\023\060\021\006\003\125\004\007
\023\012\123\143\157\164\164\163\144\141\154\145\061\032\060\030
\006\003\125\004\012\023\021\107\157\104\141\144\144\171\056\143
\157\155\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\023\050\107\157\040\104\141\144\144\171\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\277\161\142\010
\361\372\131\064\367\033\311\030\243\367\200\111\130\351\042\203
\023\246\305\040\103\001\073\204\361\346\205\111\237\047\352\366
\204\033\116\240\264\333\160\230\307\062\001\261\005\076\007\116
\356\364\372\117\057\131\060\042\347\253\031\126\153\342\200\007
\374\363\026\165\200\071\121\173\345\371\065\266\164\116\251\215
\202\023\344\266\077\251\003\203\372\242\276\212\025\152\177\336
\013\303\266\031\024\005\312\352\303\250\004\224\073\106\174\062
\015\363\000\146\042\310\215\151\155\066\214\021\030\267\323\262
\034\140\264\070\372\002\214\316\323\335\106\007\336\012\076\353

\135\174\310\174\373\260\053\123\244\222\142\151\121\045\005\141
\032\104\201\214\054\251\103\226\043\337\254\072\201\232\016\051
\305\034\251\351\135\036\266\236\236\060\012\071\316\361\210\200
\373\113\135\314\062\354\205\142\103\045\064\002\126\047\001\221
\264\073\160\052\077\156\261\350\234\210\001\175\237\324\371\333
\123\155\140\235\277\054\347\130\253\270\137\106\374\316\304\033
\003\074\011\353\111\061\134\151\106\263\340\107\002\003\001\000
\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\072\232\205\007\020\147\050\266\357\366\275\005\101\156\040
\301\224\332\017\336\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\231\333\135\171\325\371\227
\131\147\003\141\361\176\073\006\061\165\055\241\040\216\117\145
\207\264\367\246\234\274\330\351\057\320\333\132\356\317\164\214
\163\264\070\102\332\005\173\370\002\165\270\375\245\261\327\256
\366\327\336\023\313\123\020\176\212\106\321\227\372\267\056\053
\021\253\220\260\047\200\371\350\237\132\351\067\237\253\344\337
\154\263\205\027\235\075\331\044\117\171\221\065\326\137\004\353
\200\203\253\232\002\055\265\020\364\330\220\307\004\163\100\355
\162\045\240\251\237\354\236\253\150\022\231\127\306\217\022\072
\011\244\275\104\375\006\025\067\301\233\344\062\243\355\070\350
\330\144\363\054\176\024\374\002\352\237\315\377\007\150\027\333
\042\220\070\055\172\215\321\124\361\151\343\137\063\312\172\075
\173\012\343\312\177\137\071\345\342\165\272\305\166\030\063\316
\054\360\057\114\255\367\261\347\316\117\250\304\233\112\124\006
\305\177\175\325\010\017\342\034\376\176\027\270\254\136\366\324
\026\262\103\011\014\115\366\247\153\264\231\204\145\312\172\210
\342\342\104\276\134\367\352\034\365
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Go Daddy Root Certificate Authority - G2"
Issuer: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com, Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Go Daddy Root Certificate Authority - G2,O="GoDaddy.com,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
45:14:0B:32:47:EB:9C:C8:C5:B4:F0:D7:B5:30:91:F7:32:92:08:9E:6E:5A:63:E2:74:9D:D3:AC:A9:19:8E:DA
Fingerprint (SHA1): 47:BE:AB:C9:22:EA:E8:0E:78:78:34:62:A7:9F:45:C2:54:FD:E6:8B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Go Daddy Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\107\276\253\311\042\352\350\016\170\170\064\142\247\237\105\302
\124\375\346\213
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\072\274\042\301\346\373\215\233\073\047\112\062\033\232\001
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\032\060\030\006\003\125\004\012
\023\021\107\157\104\141\144\144\171\056\143\157\155\054\040\111
\156\143\056\061\061\060\057\006\003\125\004\003\023\050\107\157
\040\104\141\144\144\171\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Starfield Root Certificate Authority - G2"
#
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec
 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\335\060\202\002\305\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062\060
\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145\154
\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062\060\036\027\015\060\071\060\071\060\061\060\060\060\060\060
\060\132\027\015\063\067\061\062\063\061\062\063\065\071\065\071
\132\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172
\157\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143
\157\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004

\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\062\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151
\145\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\275\355\301\003\374\366\217\374\002\261\157\133
\237\110\331\235\171\342\242\267\003\141\126\030\303\107\266\327
\312\075\065\056\211\103\367\241\151\233\336\212\032\375\023\040
\234\264\111\167\062\051\126\375\271\354\214\335\042\372\162\334
\047\141\227\356\366\132\204\354\156\031\271\211\054\334\204\133
\325\164\373\153\137\305\211\245\020\122\211\106\125\364\270\165
\034\346\177\344\124\256\113\370\125\162\127\002\031\370\027\161
\131\353\036\050\007\164\305\235\110\276\154\264\364\244\260\363
\144\067\171\222\300\354\106\136\177\341\155\123\114\142\257\315
\037\013\143\273\072\235\373\374\171\000\230\141\164\317\046\202
\100\143\363\262\162\152\031\015\231\312\324\016\165\314\067\373
\213\211\301\131\361\142\177\137\263\137\145\060\370\247\267\115
\166\132\036\166\136\064\300\350\226\126\231\212\263\360\177\244
\315\275\334\062\061\174\221\317\340\137\021\370\153\252\111\134
\321\231\224\321\242\343\143\133\011\166\265\126\142\341\113\164
\035\226\324\046\324\010\004\131\320\230\016\016\346\336\374\303
\354\037\220\361\002\003\001\000\001\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\174\014\062\037\247\331\060
\177\304\175\150\243\142\250\241\316\253\007\133\047\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001
\000\021\131\372\045\117\003\157\224\231\073\232\037\202\205\071
\324\166\005\224\136\341\050\223\155\142\135\011\302\240\250\324
\260\165\070\361\064\152\235\344\237\212\206\046\121\346\054\321
\306\055\156\225\040\112\222\001\354\270\212\147\173\061\342\147
\056\214\225\003\046\056\103\235\112\061\366\016\265\014\273\267
\342\067\177\042\272\000\243\016\173\122\373\153\273\073\304\323
\171\121\116\315\220\364\147\007\031\310\074\106\172\015\001\175
\305\130\347\155\346\205\060\027\232\044\304\020\340\004\367\340
\362\177\324\252\012\377\102\035\067\355\224\345\144\131\022\040
\167\070\323\062\076\070\201\165\226\163\372\150\217\261\313\316
\037\305\354\372\234\176\317\176\261\361\007\055\266\374\277\312
\244\277\320\227\005\112\274\352\030\050\002\220\275\124\170\011
\041\161\323\321\175\035\331\026\260\251\141\075\320\012\000\042
\374\307\173\313\011\144\105\013\073\100\201\367\175\174\062\365
\230\312\130\216\175\052\356\220\131\163\144\371\066\164\136\045
\241\365\146\005\056\177\071\025\251\052\373\120\213\216\205\151
\364
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield
Root Certificate Authority - G2"
Issuer: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
2C:E1:CB:0B:F9:D2:F9:E1:02:99:3F:BE:21:51:52:C3:B2:DD:0C:AB:DE:1C:68:E5:31:9B:83:91:54:DB:B7:F5
Fingerprint (SHA1): B5:1C:06:7C:EE:2B:0C:3D:F8:55:AB:2D:92:F4:FE:39:D4:E7:0F:0E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\034\006\174\356\053\014\075\370\125\253\055\222\364\376\071
\324\347\017\016
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\326\071\201\306\122\176\226\151\374\374\312\146\355\005\362\226
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\062
\060\060\006\003\125\004\003\023\051\123\164\141\162\146\151\145
\154\144\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "Starfield Services Root Certificate Authority - G2"
#
# Issuer: CN=Starfield
 Services Root Certificate Authority - G2,O="Starfield Technologies, Inc.",L=Scottsdale,ST=Arizona,C=US
# Serial Number: 0 (0x0)
# Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
# Not Valid Before: Tue Sep 01 00:00:00 2009
# Not Valid After : Thu Dec 31 23:59:59 2037
# Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
# Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER
```

MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\357\060\202\002\327\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073\060
\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145\154
\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\040\055\040\107\062\060\036\027\015\060\071
\060\071\060\061\060\060\060\060\060\060\132\027\015\063\067\061
\062\063\061\062\063\065\071\065\071\132\060\201\230\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\020\060\016\006\003
\125\004\010\023\007\101\162\151\172\157\156\141\061\023\060\021
\006\003\125\004\007\023\012\123\143\157\164\164\163\144\141\154
\145\061\045\060\043\006\003\125\004\012\023\034\123\164\141\162
\146\151\145\154\144\040\124\145\143\150\156\157\154\157\147\151
\145\163\054\040\111\156\143\056\061\073\060\071\006\003\125\004
\003\023\062\123\164\141\162\146\151\145\154\144\040\123\145\162
\166\151\143\145\163\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\325\014\072\304\052\371\116\342\365\276
\031\227\137\216\210\123\261\037\077\313\317\237\040\023\155\051
\072\310\017\175\074\367\153\166\070\143\331\066\140\250\233\136
\134\000\200\262\057\131\177\366\207\371\045\103\206\347\151\033
\122\232\220\341\161\343\330\055\015\116\157\366\310\111\331\266
\363\032\126\256\053\266\164\024\353\317\373\046\343\032\272\035
\226\056\152\073\130\224\211\107\126\377\045\240\223\160\123\203
\332\204\164\024\303\147\236\004\150\072\337\216\100\132\035\112
\116\317\103\221\073\347\126\326\000\160\313\122\356\173\175\256
\072\347\274\061\371\105\366\302\140\317\023\131\002\053\200\314
\064\107\337\271\336\220\145\155\002\317\054\221\246\246\347\336
\205\030\111\174\146\116\243\072\155\251\265\356\064\056\272\015
\003\270\063\337\107\353\261\153\215\045\331\233\316\201\321\105
\106\062\226\160\207\336\002\016\111\103\205\266\154\163\273\144
\352\141\101\254\311\324\124\337\207\057\307\042\262\046\314\237
\131\124\150\237\374\276\052\057\304\125\034\165\100\140\027\205
\002\125\071\213\177\005\002\003\001\000\001\243\102\060\100\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006

\060\035\006\003\125\035\016\004\026\004\024\234\137\000\337\252
\001\327\060\053\070\210\242\270\155\112\234\362\021\221\203\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\001\001\000\113\066\246\204\167\151\335\073\031\237\147\043\010
\157\016\141\311\375\204\334\137\330\066\201\315\330\033\101\055
\237\140\335\307\032\150\331\321\156\206\341\210\043\317\023\336
\103\317\342\064\263\004\235\037\051\325\277\370\136\310\325\301
\275\356\222\157\062\164\362\221\202\057\275\202\102\172\255\052
\267\040\175\115\274\172\125\022\302\025\352\275\367\152\225\056
\154\164\237\317\034\264\362\305\001\243\205\320\162\076\255\163
\253\013\233\165\014\155\105\267\216\224\254\226\067\265\240\320
\217\025\107\016\343\350\203\335\217\375\357\101\001\167\314\047
\251\142\205\063\362\067\010\357\161\317\167\006\336\310\031\035
\210\100\317\175\106\035\377\036\307\341\316\377\043\333\306\372
\215\125\116\251\002\347\107\021\106\076\364\375\275\173\051\046
\273\251\141\142\067\050\266\055\052\366\020\206\144\311\160\247
\322\255\267\051\160\171\352\074\332\143\045\237\375\150\267\060
\354\160\373\165\212\267\155\140\147\262\036\310\271\351\330\250
\157\002\213\147\015\115\046\127\161\332\040\374\301\112\120\215
\261\050\272
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Starfield Services Root Certificate Authority - G2"
Issuer: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate Authority - G2,O="Starfield Technologies,
Inc.",L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After : Thu Dec 31 23:59:59 2037
Fingerprint (SHA-256):
56:8D:69:05:A2:C8:87:08:A4:B3:02:51:90:ED:CF:ED:B1:97:4A:60:6A:13:C6:E5:29:0F:CB:2A:E6:3E:DA:B5
#
Fingerprint (SHA1): 92:5A:8F:8D:2C:6D:04:E0:66:5F:59:6A:FF:22:D8:63:E8:25:6F:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\222\132\217\215\054\155\004\340\146\137\131\152\377\042\330\143
\350\045\157\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\027\065\164\257\173\141\034\353\364\371\074\342\356\100\371\242
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\073
\060\071\006\003\125\004\003\023\062\123\164\141\162\146\151\145
\154\144\040\123\145\162\166\151\143\145\163\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Commercial"
#
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\167
\167\006\047\046\251\261\174\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\060\036\027\015
\061\060\060\061\062\071\061\064\060\066\060\066\132\027\015\063
\060\061\062\063\061\061\064\060\066\060\066\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151
\162\155\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\366\033\117\147\007\053\241\025\365\006\042\313\037
\001\262\343\163\105\006\104\111\054\273\111\045\024\326\316\303
\267\253\054\117\306\101\062\224\127\372\022\247\133\016\342\217
\037\036\206\031\247\252\265\055\271\137\015\212\302\257\205\065
\171\062\055\273\034\142\067\362\261\133\112\075\312\315\161\137
\351\102\276\224\350\310\336\371\042\110\144\306\345\253\306\053
\155\255\005\360\372\325\013\317\232\345\360\120\244\213\073\107
\245\043\133\172\172\370\063\077\270\357\231\227\343\040\301\326
\050\211\317\224\373\271\105\355\343\100\027\021\324\164\360\013
\061\342\053\046\152\233\114\127\256\254\040\076\272\105\172\005
\363\275\233\151\025\256\175\116\040\143\304\065\166\072\007\002
\311\067\375\307\107\356\350\361\166\035\163\025\362\227\244\265
\310\172\171\331\102\252\053\177\134\376\316\046\117\243\146\201
\065\257\104\272\124\036\034\060\062\145\235\346\074\223\136\120
\116\172\343\072\324\156\314\032\373\371\322\067\256\044\052\253
\127\003\042\050\015\111\165\177\267\050\332\165\277\216\343\334
\016\171\061\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\235\223\306\123\213\136\312\257\077
\237\036\017\345\231\225\274\044\366\224\217\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011

\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001\000
\130\254\364\004\016\315\300\015\377\012\375\324\272\026\137\051
\275\173\150\231\130\111\322\264\035\067\115\177\047\175\106\006
\135\103\306\206\056\076\163\262\046\175\117\223\251\266\304\052
\232\253\041\227\024\261\336\214\323\253\211\025\330\153\044\324
\361\026\256\330\244\134\324\177\121\216\355\030\001\261\223\143
\275\274\370\141\200\232\236\261\316\102\160\342\251\175\006\045
\175\047\241\376\157\354\263\036\044\332\343\113\125\032\000\073
\065\264\073\331\327\135\060\375\201\023\211\362\302\006\053\355
\147\304\216\311\103\262\134\153\025\211\002\274\142\374\116\362
\265\063\252\262\157\323\012\242\120\343\366\073\350\056\104\302
\333\146\070\251\063\126\110\361\155\033\063\215\015\214\077\140
\067\235\323\312\155\176\064\176\015\237\162\166\213\033\237\162
\375\122\065\101\105\002\226\057\034\262\232\163\111\041\261\111
\107\105\107\264\357\152\064\021\311\115\232\314\131\267\326\002
\236\132\116\145\265\224\256\033\337\051\260\026\361\277\000\236
\007\072\027\144\265\004\265\043\041\231\012\225\073\227\174\357
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Commercial"
Issuer: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Serial Number:77:77:06:27:26:a9:b1:7c
Subject: CN=AffirmTrust Commercial,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:06:06 2010
Not Valid After : Tue Dec 31 14:06:06 2030
Fingerprint (SHA-256):
03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7
Fingerprint (SHA1): F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Commercial"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\265\266\062\105\137\234\276\354\127\137\200\334\351\156\054
\307\262\170\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\202\222\272\133\357\315\212\157\246\075\125\371\204\366\326\267
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155

\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\103\157\155\155
\145\162\143\151\141\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\167\167\006\047\046\251\261\174
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
#
 Certificate "AffirmTrust Networking"
#
Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010
Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055

END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\114\060\202\002\064\240\003\002\001\002\002\010\174
\117\004\071\034\324\231\055\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\104\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\037\060\035\006
\003\125\004\003\014\026\101\146\146\151\162\155\124\162\165\163
\164\040\116\145\164\167\157\162\153\151\156\147\060\036\027\015
\061\060\060\061\062\071\061\064\060\070\062\064\132\027\015\063
\060\061\062\063\061\061\064\060\070\062\064\132\060\104\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\024\060\022\006
\003\125\004\012\014\013\101\146\146\151\162\155\124\162\165\163
\164\061\037\060\035\006\003\125\004\003\014\026\101\146\146\151
\162\155\124\162\165\163\164\040\116\145\164\167\157\162\153\151
\156\147\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\264\204\314\063\027\056\153\224\154\153\141\122\240
\353\243\317\171\224\114\345\224\200\231\313\125\144\104\145\217
\147\144\342\006\343\134\067\111\366\057\233\204\204\036\055\362
\140\235\060\116\314\204\205\342\054\317\036\236\376\066\253\063
\167\065\104\330\065\226\032\075\066\350\172\016\330\325\107\241
\152\151\213\331\374\273\072\256\171\132\325\364\326\161\273\232
\220\043\153\232\267\210\164\207\014\036\137\271\236\055\372\253
\123\053\334\273\166\076\223\114\010\010\214\036\242\043\034\324
\152\255\042\272\231\001\056\155\145\313\276\044\146\125\044\113
\100\104\261\033\327\341\302\205\300\336\020\077\075\355\270\374
\361\361\043\123\334\277\145\227\157\331\371\100\161\215\175\275
\225\324\316\276\240\136\047\043\336\375\246\320\046\016\000\051
\353\074\106\360\075\140\277\077\120\322\334\046\101\121\236\024
\067\102\004\243\160\127\250\033\207\355\055\372\173\356\214\012
\343\251\146\211\031\313\101\371\335\104\066\141\317\342\167\106
\310\175\366\364\222\201\066\375\333\064\361\162\176\363\014\026
\275\264\025\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\007\037\322\347\234\332\302\156\242
\100\264\260\172\120\020\120\164\304\310\275\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\211\127\262\026\172\250\302\375\326\331\233\233\064\302\234\264
\062\024\115\247\244\337\354\276\247\276\370\103\333\221\067\316
\264\062\056\120\125\032\065\116\166\103\161\040\357\223\167\116
\025\160\056\207\303\301\035\155\334\313\265\047\324\054\126\321
\122\123\072\104\322\163\310\304\033\005\145\132\142\222\234\356
\101\215\061\333\347\064\352\131\041\325\001\172\327\144\270\144
\071\315\311\355\257\355\113\003\110\247\240\231\001\200\334\145
\243\066\256\145\131\110\117\202\113\310\145\361\127\035\345\131
\056\012\077\154\330\321\365\345\011\264\154\124\000\012\340\025

\115\207\165\155\267\130\226\132\335\155\322\000\240\364\233\110
\276\303\067\244\272\066\340\174\207\205\227\032\025\242\336\056
\242\133\275\257\030\371\220\120\315\160\131\370\047\147\107\313
\307\240\007\072\175\321\054\135\154\031\072\146\265\175\375\221
\157\202\261\276\010\223\333\024\107\361\242\067\307\105\236\074
\307\167\257\144\250\223\337\366\151\203\202\140\362\111\102\064
\355\132\000\124\205\034\026\066\222\014\134\372\246\255\277\333
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Networking"
Issuer: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Serial Number:7c:4f:04:39:1c:d4:99:2d
Subject: CN=AffirmTrust Networking,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:08:24 2010
Not Valid After : Tue Dec 31 14:08:24 2030
Fingerprint (SHA-256):
0A:81:EC:5A:92:97:77:F1:45:90:4A:F3:8D:5D:50:9F:66:B5:E2:C5:8F:CD:B5:31:05:8B:0E:17:F3:F0:B4:1B
Fingerprint (SHA1): 29:36:21:02:8B:20:ED:02:F5:66:C5:32:D1:D6:ED:90:9F:45:00:2F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Networking"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\051\066\041\002\213\040\355\002\365\146\305\062\321\326\355\220
\237\105\000\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\145\312\276\001\232\232\114\251\214\101\111\315\300\325\177
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\037\060\035\006\003\125\004\003\014\026
\101\146\146\151\162\155\124\162\165\163\164\040\116\145\164\167
\157\162\153\151\156\147
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\174\117\004\071\034\324\231\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium"
#
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\010\155
\214\024\106\261\246\012\356\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\060\101\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\024\060\022\006\003\125\004\012\014\013
\101\146\146\151\162\155\124\162\165\163\164\061\034\060\032\006
\003\125\004\003\014\023\101\146\146\151\162\155\124\162\165\163
\164\040\120\162\145\155\151\165\155\060\036\027\015\061\060\060
\061\062\071\061\064\061\060\063\066\132\027\015\064\060\061\062

\063\061\061\064\061\060\063\066\132\060\101\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125\004
\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061\034
\060\032\006\003\125\004\003\014\023\101\146\146\151\162\155\124
\162\165\163\164\040\120\162\145\155\151\165\155\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\304\022\337
\251\137\376\101\335\335\365\237\212\343\366\254\341\074\170\232
\274\330\360\177\172\240\063\052\334\215\040\133\256\055\157\347
\223\331\066\160\152\150\317\216\121\243\205\133\147\004\240\020
\044\157\135\050\202\301\227\127\330\110\051\023\266\341\276\221
\115\337\205\014\123\030\232\036\044\242\117\217\360\242\205\013
\313\364\051\177\322\244\130\356\046\115\311\252\250\173\232\331
\372\070\336\104\127\025\345\370\214\310\331\110\342\015\026\047
\035\036\310\203\205\045\267\272\252\125\101\314\003\042\113\055
\221\215\213\346\211\257\146\307\351\377\053\351\074\254\332\322
\263\303\341\150\234\211\370\172\000\126\336\364\125\225\154\373
\272\144\335\142\213\337\013\167\062\353\142\314\046\232\233\273
\252\142\203\114\264\006\172\060\310\051\277\355\006\115\227\271
\034\304\061\053\325\137\274\123\022\027\234\231\127\051\146\167
\141\041\061\007\056\045\111\235\030\362\356\363\053\161\214\265
\272\071\007\111\167\374\357\056\222\220\005\215\055\057\167\173
\357\103\277\065\273\232\330\371\163\247\054\362\320\127\356\050
\116\046\137\217\220\150\011\057\270\370\334\006\351\056\232\076
\121\247\321\042\304\012\247\070\110\154\263\371\377\175\253\206
\127\343\272\326\205\170\167\272\103\352\110\177\366\330\276\043
\155\036\277\321\066\154\130\134\361\356\244\031\124\032\365\003
\322\166\346\341\214\275\074\263\323\110\113\342\310\370\177\222
\250\166\106\234\102\145\076\244\036\301\007\003\132\106\055\270
\227\363\267\325\262\125\041\357\272\334\114\000\227\373\024\225
\047\063\277\350\103\107\106\322\010\231\026\140\073\232\176\322
\346\355\070\352\354\001\036\074\110\126\111\011\307\114\067\000
\236\210\016\300\163\341\157\146\351\162\107\060\076\020\345\013
\003\311\232\102\000\154\305\224\176\141\304\212\337\177\202\032
\013\131\304\131\062\167\263\274\140\151\126\071\375\264\006\173
\054\326\144\066\331\275\110\355\204\037\176\245\042\217\052\270
\102\364\202\267\324\123\220\170\116\055\032\375\201\157\104\327
\073\001\164\226\102\340\000\342\056\153\352\305\356\162\254\273
\277\376\352\252\250\370\334\366\262\171\212\266\147\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\235\300\147\246\014\042\331\046\365\105\253\246\145\122\021
\047\330\105\254\143\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\263\127\115\020\142\116
\072\344\254\352\270\034\257\062\043\310\263\111\132\121\234\166
\050\215\171\252\127\106\027\325\365\122\366\267\104\350\010\104
\277\030\204\322\013\200\315\305\022\375\000\125\005\141\207\101

\334\265\044\236\074\304\330\310\373\160\236\057\170\226\203\040
\066\336\174\017\151\023\210\245\165\066\230\010\246\306\337\254
\316\343\130\326\267\076\336\272\363\353\064\100\330\242\201\365
\170\077\057\325\245\374\331\242\324\136\004\016\027\255\376\101
\360\345\262\162\372\104\202\063\102\350\055\130\367\126\214\142
\077\272\102\260\234\014\134\176\056\145\046\134\123\117\000\262
\170\176\241\015\231\055\215\270\035\216\242\304\260\375\140\320
\060\244\216\310\004\142\251\304\355\065\336\172\227\355\016\070
\136\222\057\223\160\245\251\234\157\247\175\023\035\176\306\010
\110\261\136\147\353\121\010\045\351\346\045\153\122\051\221\234
\322\071\163\010\127\336\231\006\264\133\235\020\006\341\302\000
\250\270\034\112\002\012\024\320\301\101\312\373\214\065\041\175
\202\070\362\251\124\221\031\065\223\224\155\152\072\305\262\320
\273\211\206\223\350\233\311\017\072\247\172\270\241\360\170\106
\372\374\067\057\345\212\204\363\337\376\004\331\241\150\240\057
\044\342\011\225\006\325\225\312\341\044\226\353\174\366\223\005
\273\355\163\351\055\321\165\071\327\347\044\333\330\116\137\103
\217\236\320\024\071\277\125\160\110\231\127\061\264\234\356\112
\230\003\226\060\037\140\006\356\033\043\376\201\140\043\032\107
\142\205\245\314\031\064\200\157\263\254\032\343\237\360\173\110
\255\325\001\331\147\266\251\162\223\352\055\146\265\262\270\344
\075\074\262\357\114\214\352\353\007\277\253\065\232\125\206\274
\030\246\265\250\136\264\203\154\153\151\100\323\237\334\361\303
\151\153\271\341\155\011\364\361\252\120\166\012\172\175\172\027
\241\125\226\102\231\061\011\335\140\021\215\005\060\176\346\216
\106\321\235\024\332\307\027\344\005\226\214\304\044\265\033\317
\024\007\262\100\370\243\236\101\206\274\004\320\153\226\310\052
\200\064\375\277\357\006\243\335\130\305\205\075\076\217\376\236
\051\340\266\270\011\150\031\034\030\103
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium"
Issuer: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Serial Number:6d:8c:14:46:b1:a6:0a:ee
Subject: CN=AffirmTrust Premium,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:10:36 2010
Not Valid After : Mon Dec 31 14:10:36 2040
Fingerprint (SHA-256):
70:A7:3F:7F:37:6B:60:07:42:48:90:45:34:B1:14:82:D5:BF:0E:69:8E:CC:49:8D:F5:25:77:EB:F2:E9:3B:9A
#
Fingerprint (SHA1): D8:A6:33:2C:E0:03:6F:B1:85:F6:63:4F:7D:6A:06:65:26:32:28:27
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\246\063\054\340\003\157\261\205\366\143\117\175\152\006\145
\046\062\050\047
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\135\016\110\266\254\050\060\116\012\274\371\070\026\207\127
END
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\034\060\032\006\003\125\004\003\014\023
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\155\214\024\106\261\246\012\356
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AffirmTrust Premium ECC"
#
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23
Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\376\060\202\001\205\240\003\002\001\002\002\010\164
\227\045\212\307\077\172\124\060\012\006\010\052\206\110\316\075
\004\003\003\060\105\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\024\060\022\006\003\125\004\012\014\013\101\146\146
\151\162\155\124\162\165\163\164\061\040\060\036\006\003\125\004
\003\014\027\101\146\146\151\162\155\124\162\165\163\164\040\120
\162\145\155\151\165\155\040\105\103\103\060\036\027\015\061\060
\060\061\062\071\061\064\062\060\062\064\132\027\015\064\060\061
\062\063\061\061\064\062\060\062\064\132\060\105\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\024\060\022\006\003\125
\004\012\014\013\101\146\146\151\162\155\124\162\165\163\164\061
\040\060\036\006\003\125\004\003\014\027\101\146\146\151\162\155
\124\162\165\163\164\040\120\162\145\155\151\165\155\040\105\103
\103\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\015\060\136\033\025\235\003
\320\241\171\065\267\072\074\222\172\312\025\034\315\142\363\234
\046\134\007\075\345\124\372\243\326\314\022\352\364\024\137\350
\216\031\253\057\056\110\346\254\030\103\170\254\320\067\303\275
\262\315\054\346\107\342\032\346\143\270\075\056\057\170\304\117
\333\364\017\244\150\114\125\162\153\225\035\116\030\102\225\170
\314\067\074\221\342\233\145\053\051\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\232\257\051\172\300\021\065\065
\046\121\060\000\303\152\376\100\325\256\326\074\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060
\027\011\363\207\210\120\132\257\310\300\102\277\107\137\365\154
\152\206\340\304\047\164\344\070\123\327\005\177\033\064\343\306
\057\263\312\011\074\067\235\327\347\270\106\361\375\241\342\161
\002\060\102\131\207\103\324\121\337\272\323\011\062\132\316\210
\176\127\075\234\137\102\153\365\007\055\265\360\202\223\371\131
\157\256\144\372\130\345\213\036\343\143\276\265\201\315\157\002
\214\171
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AffirmTrust Premium ECC"
Issuer: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Serial Number:74:97:25:8a:c7:3f:7a:54
Subject: CN=AffirmTrust Premium ECC,O=AffirmTrust,C=US
Not Valid
Before: Fri Jan 29 14:20:24 2010
Not Valid After : Mon Dec 31 14:20:24 2040
Fingerprint (SHA-256):
BD:71:FD:F6:DA:97:E4:CF:62:D1:64:7A:DD:25:81:B0:7D:79:AD:F8:39:7E:B4:EC:BA:9C:5E:84:88:82:14:23
Fingerprint (SHA1): B8:23:6B:00:2F:1D:16:86:53:01:55:6C:11:A4:37:CA:EB:FF:C3:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AffirmTrust Premium ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\043\153\000\057\035\026\206\123\001\125\154\021\244\067\312
\353\377\303\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\144\260\011\125\317\261\325\231\342\276\023\253\246\135\352\115
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\024\060\022\006\003\125\004\012\014\013\101\146\146\151\162\155
\124\162\165\163\164\061\040\060\036\006\003\125\004\003\014\027
\101\146\146\151\162\155\124\162\165\163\164\040\120\162\145\155
\151\165\155\040\105\103\103
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\164\227\045\212\307\077\172\124
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA"
#
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL

Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256): 5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\004\104\300
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\273\060\202\002\243\240\003\002\001\002\002\003\004
\104\300\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164

\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\036\027\015\060\070\061\060\062\062\061\062\060\067\063
\067\132\027\015\062\071\061\062\063\061\061\062\060\067\063\067
\132\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060
\040\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\343\373\175\243\162\272\302\360\311\024\207\365\153\001
\116\341\156\100\007\272\155\047\135\177\367\133\055\263\132\307
\121\137\253\244\062\246\141\207\266\156\017\206\322\060\002\227
\370\327\151\127\241\030\071\135\152\144\171\306\001\131\254\074
\061\112\070\174\322\004\322\113\050\350\040\137\073\007\242\314
\115\163\333\363\256\117\307\126\325\132\247\226\211\372\363\253
\150\324\043\206\131\047\317\011\047\274\254\156\162\203\034\060
\162\337\340\242\351\322\341\164\165\031\275\052\236\173\025\124
\004\033\327\103\071\255\125\050\305\342\032\273\364\300\344\256
\070\111\063\314\166\205\237\071\105\322\244\236\362\022\214\121
\370\174\344\055\177\365\254\137\353\026\237\261\055\321\272\314
\221\102\167\114\045\311\220\070\157\333\360\314\373\216\036\227
\131\076\325\140\116\346\005\050\355\111\171\023\113\272\110\333
\057\371\162\323\071\312\376\037\330\064\162\365\264\100\317\061
\001\303\354\336\021\055\027\135\037\270\120\321\136\031\247\151
\336\007\063\050\312\120\225\371\247\124\313\124\206\120\105\251
\371\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\010\166\315\313\007\377\044\366\305
\315\355\273\220\274\342\204\067\106\165\367\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\246
\250\255\042\316\001\075\246\243\377\142\320\110\235\213\136\162
\260\170\104\343\334\034\257\011\375\043\110\372\275\052\304\271
\125\004\265\020\243\215\047\336\013\202\143\320\356\336\014\067
\171\101\133\042\262\260\232\101\134\246\160\340\324\320\167\313
\043\323\000\340\154\126\057\341\151\015\015\331\252\277\041\201
\120\331\006\245\250\377\225\067\320\252\376\342\263\365\231\055
\105\204\212\345\102\011\327\164\002\057\367\211\330\231\351\274
\047\324\107\215\272\015\106\034\167\317\024\244\034\271\244\061
\304\234\050\164\003\064\377\063\031\046\245\351\015\164\267\076
\227\306\166\350\047\226\243\146\335\341\256\362\101\133\312\230
\126\203\163\160\344\206\032\322\061\101\272\057\276\055\023\132

\166\157\116\350\116\201\016\077\133\003\042\240\022\276\146\130
\021\112\313\003\304\264\052\052\055\226\027\340\071\124\274\110
\323\166\047\235\232\055\006\246\311\354\071\322\253\333\237\232
\013\047\002\065\051\261\100\225\347\371\350\234\125\210\031\106
\326\267\064\365\176\316\071\232\331\070\361\121\367\117\054
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA"
Issuer: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number: 279744 (0x444c0)
Subject: CN=Certum Trusted Network CA,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Not Valid Before: Wed Oct 22 12:07:37 2008
Not Valid After : Mon Dec 31 12:07:37 2029
Fingerprint (SHA-256): 5C:58:46:8D:55:F5:8E:49:7E:74:39:82:D2:B5:00:10:B6:D1:65:37:4A:CF:83:A7:D4:A3:2D:B7:68:C4:40:8E
Fingerprint (SHA1): 07:E0:32:E0:20:B7:2C:3F:19:2F:06:28:A2:59:3A:19:A7:0F:06:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\007\340\062\340\040\267\054\077\031\057\006\050\242\131\072\031
\247\017\006\236
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\325\351\201\100\305\030\151\374\106\054\211\165\142\017\252\170
END
CKA_ISSUER MULTILINE_OCTAL
\060\176\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164
\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\042\060\040
\006\003\125\004\003\023\031\103\145\162\164\165\155\040\124\162
\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\004\104\300
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TWCA Root Certification Authority"
#
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\173\060\202\002\143\240\003\002\001\002\002\001\001

\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061\022
\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116\055
\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157\157
\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041\124
\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\036\027\015\060\070\060\070\062\070\060\067\062\064\063\063
\132\027\015\063\060\061\062\063\061\061\065\065\071\065\071\132
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\260\176\162\270\244\003\224\346\247\336\011\070\221\112
\021\100\207\247\174\131\144\024\173\265\021\020\335\376\277\325
\300\273\126\342\205\045\364\065\162\017\370\123\320\101\341\104
\001\302\264\034\303\061\102\026\107\205\063\042\166\262\012\157
\017\345\045\120\117\205\206\276\277\230\056\020\147\036\276\021
\005\206\005\220\304\131\320\174\170\020\260\200\134\267\341\307
\053\165\313\174\237\256\265\321\235\043\067\143\247\334\102\242
\055\222\004\033\120\301\173\270\076\033\311\126\004\213\057\122
\233\255\251\126\351\301\377\255\251\130\207\060\266\201\367\227
\105\374\031\127\073\053\157\344\107\364\231\105\376\035\361\370
\227\243\210\035\067\034\134\217\340\166\045\232\120\370\240\124
\377\104\220\166\043\322\062\306\303\253\006\277\374\373\277\363
\255\175\222\142\002\133\051\323\065\243\223\232\103\144\140\135
\262\372\062\377\073\004\257\115\100\152\371\307\343\357\043\375
\153\313\345\017\213\070\015\356\012\374\376\017\230\237\060\061
\335\154\122\145\371\213\201\276\042\341\034\130\003\272\221\033
\211\007\002\003\001\000\001\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\152\070\133\046\215\336\213\132\362
\117\172\124\203\031\030\343\010\065\246\272\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\074
\325\167\075\332\337\211\272\207\014\010\124\152\040\120\222\276
\260\101\075\271\046\144\203\012\057\350\100\300\227\050\047\202
\060\112\311\223\377\152\347\246\000\177\211\102\232\326\021\345
\123\316\057\314\362\332\005\304\376\342\120\304\072\206\175\314
\332\176\020\011\073\222\065\052\123\262\376\353\053\005\331\154
\135\346\320\357\323\152\146\236\025\050\205\172\350\202\000\254
\036\247\011\151\126\102\323\150\121\030\276\124\232\277\104\101
\272\111\276\040\272\151\134\356\270\167\315\316\154\037\255\203
\226\030\175\016\265\024\071\204\361\050\351\055\243\236\173\036

\172\162\132\203\263\171\157\357\264\374\320\012\245\130\117\106
\337\373\155\171\131\362\204\042\122\256\017\314\373\174\073\347
\152\312\107\141\303\172\370\323\222\004\037\270\040\204\341\066
\124\026\307\100\336\073\212\163\334\337\306\011\114\337\354\332
\377\324\123\102\241\311\362\142\035\042\203\074\227\305\371\031
\142\047\254\145\042\327\323\074\306\345\216\262\123\314\111\316
\274\060\376\173\016\063\220\373\355\322\024\221\037\007\257
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Root Certification Authority"
Issuer: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 1 (0x1)
Subject: CN=TWCA Root Certification Authority,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Thu Aug 28 07:24:33 2008
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
BF:D8:8F:E1:10:1C:41:AE:3E:80:1B:F8:BE:56:35:0E:E9:BA:D1:A6:B9:BD:51:5E:DC:5C:6D:5B:87:11:AC:44
#
Fingerprint (SHA1): CF:9E:87:6D:D3:EB:FC:42:26:97:A3:B5:A3:7A:A0:76:A9:06:23:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\317\236\207\155\323\353\374\102\046\227\243\265\243\172\240\166
\251\006\043\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\010\217\366\371\173\267\362\261\247\036\233\352\352\275\171
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\014\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\014\007\122\157
\157\164\040\103\101\061\052\060\050\006\003\125\004\003\014\041
\124\127\103\101\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Explicitly Distrust DigiNotar Root CA"
#
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007
Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT
 MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\212\060\202\003\162\240\003\002\001\002\002\020\017
\377\377\377\377\377\377\377\377\377\377\377\377\377\377\377\060

\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\137
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022\060
\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164\141
\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147\151
\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040\060
\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151\156
\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154\060
\036\027\015\060\067\060\067\062\067\061\067\061\071\063\067\132
\027\015\062\065\060\063\063\061\061\070\061\071\062\062\132\060
\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061\022
\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157\164
\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151\147
\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061\040
\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021\151
\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156\154
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\260\130\301\000\275\330\041\010\013\053\232\376\156\126
\060\005\237\033\167\220\020\101\134\303\015\207\021\167\216\201
\361\312\174\351\214\152\355\070\164\065\273\332\337\371\273\300
\011\067\264\226\163\201\175\063\032\230\071\367\223\157\225\177
\075\271\261\165\207\272\121\110\350\213\160\076\225\004\305\330
\266\303\026\331\210\260\261\207\035\160\332\206\264\017\024\213
\172\317\020\321\164\066\242\022\173\167\206\112\171\346\173\337
\002\021\150\245\116\206\256\064\130\233\044\023\170\126\042\045
\036\001\213\113\121\161\373\202\314\131\226\151\210\132\150\123
\305\271\015\002\067\313\113\274\146\112\220\176\052\013\005\007
\355\026\137\125\220\165\330\106\311\033\203\342\010\276\361\043
\314\231\035\326\052\017\203\040\025\130\047\202\056\372\342\042
\302\111\261\271\001\201\152\235\155\235\100\167\150\166\116\041
\052\155\204\100\205\116\166\231\174\202\363\363\267\002\131\324
\046\001\033\216\337\255\123\006\321\256\030\335\342\262\072\313
\327\210\070\216\254\133\051\271\031\323\230\371\030\003\317\110
\202\206\146\013\033\151\017\311\353\070\210\172\046\032\005\114
\222\327\044\324\226\362\254\122\055\243\107\325\122\366\077\376
\316\204\006\160\246\252\076\242\362\266\126\064\030\127\242\344
\201\155\347\312\360\152\323\307\221\153\002\203\101\174\025\357
\153\232\144\136\343\320\074\345\261\353\173\135\206\373\313\346
\167\111\315\243\145\334\367\271\234\270\344\013\137\223\317\314
\060\032\062\034\316\034\143\225\245\371\352\341\164\213\236\351
\053\251\060\173\240\030\037\016\030\013\345\133\251\323\321\154
\036\007\147\217\221\113\251\212\274\322\146\252\223\001\210\262
\221\372\061\134\325\246\301\122\010\011\315\012\143\242\323\042
\246\350\241\331\071\006\227\365\156\215\002\220\214\024\173\077
\200\315\033\234\272\304\130\162\043\257\266\126\237\306\172\102
\063\051\007\077\202\311\346\037\005\015\315\114\050\066\213\323
\310\076\034\306\210\357\136\356\211\144\351\035\353\332\211\176
\062\246\151\321\335\314\210\237\321\320\311\146\041\334\006\147

\305\224\172\232\155\142\114\175\314\340\144\200\262\236\107\216
\243\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\210\150\277\340\216\065\304\073\070\153
\142\367\050\073\204\201\310\014\327\115\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\073\002
\215\313\074\060\350\156\240\255\362\163\263\137\236\045\023\004
\005\323\366\343\213\273\013\171\316\123\336\344\226\305\321\257
\163\274\325\303\320\100\125\174\100\177\315\033\137\011\325\362
\174\237\150\035\273\135\316\172\071\302\214\326\230\173\305\203
\125\250\325\175\100\312\340\036\367\211\136\143\135\241\023\302
\135\212\266\212\174\000\363\043\303\355\205\137\161\166\360\150
\143\252\105\041\071\110\141\170\066\334\361\103\223\324\045\307
\362\200\145\341\123\002\165\121\374\172\072\357\067\253\204\050
\127\014\330\324\324\231\126\154\343\242\376\131\204\264\061\350
\063\370\144\224\224\121\227\253\071\305\113\355\332\335\200\013
\157\174\051\015\304\216\212\162\015\347\123\024\262\140\101\075
\204\221\061\150\075\047\104\333\345\336\364\372\143\105\310\114
\076\230\365\077\101\272\116\313\067\015\272\146\230\361\335\313
\237\134\367\124\066\202\153\054\274\023\141\227\102\370\170\273
\314\310\242\237\312\360\150\275\153\035\262\337\215\157\007\235
\332\216\147\307\107\036\312\271\277\052\102\221\267\143\123\146
\361\102\243\341\364\132\115\130\153\265\344\244\063\255\134\160
\035\334\340\362\353\163\024\221\232\003\301\352\000\145\274\007
\374\317\022\021\042\054\256\240\275\072\340\242\052\330\131\351
\051\323\030\065\244\254\021\137\031\265\265\033\377\042\112\134
\306\172\344\027\357\040\251\247\364\077\255\212\247\232\004\045
\235\016\312\067\346\120\375\214\102\051\004\232\354\271\317\113
\162\275\342\010\066\257\043\057\142\345\312\001\323\160\333\174
\202\043\054\026\061\014\306\066\007\220\172\261\037\147\130\304
\073\130\131\211\260\214\214\120\263\330\206\313\150\243\304\012
\347\151\113\040\316\301\036\126\113\225\251\043\150\330\060\330
\303\353\260\125\121\315\345\375\053\270\365\273\021\237\123\124
\366\064\031\214\171\011\066\312\141\027\045\027\013\202\230\163
\014\167\164\303\325\015\307\250\022\114\307\247\124\161\107\056
\054\032\175\311\343\053\073\110\336\047\204\247\143\066\263\175
\217\240\144\071\044\015\075\173\207\257\146\134\164\033\113\163
\262\345\214\360\206\231\270\345\305\337\204\301\267\353
END

#
Trust for Certificate "Explicitly Distrust DigiNotar Root CA"
Issuer: E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Serial Number:0f:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff:ff
Subject:
E=info@diginotar.nl,CN=DigiNotar Root CA,O=DigiNotar,C=NL
Not Valid Before: Fri Jul 27 17:19:37 2007

Not Valid After : Mon Mar 31 18:19:22 2025
Fingerprint (MD5): 0A:A4:D5:CC:BA:B4:FB:A3:59:E3:E6:01:DD:53:D9:4E
Fingerprint (SHA1): C1:77:CB:4B:E0:B4:26:8E:F5:C7:CF:45:99:22:B9:B0:CE:BA:21:2F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Explicitly Distrust DigiNotar Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\301\167\313\113\340\264\046\216\365\307\317\105\231\042\271\260
\316\272\041\057
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\244\325\314\272\264\373\243\131\343\346\001\335\123\331\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\022\060\020\006\003\125\004\012\023\011\104\151\147\151\116\157
\164\141\162\061\032\060\030\006\003\125\004\003\023\021\104\151
\147\151\116\157\164\141\162\040\122\157\157\164\040\103\101\061
\040\060\036\006\011\052\206\110\206\367\015\001\011\001\026\021
\151\156\146\157\100\144\151\147\151\156\157\164\141\162\056\156
\154
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\017\377\377\377\377\377\377\377\377\377\377\377\377\377
\377\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_NOT_TRUSTED
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication RootCA2"
#
Issuer: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Fri May 29 05:00:39 2009
Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):
51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS
 CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045
\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124
\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056
\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036
\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151
\143\141\164\151\157\156\040\122\157\157\164\103\101\062\060\036
\027\015\060\071\060\065\062\071\060\065\060\060\063\071\132\027
\015\062\071\060\065\062\071\060\065\060\060\063\071\132\060\135
\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045\060
\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124\162
\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056\054
\114\124\104\056\061\047\060\045\006\003\125\004\013\023\036\123
\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151\143
\141\164\151\157\156\040\122\157\157\164\103\101\062\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\320\025
\071\122\261\122\263\272\305\131\202\304\135\122\256\072\103\145
\200\113\307\362\226\274\333\066\227\326\246\144\214\250\136\360
\343\012\034\367\337\227\075\113\256\366\135\354\041\265\101\253
\315\271\176\166\237\276\371\076\066\064\240\073\301\366\061\021

\105\164\223\075\127\200\305\371\211\231\312\345\253\152\324\265
\332\101\220\020\301\326\326\102\211\302\277\364\070\022\225\114
\124\005\367\066\344\105\203\173\024\145\326\334\014\115\321\336
\176\014\253\073\304\025\276\072\126\246\132\157\166\151\122\251
\172\271\310\353\152\232\135\122\320\055\012\153\065\026\011\020
\204\320\152\312\072\006\000\067\107\344\176\127\117\077\213\353
\147\270\210\252\305\276\123\125\262\221\304\175\271\260\205\031
\006\170\056\333\141\032\372\205\365\112\221\241\347\026\325\216
\242\071\337\224\270\160\037\050\077\213\374\100\136\143\203\074
\203\052\032\231\153\317\336\131\152\073\374\157\026\327\037\375
\112\020\353\116\202\026\072\254\047\014\123\361\255\325\044\260
\153\003\120\301\055\074\026\335\104\064\047\032\165\373\002\003
\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\012\205\251\167\145\005\230\174\100\201\370\017\227\054
\070\361\012\354\074\317\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\114\072\243\104\254
\271\105\261\307\223\176\310\013\012\102\337\144\352\034\356\131
\154\010\272\211\137\152\312\112\225\236\172\217\007\305\332\105
\162\202\161\016\072\322\314\157\247\264\241\043\273\366\044\237
\313\027\376\214\246\316\302\322\333\314\215\374\161\374\003\051
\301\154\135\063\137\144\266\145\073\211\157\030\166\170\365\334
\242\110\037\031\077\216\223\353\361\372\027\356\315\116\343\004
\022\125\326\345\344\335\373\076\005\174\342\035\136\306\247\274
\227\117\150\072\365\351\056\012\103\266\257\127\134\142\150\174
\267\375\243\212\204\240\254\142\276\053\011\207\064\360\152\001
\273\233\051\126\074\376\000\067\317\043\154\361\116\252\266\164
\106\022\154\221\356\064\325\354\232\221\347\104\276\220\061\162
\325\111\002\366\002\345\364\037\353\174\331\226\125\251\377\354
\212\371\231\107\377\065\132\002\252\004\313\212\133\207\161\051
\221\275\244\264\172\015\275\232\365\127\043\000\007\041\027\077
\112\071\321\005\111\013\247\266\067\201\245\135\214\252\063\136
\201\050\174\247\175\047\353\000\256\215\067
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication RootCA2"
Issuer: OU=Security Communication RootCA2,O="SECOM
Trust Systems CO.,LTD.",C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA2,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Fri May 29 05:00:39 2009
Not Valid After : Tue May 29 05:00:39 2029
Fingerprint (SHA-256):

51:3B:2C:EC:B8:10:D4:CD:E5:DD:85:39:1A:DF:C6:C2:DD:60:D8:7B:B7:36:D2:B5:21:48:4A:A4:7A:0E:BE:F6
Fingerprint (SHA1): 5F:3B:8C:F2:F8:10:B3:7D:78:B4:CE:EC:19:19:C3:73:34:B9:C7:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\073\214\362\370\020\263\175\170\264\316\354\031\031\303\163
\064\271\307\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\154\071\175\244\016\125\131\262\077\326\101\261\022\120\336\103
END
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\013\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Actalis Authentication Root CA"
#
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030
Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
#
 Fingerprint (SHA1): F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\127\012\021\227\102\304\343\314
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\273\060\202\003\243\240\003\002\001\002\002\010\127
\012\021\227\102\304\343\314\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\153\061\013\060\011\006\003\125\004
\006\023\002\111\124\061\016\060\014\006\003\125\004\007\014\005
\115\151\154\141\156\061\043\060\041\006\003\125\004\012\014\032
\101\143\164\141\154\151\163\040\123\056\160\056\101\056\057\060
\063\063\065\070\065\062\060\071\066\067\061\047\060\045\006\003
\125\004\003\014\036\101\143\164\141\154\151\163\040\101\165\164
\150\145\156\164\151\143\141\164\151\157\156\040\122\157\157\164
\040\103\101\060\036\027\015\061\061\060\071\062\062\061\061\062
\062\060\062\132\027\015\063\060\060\071\062\062\061\061\062\062
\060\062\132\060\153\061\013\060\011\006\003\125\004\006\023\002
\111\124\061\016\060\014\006\003\125\004\007\014\005\115\151\154
\141\156\061\043\060\041\006\003\125\004\012\014\032\101\143\164
\141\154\151\163\040\123\056\160\056\101\056\057\060\063\063\065
\070\065\062\060\071\066\067\061\047\060\045\006\003\125\004\003
\014\036\101\143\164\141\154\151\163\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\103\101
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\247\306\304\245\051\244\054\357\345\030\305\260\120\243\157
\121\073\237\012\132\311\302\110\070\012\302\034\240\030\177\221
\265\207\271\100\077\335\035\150\037\010\203\325\055\036\210\240

\370\217\126\217\155\231\002\222\220\026\325\137\010\154\211\327
\341\254\274\040\302\261\340\203\121\212\151\115\000\226\132\157
\057\300\104\176\243\016\344\221\315\130\356\334\373\307\036\105
\107\335\047\271\010\001\237\246\041\035\365\101\055\057\114\375
\050\255\340\212\255\042\264\126\145\216\206\124\217\223\103\051
\336\071\106\170\243\060\043\272\315\360\175\023\127\300\135\322
\203\153\110\114\304\253\237\200\132\133\072\275\311\247\042\077
\200\047\063\133\016\267\212\014\135\007\067\010\313\154\322\172
\107\042\104\065\305\314\314\056\216\335\052\355\267\175\146\015
\137\141\121\042\125\033\343\106\343\343\075\320\065\142\232\333
\257\024\310\133\241\314\211\033\341\060\046\374\240\233\037\201
\247\107\037\004\353\243\071\222\006\237\231\323\277\323\352\117
\120\234\031\376\226\207\036\074\145\366\243\030\044\203\206\020
\347\124\076\250\072\166\044\117\201\041\305\343\017\002\370\223
\224\107\040\273\376\324\016\323\150\271\335\304\172\204\202\343
\123\124\171\335\333\234\322\362\007\233\056\266\274\076\355\205
\155\357\045\021\362\227\032\102\141\367\112\227\350\213\261\020
\007\372\145\201\262\242\071\317\367\074\377\030\373\306\361\132
\213\131\342\002\254\173\222\320\116\024\117\131\105\366\014\136
\050\137\260\350\077\105\317\317\257\233\157\373\204\323\167\132
\225\157\254\224\204\236\356\274\300\112\217\112\223\370\104\041
\342\061\105\141\120\116\020\330\343\065\174\114\031\264\336\005
\277\243\006\237\310\265\315\344\037\327\027\006\015\172\225\164
\125\015\150\032\374\020\033\142\144\235\155\340\225\240\303\224
\007\127\015\024\346\275\005\373\270\237\346\337\213\342\306\347
\176\226\366\123\305\200\064\120\050\130\360\022\120\161\027\060
\272\346\170\143\274\364\262\255\233\053\262\376\341\071\214\136
\272\013\040\224\336\173\203\270\377\343\126\215\267\021\351\073
\214\362\261\301\135\235\244\013\114\053\331\262\030\365\265\237
\113\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035
\016\004\026\004\024\122\330\210\072\310\237\170\146\355\211\363
\173\070\160\224\311\002\002\066\320\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\122\330\210\072\310\237\170\146\355
\211\363\173\070\160\224\311\002\002\066\320\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\013
\173\162\207\300\140\246\111\114\210\130\346\035\210\367\024\144
\110\246\330\130\012\016\117\023\065\337\065\035\324\355\006\061
\310\201\076\152\325\335\073\032\062\356\220\075\021\322\056\364
\216\303\143\056\043\146\260\147\276\157\266\300\023\071\140\252
\242\064\045\223\165\122\336\247\235\255\016\207\211\122\161\152
\026\074\031\035\203\370\232\051\145\276\364\077\232\331\360\363
\132\207\041\161\200\115\313\340\070\233\077\273\372\340\060\115
\317\206\323\145\020\031\030\321\227\002\261\053\162\102\150\254
\240\275\116\132\332\030\277\153\230\201\320\375\232\276\136\025
\110\315\021\025\271\300\051\134\264\350\210\367\076\066\256\267
\142\375\036\142\336\160\170\020\034\110\133\332\274\244\070\272

\147\355\125\076\136\127\337\324\003\100\114\201\244\322\117\143
\247\011\102\011\024\374\000\251\302\200\163\117\056\300\100\331
\021\173\110\352\172\002\300\323\353\050\001\046\130\164\301\300
\163\042\155\223\225\375\071\175\273\052\343\366\202\343\054\227
\137\116\037\221\224\372\376\054\243\330\166\032\270\115\262\070
\117\233\372\035\110\140\171\046\342\363\375\251\320\232\350\160
\217\111\172\326\345\275\012\016\333\055\363\215\277\353\343\244
\175\313\307\225\161\350\332\243\174\305\302\370\164\222\004\033
\206\254\244\042\123\100\266\254\376\114\166\317\373\224\062\300
\065\237\166\077\156\345\220\156\240\246\046\242\270\054\276\321
\053\205\375\247\150\310\272\001\053\261\154\164\035\270\163\225
\347\356\267\307\045\360\000\114\000\262\176\266\013\213\034\363
\300\120\236\045\271\340\010\336\066\146\377\067\245\321\273\124
\144\054\311\047\265\113\222\176\145\377\323\055\341\271\116\274
\177\244\101\041\220\101\167\246\071\037\352\236\343\237\320\146
\157\005\354\252\166\176\277\153\026\240\353\265\307\374\222\124
\057\053\021\047\045\067\170\114\121\152\260\363\314\130\135\024
\361\152\110\025\377\302\007\266\261\215\017\216\134\120\106\263
\075\277\001\230\117\262\131\124\107\076\064\173\170\155\126\223
\056\163\352\146\050\170\315\035\024\277\240\217\057\056\270\056
\216\362\024\212\314\351\265\174\373\154\235\014\245\341\226
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Actalis Authentication Root CA"
Issuer: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Serial Number:57:0a:11:97:42:c4:e3:cc
Subject: CN=Actalis Authentication Root CA,O=Actalis S.p.A./03358520967,L=Milan,C=IT
Not Valid Before: Thu Sep 22 11:22:02 2011
Not Valid After : Sun Sep 22 11:22:02 2030
Fingerprint (SHA-256):
55:92:60:84:EC:96:3A:64:B9:6E:2A:BE:01:CE:0B:A8:6A:64:FB:FE:BC:C7:AA:B5:AF:C1:55:B3:7F:D7:60:66
Fingerprint (SHA1):
F3:73:B3:87:06:5A:28:84:8A:F2:F3:4A:CE:19:2B:DD:C7:8E:9C:AC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\363\163\263\207\006\132\050\204\212\362\363\112\316\031\053\335
\307\216\234\254
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\301\015\117\007\243\033\303\376\126\075\004\274\021\366\246

```
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\016\060\014\006\003\125\004\007\014\005\115\151\154\141\156\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\047\060\045\006\003\125\004\003\014\036\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\127\012\021\227\102\304\343\314
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Buypass Class 2 Root CA"
#
# Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
# Serial Number: 2 (0x2)
# Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
# Not Valid Before: Tue Oct 26 08:38:03 2010
# Not Valid After : Fri Oct 26 08:38:03 2040
# Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
# Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
```

\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\036\027\015\061\060\061\060\062\066\060\070\063\070\060\063\132
\027\015\064\060\061\060\062\066\060\070\063\070\060\063\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\327\307\136\367\301\007\324\167\373\103\041\364\364\365\151\344
\356\062\001\333\243\206\037\344\131\015\272\347\165\203\122\353
\352\034\141\025\110\273\035\007\312\214\256\260\334\226\235\352
\303\140\222\206\202\050\163\234\126\006\377\113\144\360\014\052
\067\111\265\345\317\014\174\356\361\112\273\163\060\145\363\325
\057\203\266\176\343\347\365\236\253\140\371\323\361\235\222\164
\212\344\034\226\254\133\200\351\265\364\061\207\243\121\374\307
\176\241\157\216\123\167\324\227\301\125\063\222\076\030\057\165
\324\255\206\111\313\225\257\124\006\154\330\006\023\215\133\377
\341\046\031\131\300\044\272\201\161\171\220\104\120\150\044\224
\137\270\263\021\361\051\101\141\243\101\313\043\066\325\301\361
\062\120\020\116\177\364\206\223\354\204\323\216\274\113\277\134
\001\116\007\075\334\024\212\224\012\244\352\163\373\013\121\350
\023\007\030\372\016\361\053\321\124\025\175\074\341\367\264\031
\102\147\142\136\167\340\242\125\354\266\331\151\027\325\072\257
\104\355\112\305\236\344\172\047\174\345\165\327\252\313\045\347
\337\153\012\333\017\115\223\116\250\240\315\173\056\362\131\001
\152\267\015\270\007\201\176\213\070\033\070\346\012\127\231\075
\356\041\350\243\365\014\026\335\213\354\064\216\234\052\034\000
\025\027\215\150\203\322\160\237\030\010\315\021\150\325\311\153
\122\315\304\106\217\334\265\363\330\127\163\036\351\224\071\004
\277\323\336\070\336\264\123\354\151\034\242\176\304\217\344\033
\160\255\362\242\371\373\367\026\144\146\151\237\111\121\242\342
\025\030\147\006\112\177\325\154\265\115\263\063\340\141\353\135

\276\351\230\017\062\327\035\113\074\056\132\001\122\221\011\362
\337\352\215\330\006\100\143\252\021\344\376\303\067\236\024\122
\077\364\342\314\362\141\223\321\375\147\153\327\122\256\277\150
\253\100\103\240\127\065\123\170\360\123\370\141\102\007\144\306
\327\157\233\114\070\015\143\254\142\257\066\213\242\163\012\015
\365\041\275\164\252\115\352\162\003\111\333\307\137\035\142\143
\307\375\335\221\354\063\356\365\155\264\156\060\150\336\310\326
\046\260\165\136\173\264\007\040\230\241\166\062\270\115\154\117
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\311\200\167\340\142\222\202\365\106\234\363
\272\367\114\303\336\270\243\255\071\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\123\137\041
\365\272\260\072\122\071\054\222\260\154\000\311\357\316\040\357
\006\362\226\236\351\244\164\177\172\026\374\267\365\266\373\025
\033\077\253\246\300\162\135\020\261\161\356\274\117\343\255\254
\003\155\056\161\056\257\304\343\255\243\275\014\021\247\264\377
\112\262\173\020\020\037\247\127\101\262\300\256\364\054\131\326
\107\020\210\363\041\121\051\060\312\140\206\257\106\253\035\355
\072\133\260\224\336\104\343\101\010\242\301\354\035\326\375\117
\266\326\107\320\024\013\312\346\312\265\173\167\176\101\037\136
\203\307\266\214\071\226\260\077\226\201\101\157\140\220\342\350
\371\373\042\161\331\175\263\075\106\277\264\204\257\220\034\017
\217\022\152\257\357\356\036\172\256\002\112\212\027\053\166\376
\254\124\211\044\054\117\077\266\262\247\116\214\250\221\227\373
\051\306\173\134\055\271\313\146\266\267\250\133\022\121\205\265
\011\176\142\170\160\376\251\152\140\266\035\016\171\014\375\312
\352\044\200\162\303\227\077\362\167\253\103\042\012\307\353\266
\014\204\202\054\200\153\101\212\010\300\353\245\153\337\231\022
\313\212\325\136\200\014\221\340\046\010\066\110\305\372\070\021
\065\377\045\203\055\362\172\277\332\375\216\376\245\313\105\054
\037\304\210\123\256\167\016\331\232\166\305\216\054\035\243\272
\325\354\062\256\300\252\254\367\321\172\115\353\324\007\342\110
\367\042\216\260\244\237\152\316\216\262\262\140\364\243\042\320
\043\353\224\132\172\151\335\017\277\100\127\254\153\131\120\331
\243\231\341\156\376\215\001\171\047\043\025\336\222\235\173\011
\115\132\347\113\110\060\132\030\346\012\155\346\217\340\322\273
\346\337\174\156\041\202\301\150\071\115\264\230\130\146\142\314
\112\220\136\303\372\047\004\261\171\025\164\231\314\276\255\040
\336\046\140\034\353\126\121\246\243\352\344\243\077\247\377\141
\334\361\132\115\154\062\043\103\356\254\250\356\356\112\022\011
\074\135\161\302\276\171\372\302\207\150\035\013\375\134\151\314
\006\320\232\175\124\231\052\311\071\032\031\257\113\052\103\363
\143\135\132\130\342\057\343\035\344\251\326\320\012\320\236\277
\327\201\011\361\311\307\046\015\254\230\026\126\240
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 2 Root CA"
Issuer: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 2 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:38:03 2010
Not Valid After : Fri Oct 26 08:38:03 2040
Fingerprint (SHA-256):
9A:11:40:25:19:7C:5B:B9:5D:94:E6:3D:55:CD:43:79:08:47:B6:46:B2:3C:DF:11:AD:A4:A0:0E:FF:15:FB:48
Fingerprint (SHA1): 49:0A:75:74:DE:87:0A:47:FE:58:EE:F6:C7:6B:EB:C6:0B:12:40:99
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 2 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\111\012\165\164\336\207\012\107\376\130\356\366\307\153\353\306
\013\022\100\231
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\247\322\376\105\373\144\132\250\131\220\233\170\104\233\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\062\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate
"Buypass Class 3 Root CA"
#
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO

Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\131\060\202\003\101\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060
\036\027\015\061\060\061\060\062\066\060\070\062\070\065\070\132
\027\015\064\060\061\060\062\066\060\070\062\070\065\070\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061\035
\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163\163
\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040\060
\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163\040
\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\245\332\012\225\026\120\343\225\362\136\235\166\061\006\062\172

\233\361\020\166\270\000\232\265\122\066\315\044\107\260\237\030
\144\274\232\366\372\325\171\330\220\142\114\042\057\336\070\075
\326\340\250\351\034\054\333\170\021\351\216\150\121\025\162\307
\363\063\207\344\240\135\013\134\340\127\007\052\060\365\315\304
\067\167\050\115\030\221\346\277\325\122\375\161\055\160\076\347
\306\304\212\343\360\050\013\364\166\230\241\213\207\125\262\072
\023\374\267\076\047\067\216\042\343\250\117\052\357\140\273\075
\267\071\303\016\001\107\231\135\022\117\333\103\372\127\241\355
\371\235\276\021\107\046\133\023\230\253\135\026\212\260\067\034
\127\235\105\377\210\226\066\277\273\312\007\173\157\207\143\327
\320\062\152\326\135\154\014\361\263\156\071\342\153\061\056\071
\000\047\024\336\070\300\354\031\146\206\022\350\235\162\026\023
\144\122\307\251\067\034\375\202\060\355\204\030\035\364\256\134
\377\160\023\000\353\261\365\063\172\113\326\125\370\005\215\113
\151\260\365\263\050\066\134\024\304\121\163\115\153\013\361\064
\007\333\027\071\327\334\050\173\153\365\237\363\056\301\117\027
\052\020\363\314\312\350\353\375\153\253\056\232\237\055\202\156
\004\324\122\001\223\055\075\206\374\176\374\337\357\102\035\246
\153\357\271\040\306\367\275\240\247\225\375\247\346\211\044\330
\314\214\064\154\342\043\057\331\022\032\041\271\125\221\157\013
\221\171\031\014\255\100\210\013\160\342\172\322\016\330\150\110
\273\202\023\071\020\130\351\330\052\007\306\022\333\130\333\322
\073\125\020\107\005\025\147\142\176\030\143\246\106\077\011\016
\124\062\136\277\015\142\172\047\357\200\350\333\331\113\006\132
\067\132\045\320\010\022\167\324\157\011\120\227\075\310\035\303
\337\214\105\060\126\306\323\144\253\146\363\300\136\226\234\303
\304\357\303\174\153\213\072\171\177\263\111\317\075\342\211\237
\240\060\113\205\271\234\224\044\171\217\175\153\251\105\150\017
\053\320\361\332\034\313\151\270\312\111\142\155\310\320\143\142
\335\140\017\130\252\217\241\274\005\245\146\242\317\033\166\262
\204\144\261\114\071\122\300\060\272\360\214\113\002\260\266\267
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\107\270\315\377\345\157\356\370\262\354\057
\116\016\371\045\260\216\074\153\303\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\000\040\043
\101\065\004\220\302\100\142\140\357\342\065\114\327\077\254\342
\064\220\270\241\157\166\372\026\026\244\110\067\054\351\220\302
\362\074\370\012\237\330\201\345\273\133\332\045\054\244\247\125
\161\044\062\366\310\013\362\274\152\370\223\254\262\007\302\137
\237\333\314\310\212\252\276\152\157\341\111\020\314\061\327\200
\273\273\310\330\242\016\144\127\352\242\365\302\251\061\025\322
\040\152\354\374\042\001\050\317\206\270\200\036\251\314\021\245
\074\362\026\263\107\235\374\322\200\041\304\313\320\107\160\101
\241\312\203\031\010\054\155\362\135\167\234\212\024\023\324\066
\034\222\360\345\006\067\334\246\346\220\233\070\217\134\153\033
\106\206\103\102\137\076\001\007\123\124\135\145\175\367\212\163

\241\232\124\132\037\051\103\024\047\302\205\017\265\210\173\032
\073\224\267\035\140\247\265\234\347\051\151\127\132\233\223\172
\103\060\033\003\327\142\310\100\246\252\374\144\344\112\327\221
\123\001\250\040\210\156\234\137\104\271\313\140\201\064\354\157
\323\175\332\110\137\353\264\220\274\055\251\034\013\254\034\325
\242\150\040\200\004\326\374\261\217\057\273\112\061\015\112\206
\034\353\342\066\051\046\365\332\330\304\362\165\141\317\176\256
\166\143\112\172\100\145\223\207\370\036\200\214\206\345\206\326
\217\016\374\123\054\140\350\026\141\032\242\076\103\173\315\071
\140\124\152\365\362\211\046\001\150\203\110\242\063\350\311\004
\221\262\021\064\021\076\352\320\103\031\037\003\223\220\014\377
\121\075\127\364\101\156\341\313\240\276\353\311\143\315\155\314
\344\370\066\252\150\235\355\275\135\227\160\104\015\266\016\065
\334\341\014\135\273\240\121\224\313\176\026\353\021\057\243\222
\105\310\114\161\331\274\311\231\122\127\106\057\120\317\275\065
\151\364\075\025\316\006\245\054\017\076\366\201\272\224\273\303
\273\277\145\170\322\206\171\377\111\073\032\203\014\360\336\170
\354\310\362\115\114\032\336\202\051\370\301\132\332\355\356\346
\047\136\350\105\320\235\034\121\250\150\253\104\343\320\213\152
\343\370\073\273\334\115\327\144\362\121\276\346\252\253\132\351
\061\356\006\274\163\277\023\142\012\237\307\271\227
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Buypass Class 3 Root CA"
Issuer: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Serial Number: 2 (0x2)
Subject: CN=Buypass Class 3 Root CA,O=Buypass AS-983163327,C=NO
Not Valid Before: Tue Oct 26 08:28:58 2010
Not Valid After : Fri Oct 26 08:28:58 2040
Fingerprint (SHA-256):
ED:F7:EB:BC:A2:7A:2A:38:4D:38:7B:7D:40:10:C6:66:E2:ED:B4:84:3E:4C:29:B4:AE:1D:5B:93:32:E6:B2:4D
Fingerprint (SHA1): DA:FA:F7:FA:66:84:EC:06:8F:14:50:BD:C7:C2:81:A5:BC:A9:64:57
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Buypass Class 3 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\332\372\367\372\146\204\354\006\217\024\120\275\307\302\201\245
\274\251\144\127
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\075\073\030\236\054\144\132\350\325\210\316\016\371\067\302\354

```
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\117\061
\035\060\033\006\003\125\004\012\014\024\102\165\171\160\141\163
\163\040\101\123\055\071\070\063\061\066\063\063\062\067\061\040
\060\036\006\003\125\004\003\014\027\102\165\171\160\141\163\163
\040\103\154\141\163\163\040\063\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "T-TeleSec GlobalRoot Class 3"
#
# Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services
GmbH,C=DE
# Serial Number: 1 (0x1)
# Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems
 Enterprise Services GmbH,C=DE
# Not Valid Before: Wed Oct 01 10:29:56 2008
# Not Valid After : Sat Oct 01 23:59:59 2033
# Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
# Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_ID
```

UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\063\060\036\027\015\060\070\061\060\060\061\061\060
\062\071\065\066\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\063\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\275\165\223\360\142\042
\157\044\256\340\172\166\254\175\275\331\044\325\270\267\374\315
\360\102\340\353\170\210\126\136\233\232\124\035\115\014\212\366
\323\317\160\364\122\265\330\223\004\343\106\206\161\101\112\053
\360\052\054\125\003\326\110\303\340\071\070\355\362\134\074\077
\104\274\223\075\141\253\116\315\015\276\360\040\047\130\016\104
\177\004\032\207\245\327\226\024\066\220\320\111\173\241\165\373
\032\153\163\261\370\316\251\011\054\362\123\325\303\024\104\270
\206\245\366\213\053\071\332\243\063\124\331\372\162\032\367\042
\025\034\210\221\153\177\146\345\303\152\200\260\044\363\337\206

\105\210\375\031\177\165\207\037\037\261\033\012\163\044\133\271
\145\340\054\124\310\140\323\146\027\077\341\314\124\063\163\221
\002\072\246\177\173\166\071\242\037\226\266\070\256\265\310\223
\164\035\236\271\264\345\140\235\057\126\321\340\353\136\133\114
\022\160\014\154\104\040\253\021\330\364\031\366\322\234\122\067
\347\372\266\302\061\073\112\324\024\231\255\307\032\365\135\137
\372\007\270\174\015\037\326\203\036\263\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\265
\003\367\166\073\141\202\152\022\252\030\123\353\003\041\224\277
\376\316\312\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\126\075\357\224\325\275\332\163\262
\130\276\256\220\255\230\047\227\376\001\261\260\122\000\270\115
\344\033\041\164\033\176\300\356\136\151\052\045\257\134\326\035
\332\322\171\311\363\227\051\340\206\207\336\004\131\017\361\131
\324\144\205\113\231\257\045\004\036\311\106\251\227\336\202\262
\033\160\237\234\366\257\161\061\335\173\005\245\054\323\271\312
\107\366\312\362\366\347\255\271\110\077\274\026\267\301\155\364
\352\011\257\354\363\265\347\005\236\246\036\212\123\121\326\223
\201\314\164\223\366\271\332\246\045\005\164\171\132\176\100\076
\202\113\046\021\060\156\341\077\101\307\107\000\065\325\365\323
\367\124\076\201\075\332\111\152\232\263\357\020\075\346\353\157
\321\310\042\107\313\314\317\001\061\222\331\030\343\042\276\011
\036\032\076\132\262\344\153\014\124\172\175\103\116\270\211\245
\173\327\242\075\226\206\314\362\046\064\055\152\222\235\232\032
\320\060\342\135\116\004\260\137\213\040\176\167\301\075\225\202
\321\106\232\073\074\170\270\157\241\320\015\144\242\170\036\051
\116\223\303\244\124\024\133
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 3"
Issuer: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems
Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 3,OU=T-Systems Trust Center,O=T-Systems Enterprise Services
GmbH,C=DE
Not Valid Before: Wed Oct 01 10:29:56 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
FD:73:DA:D3:1C:64:4F:F1:B4:3B:EF:0C:CD:DA:96:71:0B:9C:D9:87:5E:CA:7E:31:70:7A:F3:E9:6D:52:2B:BD
Fingerprint (SHA1): 55:A6:72:3E:CB:F2:EC:CD:C3:23:74:70:19:9D:2A:BE:11:E3:81:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\125\246\162\076\313\362\354\315\303\043\164\160\031\235\052\276
\021\343\201\321
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\373\100\250\116\071\222\212\035\376\216\057\304\047\352\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58
 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\063\060\202\003\033\240\003\002\001\002\002\003\011
\203\363\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003
\014\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
\060\036\027\015\060\071\061\061\060\065\060\070\063\065\065\070
\132\027\015\062\071\061\061\060\065\060\070\063\065\065\070\132
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\323\262\112\317\172\107\357\165\233\043\372\072\057\326\120\105
\211\065\072\306\153\333\376\333\000\150\250\340\003\021\035\067
\120\010\237\115\112\150\224\065\263\123\321\224\143\247\040\126
\257\336\121\170\354\052\075\363\110\110\120\076\012\337\106\125
\213\047\155\303\020\115\015\221\122\103\330\207\340\135\116\066
\265\041\312\137\071\100\004\137\133\176\314\243\306\053\251\100
\036\331\066\204\326\110\363\222\036\064\106\040\044\301\244\121
\216\112\032\357\120\077\151\135\031\177\105\303\307\001\217\121
\311\043\350\162\256\264\274\126\011\177\022\313\034\261\257\051
\220\012\311\125\314\017\323\264\032\355\107\065\132\112\355\234
\163\004\041\320\252\275\014\023\265\000\312\046\154\304\153\014
\224\132\225\224\332\120\232\361\377\245\053\146\061\244\311\070

\240\337\035\037\270\011\056\363\247\350\147\122\253\225\037\340
\106\076\330\244\303\312\132\305\061\200\350\110\232\237\224\151
\376\031\335\330\163\174\201\312\226\336\216\355\263\062\005\145
\204\064\346\346\375\127\020\265\137\166\277\057\260\020\015\305
\002\003\001\000\001\243\202\001\032\060\202\001\026\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\375\332\024\304\237\060\336
\041\275\036\102\071\374\253\143\043\111\340\361\204\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\323
\006\003\125\035\037\004\201\313\060\201\310\060\201\200\240\176
\240\174\206\172\154\144\141\160\072\057\057\144\151\162\145\143
\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164
\057\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157
\157\164\045\062\060\103\154\141\163\163\045\062\060\063\045\062
\060\103\101\045\062\060\062\045\062\060\062\060\060\071\054\117
\075\104\055\124\162\165\163\164\045\062\060\107\155\142\110\054
\103\075\104\105\077\143\145\162\164\151\146\151\143\141\164\145
\162\145\166\157\143\141\164\151\157\156\154\151\163\164\060\103
\240\101\240\077\206\075\150\164\164\160\072\057\057\167\167\167
\056\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154
\057\144\055\164\162\165\163\164\137\162\157\157\164\137\143\154
\141\163\163\137\063\137\143\141\137\062\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\177\227\333\060\310\337\244\234\175
\041\172\200\160\316\024\022\151\210\024\225\140\104\001\254\262
\351\060\117\233\120\302\146\330\176\215\060\265\160\061\351\342
\151\307\363\160\333\040\025\206\320\015\360\276\254\001\165\204
\316\176\237\115\277\267\140\073\234\363\312\035\342\136\150\330
\243\235\227\345\100\140\322\066\041\376\320\264\270\027\332\164
\243\177\324\337\260\230\002\254\157\153\153\054\045\044\162\241
\145\356\045\132\345\346\062\347\362\337\253\111\372\363\220\151
\043\333\004\331\347\134\130\374\145\324\227\276\314\374\056\012
\314\045\052\065\004\370\140\221\025\165\075\101\377\043\037\031
\310\154\353\202\123\004\246\344\114\042\115\215\214\272\316\133
\163\354\144\124\120\155\321\234\125\373\151\303\066\303\214\274
\074\205\246\153\012\046\015\340\223\230\140\256\176\306\044\227
\212\141\137\221\216\146\222\011\207\066\315\213\233\055\076\366
\121\324\120\324\131\050\275\203\362\314\050\173\123\206\155\330
\046\210\160\327\352\221\315\076\271\312\300\220\156\132\306\136
\164\145\327\134\376\243\342
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST Root Class 3 CA 2 2009"
Issuer: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE

Serial Number: 623603 (0x983f3)
Subject: CN=D-TRUST Root Class 3 CA 2 2009,O=D-Trust GmbH,C=DE
Not Valid Before:
Thu Nov 05 08:35:58 2009
Not Valid After : Mon Nov 05 08:35:58 2029
Fingerprint (SHA-256):
49:E7:A4:42:AC:F0:EA:62:87:05:00:54:B5:25:64:B6:50:E4:F4:9E:42:E3:48:D6:AA:38:E0:39:E9:57:B1:C1
Fingerprint (SHA1): 58:E8:AB:B0:36:15:33:FB:80:F7:9B:1B:6D:29:D3:FF:8D:5F:00:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\350\253\260\066\025\063\373\200\367\233\033\155\051\323\377
\215\137\000\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\340\045\151\215\107\254\234\211\065\220\367\375\121\075\057
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\047\060\045\006\003\125\004\003\014
\036\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\062\060\060\071
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\011\203\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root Class 3 CA 2 EV 2009"
#
Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Serial Number: 623604 (0x983f4)
Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Nov 05 08:50:46 2009
Not Valid After : Mon Nov 05 08:50:46 2029
Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81
Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA
 2 EV 2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\103\060\202\003\053\240\003\002\001\002\002\003\011
\203\364\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003
\014\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062
\060\060\071\060\036\027\015\060\071\061\061\060\065\060\070\065
\060\064\066\132\027\015\062\071\061\061\060\065\060\070\065\060
\064\066\132\060\120\061\013\060\011\006\003\125\004\006\023\002
\104\105\061\025\060\023\006\003\125\004\012\014\014\104\055\124
\162\165\163\164\040\107\155\142\110\061\052\060\050\006\003\125
\004\003\014\041\104\055\124\122\125\123\124\040\122\157\157\164
\040\103\154\141\163\163\040\063\040\103\101\040\062\040\105\126
\040\062\060\060\071\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\231\361\204\064\160\272\057\267\060\240
\216\275\174\004\317\276\142\274\231\375\202\227\322\172\012\147
\226\070\011\366\020\116\225\042\163\231\215\332\025\055\347\005
\374\031\163\042\267\216\230\000\274\074\075\254\241\154\373\326
\171\045\113\255\360\314\144\332\210\076\051\270\017\011\323\064

\335\063\365\142\321\341\315\031\351\356\030\117\114\130\256\342
\036\326\014\133\025\132\330\072\270\304\030\144\036\343\063\262
\265\211\167\116\014\277\331\224\153\023\227\157\022\243\376\231
\251\004\314\025\354\140\150\066\355\010\173\267\365\277\223\355
\146\061\203\214\306\161\064\207\116\027\352\257\213\221\215\034
\126\101\256\042\067\136\067\362\035\331\321\055\015\057\151\121
\247\276\146\246\212\072\052\275\307\032\261\341\024\360\276\072
\035\271\317\133\261\152\376\264\261\106\040\242\373\036\073\160
\357\223\230\175\214\163\226\362\305\357\205\160\255\051\046\374
\036\004\076\034\240\330\017\313\122\203\142\174\356\213\123\225
\220\251\127\242\352\141\005\330\371\115\304\047\372\156\255\355
\371\327\121\367\153\245\002\003\001\000\001\243\202\001\044\060
\202\001\040\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\323
\224\212\114\142\023\052\031\056\314\257\162\212\175\066\327\232
\034\334\147\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\201\335\006\003\125\035\037\004\201\325\060\201
\322\060\201\207\240\201\204\240\201\201\206\177\154\144\141\160
\072\057\057\144\151\162\145\143\164\157\162\171\056\144\055\164
\162\165\163\164\056\156\145\164\057\103\116\075\104\055\124\122
\125\123\124\045\062\060\122\157\157\164\045\062\060\103\154\141
\163\163\045\062\060\063\045\062\060\103\101\045\062\060\062\045
\062\060\105\126\045\062\060\062\060\060\071\054\117\075\104\055
\124\162\165\163\164\045\062\060\107\155\142\110\054\103\075\104
\105\077\143\145\162\164\151\146\151\143\141\164\145\162\145\166
\157\143\141\164\151\157\156\154\151\163\164\060\106\240\104\240
\102\206\100\150\164\164\160\072\057\057\167\167\167\056\144\055
\164\162\165\163\164\056\156\145\164\057\143\162\154\057\144\055
\164\162\165\163\164\137\162\157\157\164\137\143\154\141\163\163
\137\063\137\143\141\137\062\137\145\166\137\062\060\060\071\056
\143\162\154\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\064\355\173\132\074\244\224\210\357
\032\021\165\007\057\263\376\074\372\036\121\046\353\207\366\051
\336\340\361\324\306\044\011\351\301\317\125\033\264\060\331\316
\032\376\006\121\246\025\244\055\357\262\113\277\040\050\045\111
\321\246\066\167\064\350\144\337\122\261\021\307\163\172\315\071
\236\302\255\214\161\041\362\132\153\257\337\074\116\125\257\262
\204\145\024\211\271\167\313\052\061\276\317\243\155\317\157\110
\224\062\106\157\347\161\214\240\246\204\031\067\007\362\003\105
\011\053\206\165\174\337\137\151\127\000\333\156\330\246\162\042
\113\120\324\165\230\126\337\267\030\377\103\103\120\256\172\104
\173\360\171\121\327\103\075\247\323\201\323\360\311\117\271\332
\306\227\206\320\202\303\344\102\155\376\260\342\144\116\016\046
\347\100\064\046\265\010\211\327\010\143\143\070\047\165\036\063
\352\156\250\335\237\231\117\164\115\201\211\200\113\335\232\227
\051\134\057\276\201\101\271\214\377\352\175\140\006\236\315\327
\075\323\056\243\025\274\250\346\046\345\157\303\334\270\003\041
\352\237\026\361\054\124\265

```
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "D-TRUST Root Class 3 CA 2 EV 2009"
# Issuer: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
# Serial Number: 623604 (0x983f4)
# Subject: CN=D-TRUST Root Class 3 CA 2 EV 2009,O=D-Trust GmbH,C=DE
# Not Valid Before: Thu Nov 05 08:50:46 2009
# Not Valid After : Mon Nov 05 08:50:46 2029
# Fingerprint (SHA-256):
EE:C5:49:6B:98:8C:E9:86:25:B9:34:09:2E:EC:29:08:BE:D0:B0:F3:16:C2:D4:73:0C:84:EA:F1:F3:D3:48:81
# Fingerprint (SHA1): 96:C9:1B:0B:95:B4:10:98:42:FA:D0:D8:22:79:FE:60:FA:B9:16:83
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2 EV 2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\226\311\033\013\225\264\020\230\102\372\320\330\042\171\376\140
\372\271\026\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\306\103\054\136\055\315\304\064\300\120\117\021\002\117\266
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\052\060\050\006\003\125\004\003\014
\041\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\040\105\126\040\062\060
\060\071
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\011\203\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

#
# Certificate "CA Disig Root R2"
#
```

```
# Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
# Serial Number:00:92:b8:88:db:b0:8a:c1:63
# Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
# Not Valid Before: Thu Jul 19 09:15:30 2012
# Not Valid After : Sat Jul 19 09:15:30 2042
# Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
# Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\151\060\202\003\121\240\003\002\001\002\002\011\000
\222\270\210\333\260\212\301\143\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\122\061\013\060\011\006\003\125
\004\006\023\002\123\113\061\023\060\021\006\003\125\004\007\023
\012\102\162\141\164\151\163\154\141\166\141\061\023\060\021\006
\003\125\004\012\023\012\104\151\163\151\147\040\141\056\163\056
\061\031\060\027\006\003\125\004\003\023\020\103\101\040\104\151
\163\151\147\040\122\157\157\164\040\122\062\060\036\027\015\061
\062\060\067\061\071\060\071\061\065\063\060\132\027\015\064\062
\060\067\061\071\060\071\061\065\063\060\132\060\122\061\013\060
\011\006\003\125\004\006\023\002\123\113\061\023\060\021\006\003
\125\004\007\023\012\102\162\141\164\151\163\154\141\166\141\061
```

\023\060\021\006\003\125\004\012\023\012\104\151\163\151\147\040
\141\056\163\056\061\031\060\027\006\003\125\004\003\023\020\103
\101\040\104\151\163\151\147\040\122\157\157\164\040\122\062\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\242\243\304\000\011\326\205\135\055\155\024\366\302\303\163\236
\065\302\161\125\176\201\373\253\106\120\340\301\174\111\170\346
\253\171\130\074\332\377\174\034\237\330\227\002\170\076\153\101
\004\351\101\275\276\003\054\105\366\057\144\324\253\135\243\107
\075\144\233\351\150\232\306\314\033\077\272\276\262\213\064\002
\056\230\125\031\374\214\157\252\137\332\114\316\115\003\041\243
\330\322\064\223\126\226\313\114\014\000\026\074\137\032\315\310
\307\154\246\255\323\061\247\274\350\345\341\146\326\322\373\003
\264\101\145\311\020\256\016\005\143\306\200\152\151\060\375\322
\356\220\357\015\047\337\237\225\163\364\341\045\332\154\026\336
\101\070\064\352\213\374\321\350\004\024\141\055\101\176\254\307
\167\116\313\121\124\373\136\222\030\033\004\132\150\306\311\304
\372\267\023\240\230\267\021\053\267\326\127\314\174\236\027\321
\313\045\376\206\116\044\056\126\014\170\115\236\001\022\246\053
\247\001\145\156\174\142\035\204\204\337\352\300\153\265\245\052
\225\203\303\123\021\014\163\035\013\262\106\220\321\102\072\316
\100\156\225\255\377\306\224\255\156\227\204\216\175\157\236\212
\200\015\111\155\163\342\173\222\036\303\363\301\363\353\056\005
\157\331\033\317\067\166\004\310\264\132\344\027\247\313\335\166
\037\320\031\166\350\054\005\263\326\234\064\330\226\334\141\207
\221\005\344\104\010\063\301\332\271\010\145\324\256\262\066\015
\353\272\070\272\014\345\233\236\353\215\146\335\231\317\326\211
\101\366\004\222\212\051\051\155\153\072\034\347\165\175\002\161
\016\363\300\347\275\313\031\335\235\140\262\302\146\140\266\261
\004\356\311\346\206\271\232\146\100\250\347\021\355\201\105\003
\213\366\147\131\350\301\006\021\275\335\317\200\002\117\145\100
\170\134\107\120\310\233\346\037\201\173\344\104\250\133\205\232
\342\336\132\325\307\371\072\104\146\113\344\062\124\174\344\154
\234\263\016\075\027\242\262\064\022\326\176\262\250\111\273\321
\172\050\100\276\242\026\037\337\344\067\037\021\163\373\220\012
\145\103\242\015\174\370\006\001\125\063\175\260\015\270\364\365
\256\245\102\127\174\066\021\214\173\136\304\003\235\214\171\235
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125\035
\016\004\026\004\024\265\231\370\257\260\224\365\343\040\326\012
\255\316\116\126\244\056\156\102\355\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\046\006\136
\160\347\145\063\310\202\156\331\234\027\072\033\172\146\262\001
\366\170\073\151\136\057\352\377\116\371\050\303\230\052\141\114
\264\044\022\212\175\155\021\024\367\234\265\312\346\274\236\047
\216\114\031\310\251\275\172\300\327\066\016\155\205\162\156\250
\306\242\155\366\372\163\143\177\274\156\171\010\034\235\212\237

\032\212\123\246\330\273\331\065\125\261\021\305\251\003\263\126
\073\271\204\223\042\136\176\301\366\022\122\213\352\054\147\274
\376\066\114\365\270\317\321\263\111\222\073\323\051\016\231\033
\226\367\141\270\073\304\053\266\170\154\264\043\157\360\375\323
\262\136\165\037\231\225\250\254\366\332\341\305\061\173\373\321
\106\263\322\274\147\264\142\124\272\011\367\143\260\223\242\232
\371\351\122\056\213\140\022\253\374\365\140\126\357\020\134\213
\304\032\102\334\203\133\144\016\313\265\274\326\117\301\174\074
\156\215\023\155\373\173\353\060\320\334\115\257\305\325\266\245
\114\133\161\311\350\061\276\350\070\006\110\241\032\342\352\322
\336\022\071\130\032\377\200\016\202\165\346\267\311\007\154\016
\357\377\070\361\230\161\304\267\177\016\025\320\045\151\275\042
\235\053\355\005\366\106\107\254\355\300\360\324\073\342\354\356
\226\133\220\023\116\036\126\072\353\260\357\226\273\226\043\021
\272\362\103\206\164\144\225\310\050\165\337\035\065\272\322\067
\203\070\123\070\066\073\317\154\351\371\153\016\320\373\004\350
\117\167\327\145\001\170\206\014\172\076\041\142\361\177\143\161
\014\311\237\104\333\250\047\242\165\276\156\201\076\327\300\353
\033\230\017\160\134\064\262\212\314\300\205\030\353\156\172\263
\367\132\241\007\277\251\102\222\363\140\042\227\344\024\241\007
\233\116\166\300\216\175\375\244\045\307\107\355\377\037\163\254
\314\303\245\351\157\012\216\233\145\302\120\205\265\243\240\123
\022\314\125\207\141\363\201\256\020\106\141\275\104\041\270\302
\075\164\317\176\044\065\372\034\007\016\233\075\042\312\357\061
\057\214\254\022\275\357\100\050\374\051\147\237\262\023\117\146
\044\304\123\031\351\036\051\025\357\346\155\260\177\055\147\375
\363\154\033\165\106\243\345\112\027\351\244\327\013
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CA Disig Root R2"
Issuer: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:00:92:b8:88:db:b0:8a:c1:63
Subject: CN=CA Disig Root R2,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:15:30 2012
Not Valid After : Sat Jul 19 09:15:30 2042
Fingerprint (SHA-256):
E2:3D:4A:03:6D:7B:70:E9:F5:95:B1:42:20:79:D2:B9:1E:DF:BB:1F:B6:51:A0:63:3E:AA:8A:9D:C5:F8:07:03
Fingerprint (SHA1): B5:61:EB:EA:A4:DE:E4:25:4B:69:1A:98:A5:57:47:C2:34:C7:D9:71
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R2"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\265\141\353\352\244\336\344\045\113\151\032\230\245\127\107\302
\064\307\331\161
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\001\373\330\047\247\027\232\105\124\070\032\103\001\073\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\222\270\210\333\260\212\301\143
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ACCVRAIZ1"
#
#
 Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Serial Number:5e:c3:b7:a6:43:7f:a4:e0
Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
Not Valid Before: Thu May 05 09:37:37 2011
Not Valid After : Tue Dec 31 09:37:37 2030
Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\136\303\267\246\103\177\244\340
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\323\060\202\005\273\240\003\002\001\002\002\010\136
\303\267\246\103\177\244\340\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\102\061\022\060\020\006\003\125\004
\003\014\011\101\103\103\126\122\101\111\132\061\061\020\060\016
\006\003\125\004\013\014\007\120\113\111\101\103\103\126\061\015
\060\013\006\003\125\004\012\014\004\101\103\103\126\061\013\060
\011\006\003\125\004\006\023\002\105\123\060\036\027\015\061\061
\060\065\060\065\060\071\063\067\063\067\132\027\015\063\060\061
\062\063\061\060\071\063\067\063\067\132\060\102\061\022\060\020
\006\003\125\004\003\014\011\101\103\103\126\122\101\111\132\061
\061\020\060\016\006\003\125\004\013\014\007\120\113\111\101\103
\103\126\061\015\060\013\006\003\125\004\012\014\004\101\103\103
\126\061\013\060\011\006\003\125\004\006\023\002\105\123\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\233
\251\253\277\141\112\227\257\057\227\146\232\164\137\320\331\226
\375\317\342\344\146\357\037\037\107\063\302\104\243\337\232\336
\037\265\124\335\025\174\151\065\021\157\273\310\014\216\152\030
\036\330\217\331\026\274\020\110\066\134\360\143\263\220\132\134
\044\067\327\243\326\313\011\161\271\361\001\162\204\260\175\333
\115\200\315\374\323\157\311\370\332\266\016\202\322\105\205\250
\033\150\250\075\350\364\104\154\275\241\302\313\003\276\214\076
\023\000\204\337\112\110\300\343\042\012\350\351\067\247\030\114
\261\011\015\043\126\177\004\115\331\027\204\030\245\310\332\100
\224\163\353\316\016\127\074\003\201\072\235\012\241\127\103\151
\254\127\155\171\220\170\345\265\264\073\330\274\114\215\050\241
\247\243\247\272\002\116\045\321\052\256\355\256\003\042\270\153
\040\017\060\050\124\225\177\340\356\316\012\146\235\321\100\055
\156\042\257\235\032\301\005\031\322\157\300\362\237\370\173\263
\002\102\373\120\251\035\055\223\017\043\253\306\301\017\222\377
\320\242\025\365\123\011\161\034\377\105\023\204\346\046\136\370
\340\210\034\012\374\026\266\250\163\006\270\360\143\204\002\240
\306\132\354\347\164\337\160\256\243\203\045\352\326\307\227\207
\223\247\306\212\212\063\227\140\067\020\076\227\076\156\051\025
\326\241\017\321\210\054\022\237\157\252\244\306\102\353\101\242

\343\225\103\323\001\205\155\216\273\073\363\043\066\307\376\073
\340\241\045\007\110\253\311\211\164\377\010\217\200\277\300\226
\145\363\356\354\113\150\275\235\210\303\061\263\100\361\350\317
\366\070\273\234\344\321\177\324\345\130\233\174\372\324\363\016
\233\165\221\344\272\122\056\031\176\321\365\315\132\031\374\272
\006\366\373\122\250\113\231\004\335\370\371\264\213\120\243\116
\142\211\360\207\044\372\203\102\301\207\372\325\055\051\052\132
\161\172\144\152\327\047\140\143\015\333\316\111\365\215\037\220
\211\062\027\370\163\103\270\322\132\223\206\141\326\341\165\012
\352\171\146\166\210\117\161\353\004\045\326\012\132\172\223\345
\271\113\027\100\017\261\266\271\365\336\117\334\340\263\254\073
\021\160\140\204\112\103\156\231\040\300\051\161\012\300\145\002
\003\001\000\001\243\202\002\313\060\202\002\307\060\175\006\010
\053\006\001\005\005\007\001\001\004\161\060\157\060\114\006\010
\053\006\001\005\005\007\060\002\206\100\150\164\164\160\072\057
\057\167\167\167\056\141\143\143\166\056\145\163\057\146\151\154
\145\141\144\155\151\156\057\101\162\143\150\151\166\157\163\057
\143\145\162\164\151\146\151\143\141\144\157\163\057\162\141\151
\172\141\143\143\166\061\056\143\162\164\060\037\006\010\053\006
\001\005\005\007\060\001\206\023\150\164\164\160\072\057\057\157
\143\163\160\056\141\143\143\166\056\145\163\060\035\006\003\125
\035\016\004\026\004\024\322\207\264\343\337\067\047\223\125\366
\126\352\201\345\066\314\214\036\077\275\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\322\207\264\343\337\067\047\223
\125\366\126\352\201\345\066\314\214\036\077\275\060\202\001\163
\006\003\125\035\040\004\202\001\152\060\202\001\146\060\202\001
\142\006\004\125\035\040\000\060\202\001\130\060\202\001\042\006
\010\053\006\001\005\005\007\002\002\060\202\001\024\036\202\001
\020\000\101\000\165\000\164\000\157\000\162\000\151\000\144\000
\141\000\144\000\040\000\144\000\145\000\040\000\103\000\145\000
\162\000\164\000\151\000\146\000\151\000\143\000\141\000\143\000
\151\000\363\000\156\000\040\000\122\000\141\000\355\000\172\000
\040\000\144\000\145\000\040\000\154\000\141\000\040\000\101\000
\103\000\103\000\126\000\040\000\050\000\101\000\147\000\145\000
\156\000\143\000\151\000\141\000\040\000\144\000\145\000\040\000
\124\000\145\000\143\000\156\000\157\000\154\000\157\000\147\000
\355\000\141\000\040\000\171\000\040\000\103\000\145\000\162\000
\164\000\151\000\146\000\151\000\143\000\141\000\143\000\151\000
\363\000\156\000\040\000\105\000\154\000\145\000\143\000\164\000
\162\000\363\000\156\000\151\000\143\000\141\000\054\000\040\000
\103\000\111\000\106\000\040\000\121\000\064\000\066\000\060\000
\061\000\061\000\065\000\066\000\105\000\051\000\056\000\040\000
\103\000\120\000\123\000\040\000\145\000\156\000\040\000\150\000
\164\000\164\000\160\000\072\000\057\000\057\000\167\000\167\000
\167\000\056\000\141\000\143\000\143\000\166\000\056\000\145\000
\163\060\060\006\010\053\006\001\005\005\007\002\001\026\044\150
\164\164\160\072\057\057\167\167\167\056\141\143\143\166\056\145

\163\057\154\145\147\151\163\154\141\143\151\157\156\137\143\056
\150\164\155\060\125\006\003\125\035\037\004\116\060\114\060\112
\240\110\240\106\206\104\150\164\164\160\072\057\057\167\167\167
\056\141\143\143\166\056\145\163\057\146\151\154\145\141\144\155
\151\156\057\101\162\143\150\151\166\157\163\057\143\145\162\164
\151\146\151\143\141\144\157\163\057\162\141\151\172\141\143\143
\166\061\137\144\145\162\056\143\162\154\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\027\006\003\125\035
\021\004\020\060\016\201\014\141\143\143\166\100\141\143\143\166
\056\145\163\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\002\001\000\227\061\002\237\347\375\103\147\110
\104\024\344\051\207\355\114\050\146\320\217\065\332\115\141\267
\112\227\115\265\333\220\340\005\056\016\306\171\320\362\227\151
\017\275\004\107\331\276\333\265\051\332\233\331\256\251\231\325
\323\074\060\223\365\215\241\250\374\006\215\104\364\312\026\225
\174\063\334\142\213\250\067\370\047\330\011\055\033\357\310\024
\047\040\251\144\104\377\056\326\165\252\154\115\140\100\031\111
\103\124\143\332\342\314\272\146\345\117\104\172\133\331\152\201
\053\100\325\177\371\001\047\130\054\310\355\110\221\174\077\246
\000\317\304\051\163\021\066\336\206\031\076\235\356\031\212\033
\325\260\355\216\075\234\052\300\015\330\075\146\343\074\015\275
\325\224\134\342\342\247\065\033\004\000\366\077\132\215\352\103
\275\137\211\035\251\301\260\314\231\342\115\000\012\332\311\047
\133\347\023\220\134\344\365\063\242\125\155\334\340\011\115\057
\261\046\133\047\165\000\011\304\142\167\051\010\137\236\131\254
\266\176\255\237\124\060\042\003\301\036\161\144\376\371\070\012
\226\030\335\002\024\254\043\313\006\034\036\244\175\215\015\336
\047\101\350\255\332\025\267\260\043\335\053\250\323\332\045\207
\355\350\125\104\115\210\364\066\176\204\232\170\254\367\016\126
\111\016\326\063\045\326\204\120\102\154\040\022\035\052\325\276
\274\362\160\201\244\160\140\276\005\265\233\236\004\104\276\141
\043\254\351\245\044\214\021\200\224\132\242\242\271\111\322\301
\334\321\247\355\061\021\054\236\031\246\356\341\125\341\300\352
\317\015\204\344\027\267\242\174\245\336\125\045\006\356\314\300
\207\134\100\332\314\225\077\125\340\065\307\270\204\276\264\135
\315\172\203\001\162\356\207\346\137\035\256\265\205\306\046\337
\346\301\232\351\036\002\107\237\052\250\155\251\133\317\354\105
\167\177\230\047\232\062\135\052\343\204\356\305\230\146\057\226
\040\035\335\330\303\047\327\260\371\376\331\175\315\320\237\217
\013\024\130\121\237\057\213\303\070\055\336\350\217\326\215\207
\244\365\126\103\026\231\054\364\244\126\264\064\270\141\067\311
\302\130\200\033\240\227\241\374\131\215\351\021\366\321\017\113
\125\064\106\052\213\206\073
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Trust for "ACCVRAIZ1"
# Issuer: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
# Serial Number:5e:c3:b7:a6:43:7f:a4:e0
# Subject: C=ES,O=ACCV,OU=PKIACCV,CN=ACCVRAIZ1
# Not Valid Before: Thu May 05 09:37:37 2011
# Not Valid After : Tue Dec 31 09:37:37 2030
# Fingerprint (SHA-256):
9A:6E:C0:12:E1:A7:DA:9D:BE:34:19:4D:47:8A:D7:C0:DB:18:22:FB:07:1D:F1:29:81:49:6E:D1:04:38:41:13
#
 Fingerprint (SHA1): 93:05:7A:88:15:C6:4F:CE:88:2F:FA:91:16:52:28:78:BC:53:64:17
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACCVRAIZ1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\223\005\172\210\025\306\117\316\210\057\372\221\026\122\050\170
\274\123\144\027
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\320\240\132\356\005\266\011\224\041\241\175\361\262\051\202\002
END
CKA_ISSUER MULTILINE_OCTAL
\060\102\061\022\060\020\006\003\125\004\003\014\011\101\103\103
\126\122\101\111\132\061\061\020\060\016\006\003\125\004\013\014
\007\120\113\111\101\103\103\126\061\015\060\013\006\003\125\004
\012\014\004\101\103\103\126\061\013\060\011\006\003\125\004\006
\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\136\303\267\246\103\177\244\340
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "TWCA Global Root CA"
#
# Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
# Serial Number: 3262 (0xcbe)
# Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
# Not Valid Before: Wed Jun 27 06:28:33 2012
# Not Valid After : Tue Dec 31 15:59:59 2030
# Fingerprint (SHA-256):
```

59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\014\276
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\101\060\202\003\051\240\003\002\001\002\002\002\014
\276\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101\060\036\027\015\061\062\060\066\062\067\060\066\062
\070\063\063\132\027\015\063\060\061\062\063\061\061\065\065\071
\065\071\132\060\121\061\013\060\011\006\003\125\004\006\023\002
\124\127\061\022\060\020\006\003\125\004\012\023\011\124\101\111
\127\101\116\055\103\101\061\020\060\016\006\003\125\004\013\023
\007\122\157\157\164\040\103\101\061\034\060\032\006\003\125\004
\003\023\023\124\127\103\101\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\260\005\333\310\353\214\304\156\212
\041\357\216\115\234\161\012\037\122\160\355\155\202\234\227\305

\327\114\116\105\111\313\100\102\265\022\064\154\031\302\164\244
\061\137\205\002\227\354\103\063\012\123\322\234\214\216\267\270
\171\333\053\325\152\362\216\146\304\356\053\001\007\222\324\263
\320\002\337\120\366\125\257\146\016\313\340\107\140\057\053\062
\071\065\122\072\050\203\370\173\026\306\030\270\142\326\107\045
\221\316\360\031\022\115\255\143\365\323\077\165\137\051\360\241
\060\034\052\240\230\246\025\275\356\375\031\066\360\342\221\103
\217\372\312\326\020\047\111\114\357\335\301\361\205\160\233\312
\352\250\132\103\374\155\206\157\163\351\067\105\251\360\066\307
\314\210\165\036\273\154\006\377\233\153\076\027\354\141\252\161
\174\306\035\242\367\111\351\025\265\074\326\241\141\365\021\367
\005\157\035\375\021\276\320\060\007\302\051\260\011\116\046\334
\343\242\250\221\152\037\302\221\105\210\134\345\230\270\161\245
\025\031\311\174\165\021\314\160\164\117\055\233\035\221\104\375
\126\050\240\376\273\206\152\310\372\134\013\130\334\306\113\166
\310\253\042\331\163\017\245\364\132\002\211\077\117\236\042\202
\356\242\164\123\052\075\123\047\151\035\154\216\062\054\144\000
\046\143\141\066\116\243\106\267\077\175\263\055\254\155\220\242
\225\242\316\317\332\202\347\007\064\031\226\351\270\041\252\051
\176\246\070\276\216\051\112\041\146\171\037\263\303\265\011\147
\336\326\324\007\106\363\052\332\346\042\067\140\313\201\266\017
\240\017\351\310\225\177\277\125\221\005\172\317\075\025\300\157
\336\011\224\001\203\327\064\033\314\100\245\360\270\233\147\325
\230\221\073\247\204\170\225\046\244\132\010\370\053\164\264\000
\004\074\337\270\024\216\350\337\251\215\154\147\222\063\035\300
\267\322\354\222\310\276\011\277\054\051\005\157\002\153\236\357
\274\277\052\274\133\300\120\217\101\160\161\207\262\115\267\004
\251\204\243\062\257\256\356\153\027\213\262\261\376\154\341\220
\214\210\250\227\110\316\310\115\313\363\006\317\137\152\012\102
\261\036\036\167\057\216\240\346\222\016\006\374\005\042\322\046
\341\061\121\175\062\334\017\002\003\001\000\001\243\043\060\041
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\137\064\201\166\357\226\035\325\345\265\331
\002\143\204\026\301\256\240\160\121\247\367\114\107\065\310\013
\327\050\075\211\161\331\252\063\101\352\024\033\154\041\000\300
\154\102\031\176\237\151\133\040\102\337\242\322\332\304\174\227
\113\215\260\350\254\310\356\245\151\004\231\012\222\246\253\047
\056\032\115\201\277\204\324\160\036\255\107\376\375\112\235\063
\340\362\271\304\105\010\041\012\332\151\151\163\162\015\276\064
\376\224\213\255\303\036\065\327\242\203\357\345\070\307\245\205
\037\253\317\064\354\077\050\376\014\361\127\206\116\311\125\367
\034\324\330\245\175\006\172\157\325\337\020\337\201\116\041\145
\261\266\341\027\171\225\105\006\316\137\314\334\106\211\143\150
\104\215\223\364\144\160\240\075\235\050\005\303\071\160\270\142
\173\040\375\344\333\351\010\241\270\236\075\011\307\117\373\054
\370\223\166\101\336\122\340\341\127\322\235\003\274\167\236\376

\236\051\136\367\301\121\140\037\336\332\013\262\055\165\267\103
\110\223\347\366\171\306\204\135\200\131\140\224\374\170\230\217
\074\223\121\355\100\220\007\337\144\143\044\313\116\161\005\241
\327\224\032\210\062\361\042\164\042\256\245\246\330\022\151\114
\140\243\002\356\053\354\324\143\222\013\136\276\057\166\153\243
\266\046\274\217\003\330\012\362\114\144\106\275\071\142\345\226
\353\064\143\021\050\314\225\361\255\357\357\334\200\130\110\351
\113\270\352\145\254\351\374\200\265\265\310\105\371\254\301\237
\331\271\352\142\210\216\304\361\113\203\022\255\346\213\204\326
\236\302\353\203\030\237\152\273\033\044\140\063\160\314\354\367
\062\363\134\331\171\175\357\236\244\376\311\043\303\044\356\025
\222\261\075\221\117\046\206\275\146\163\044\023\352\244\256\143
\301\255\175\204\003\074\020\170\206\033\171\343\304\363\362\004
\225\040\256\043\202\304\263\072\000\142\277\346\066\044\341\127
\272\307\036\220\165\325\137\077\225\141\053\301\073\315\345\263
\150\141\320\106\046\251\041\122\151\055\353\056\307\353\167\316
\246\072\265\003\063\117\166\321\347\134\124\001\135\313\170\364
\311\014\277\317\022\216\027\055\043\150\224\347\253\376\251\262
\053\006\320\004\315
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TWCA Global Root CA"
Issuer: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Serial Number: 3262 (0xcbe)
Subject: CN=TWCA Global Root CA,OU=Root CA,O=TAIWAN-CA,C=TW
Not Valid Before: Wed Jun 27 06:28:33 2012
Not Valid After : Tue Dec 31 15:59:59 2030
Fingerprint (SHA-256):
59:76:90:07:F7:68:5D:0F:CD:50:87:2F:9F:95:D5:75:5A:5B:2B:45:7D:81:F3:69:2B:61:0A:98:67:2F:0E:1B
Fingerprint (SHA1): 9C:BB:48:53:F6:A4:F6:D3:52:A4:E8:32:52:55:60:13:F5:AD:AF:65
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TWCA Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\234\273\110\123\366\244\366\323\122\244\350\062\122\125\140\023
\365\255\257\145
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\371\003\176\317\346\236\074\163\172\052\220\007\151\377\053\226
END
CKA_ISSUER MULTILINE_OCTAL

\060\121\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\022\060\020\006\003\125\004\012\023\011\124\101\111\127\101\116
\055\103\101\061\020\060\016\006\003\125\004\013\023\007\122\157
\157\164\040\103\101\061\034\060\032\006\003\125\004\003\023\023
\124\127\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\014\276
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TeliaSonera Root CA v1"
#
Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
#
 Not Valid Before: Thu Oct 18 12:00:50 2007
Not Valid After : Mon Oct 18 12:00:50 2032
Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\070\060\202\003\040\240\003\002\001\002\002\021\000
\225\276\026\240\367\056\106\361\173\071\202\162\372\213\315\226
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154\151
\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004\003
\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122\157
\157\164\040\103\101\040\166\061\060\036\027\015\060\067\061\060
\061\070\061\062\060\060\065\060\132\027\015\063\062\061\060\061
\070\061\062\060\060\065\060\132\060\067\061\024\060\022\006\003
\125\004\012\014\013\124\145\154\151\141\123\157\156\145\162\141
\061\037\060\035\006\003\125\004\003\014\026\124\145\154\151\141
\123\157\156\145\162\141\040\122\157\157\164\040\103\101\040\166
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\302\276\353\047\360\041\243\363\151\046\125\176\235\305
\125\026\221\134\375\357\041\277\123\200\172\055\322\221\214\143
\061\360\354\044\360\303\245\322\162\174\020\155\364\067\267\345
\346\174\171\352\214\265\202\213\256\110\266\254\000\334\145\165
\354\052\115\137\301\207\365\040\145\053\201\250\107\076\211\043
\225\060\026\220\177\350\127\007\110\347\031\256\277\105\147\261
\067\033\006\052\376\336\371\254\175\203\373\136\272\344\217\227
\147\276\113\216\215\144\007\127\070\125\151\064\066\075\023\110
\357\117\342\323\146\036\244\317\032\267\136\066\063\324\264\006
\275\030\001\375\167\204\120\000\105\365\214\135\350\043\274\176
\376\065\341\355\120\173\251\060\215\031\323\011\216\150\147\135
\277\074\227\030\123\273\051\142\305\312\136\162\301\307\226\324
\333\055\240\264\037\151\003\354\352\342\120\361\014\074\360\254
\363\123\055\360\034\365\355\154\071\071\163\200\026\310\122\260
\043\315\340\076\334\335\074\107\240\273\065\212\342\230\150\213
\276\345\277\162\356\322\372\245\355\022\355\374\230\030\251\046
\166\334\050\113\020\040\034\323\177\026\167\055\355\157\200\367
\111\273\123\005\273\135\150\307\324\310\165\026\077\211\132\213
\367\027\107\324\114\361\322\211\171\076\115\075\230\250\141\336
\072\036\322\370\136\003\340\301\311\034\214\323\215\115\323\225
\066\263\067\137\143\143\233\063\024\360\055\046\153\123\174\211
\214\062\302\156\354\075\041\000\071\311\241\150\342\120\203\056
\260\072\053\363\066\240\254\057\344\157\141\302\121\011\071\076
\213\123\271\273\147\332\334\123\271\166\131\066\235\103\345\040
\340\075\062\140\205\042\121\267\307\063\273\335\025\057\244\170
\246\007\173\201\106\066\004\206\335\171\065\307\225\054\073\260
\243\027\065\345\163\037\264\134\131\357\332\352\020\145\173\172
\320\177\237\263\264\052\067\073\160\213\233\133\271\053\267\354
\262\121\022\227\123\051\132\324\360\022\020\334\117\002\273\022

\222\057\142\324\077\151\103\174\015\326\374\130\165\001\210\235
\130\026\113\336\272\220\377\107\001\211\006\152\366\137\262\220
\152\263\002\246\002\210\277\263\107\176\052\331\325\372\150\170
\065\115\002\003\001\000\001\243\077\060\075\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016
\004\026\004\024\360\217\131\070\000\263\365\217\232\226\014\325
\353\372\173\252\027\350\023\022\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\276\344\134\142
\116\044\364\014\010\377\360\323\014\150\344\223\111\042\077\104
\047\157\273\155\336\203\146\316\250\314\015\374\365\232\006\345
\167\024\221\353\235\101\173\231\052\204\345\377\374\041\301\135
\360\344\037\127\267\165\251\241\137\002\046\377\327\307\367\116
\336\117\370\367\034\106\300\172\117\100\054\042\065\360\031\261
\320\153\147\054\260\250\340\300\100\067\065\366\204\134\134\343
\257\102\170\376\247\311\015\120\352\015\204\166\366\121\357\203
\123\306\172\377\016\126\111\056\217\172\326\014\346\047\124\343
\115\012\140\162\142\315\221\007\326\245\277\310\231\153\355\304
\031\346\253\114\021\070\305\157\061\342\156\111\310\077\166\200
\046\003\046\051\340\066\366\366\040\123\343\027\160\064\027\235
\143\150\036\153\354\303\115\206\270\023\060\057\135\106\015\107
\103\325\033\252\131\016\271\134\215\006\110\255\164\207\137\307
\374\061\124\101\023\342\307\041\016\236\340\036\015\341\300\173
\103\205\220\305\212\130\306\145\012\170\127\362\306\043\017\001
\331\040\113\336\017\373\222\205\165\052\134\163\215\155\173\045
\221\312\356\105\256\006\113\000\314\323\261\131\120\332\072\210
\073\051\103\106\136\227\053\124\316\123\157\215\112\347\226\372
\277\161\016\102\213\174\375\050\240\320\110\312\332\304\201\114
\273\242\163\223\046\310\353\014\326\046\210\266\300\044\317\273
\275\133\353\165\175\351\010\216\206\063\054\171\167\011\151\245
\211\374\263\160\220\207\166\217\323\042\273\102\316\275\163\013
\040\046\052\320\233\075\160\036\044\154\315\207\166\251\027\226
\267\317\015\222\373\216\030\251\230\111\321\236\376\140\104\162
\041\271\031\355\302\365\061\361\071\110\210\220\044\165\124\026
\255\316\364\370\151\024\144\071\373\243\270\272\160\100\307\047
\034\277\304\126\123\372\143\145\320\363\034\016\026\365\153\206
\130\115\030\324\344\015\216\245\235\133\221\334\166\044\120\077
\306\052\373\331\267\234\265\326\346\320\331\350\031\213\025\161
\110\255\267\352\330\131\210\324\220\277\026\263\331\351\254\131
\141\124\310\034\272\312\301\312\341\271\040\114\217\072\223\211
\245\240\314\277\323\366\165\244\165\226\155\126
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TeliaSonera Root CA v1"

```
# Issuer: CN=TeliaSonera Root CA v1,O=TeliaSonera
# Serial Number:00:95:be:16:a0:f7:2e:46:f1:7b:39:82:72:fa:8b:cd:96
# Subject: CN=TeliaSonera Root CA v1,O=TeliaSonera
#
 Not Valid Before: Thu Oct 18 12:00:50 2007
# Not Valid After : Mon Oct 18 12:00:50 2032
# Fingerprint (SHA-256):
DD:69:36:FE:21:F8:F0:77:C1:23:A1:A5:21:C1:22:24:F7:22:55:B7:3E:03:A7:26:06:93:E8:A2:4B:0F:A3:89
# Fingerprint (SHA1): 43:13:BB:96:F1:D5:86:9B:C1:4E:6A:92:F6:CF:F6:34:69:87:82:37
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TeliaSonera Root CA v1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\103\023\273\226\361\325\206\233\301\116\152\222\366\317\366\064
\151\207\202\067
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\101\111\033\030\126\232\046\365\255\302\146\373\100\245\114
END
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\024\060\022\006\003\125\004\012\014\013\124\145\154
\151\141\123\157\156\145\162\141\061\037\060\035\006\003\125\004
\003\014\026\124\145\154\151\141\123\157\156\145\162\141\040\122
\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\225\276\026\240\367\056\106\361\173\071\202\162\372
\213\315\226
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "T-TeleSec GlobalRoot Class 2"
#
# Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services
GmbH,C=DE
# Serial Number: 1 (0x1)
# Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services
GmbH,C=DE
# Not Valid Before: Wed Oct 01 10:40:14 2008
# Not Valid After : Sat Oct 01 23:59:59 2033
# Fingerprint (SHA-256):
```

91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL
CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\303\060\202\002\253\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163\164
\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040\123
\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060\035
\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155\163
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045\060
\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123\145
\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154\141
\163\163\040\062\060\036\027\015\060\070\061\060\060\061\061\060

\064\060\061\064\132\027\015\063\063\061\060\060\061\062\063\065
\071\065\071\132\060\201\202\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\053\060\051\006\003\125\004\012\014\042\124
\055\123\171\163\164\145\155\163\040\105\156\164\145\162\160\162
\151\163\145\040\123\145\162\166\151\143\145\163\040\107\155\142
\110\061\037\060\035\006\003\125\004\013\014\026\124\055\123\171
\163\164\145\155\163\040\124\162\165\163\164\040\103\145\156\164
\145\162\061\045\060\043\006\003\125\004\003\014\034\124\055\124
\145\154\145\123\145\143\040\107\154\157\142\141\154\122\157\157
\164\040\103\154\141\163\163\040\062\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\252\137\332\033\137\350
\163\221\345\332\134\364\242\346\107\345\363\150\125\140\005\035
\002\244\263\233\131\363\036\212\257\064\255\374\015\302\331\110
\031\356\151\217\311\040\374\041\252\007\031\355\260\134\254\145
\307\137\355\002\174\173\174\055\033\326\272\271\200\302\030\202
\026\204\372\146\260\010\306\124\043\201\344\315\271\111\077\366
\117\156\067\110\050\070\017\305\276\347\150\160\375\071\227\115
\322\307\230\221\120\252\304\104\263\043\175\071\107\351\122\142
\326\022\223\136\267\061\226\102\005\373\166\247\036\243\365\302
\374\351\172\305\154\251\161\117\352\313\170\274\140\257\307\336
\364\331\313\276\176\063\245\156\224\203\360\064\372\041\253\352
\216\162\240\077\244\336\060\133\357\206\115\152\225\133\103\104
\250\020\025\034\345\001\127\305\230\361\346\006\050\221\252\040
\305\267\123\046\121\103\262\013\021\225\130\341\300\017\166\331
\300\215\174\201\363\162\160\236\157\376\032\216\331\137\065\306
\262\157\064\174\276\110\117\342\132\071\327\330\235\170\236\237
\206\076\003\136\031\213\104\242\325\307\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\277
\131\040\066\000\171\240\240\042\153\214\325\362\141\322\270\054
\313\202\112\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\061\003\242\141\013\037\164\350\162
\066\306\155\371\115\236\372\042\250\341\201\126\317\315\273\237
\352\253\221\031\070\257\252\174\025\115\363\266\243\215\245\364
\216\366\104\251\247\350\041\225\255\076\000\142\026\210\360\002
\272\374\141\043\346\063\233\060\172\153\066\142\173\255\004\043
\204\130\145\342\333\053\212\347\045\123\067\142\123\137\274\332
\001\142\051\242\246\047\161\346\072\042\176\301\157\035\225\160
\040\112\007\064\337\352\377\025\200\345\272\327\172\330\133\165
\174\005\172\051\107\176\100\250\061\023\167\315\100\073\264\121
\107\172\056\021\343\107\021\336\235\146\320\213\325\124\146\372
\203\125\352\174\302\051\211\033\351\157\263\316\342\005\204\311
\057\076\170\205\142\156\311\137\301\170\143\164\130\300\110\030
\014\231\071\353\244\314\032\265\171\132\215\025\234\330\024\015
\366\172\007\127\307\042\203\005\055\074\233\045\046\075\030\263
\251\103\174\310\310\253\144\217\016\243\277\234\033\235\060\333

\332\320\031\056\252\074\361\373\063\200\166\344\315\255\031\117
\005\047\216\023\241\156\302
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "T-TeleSec GlobalRoot Class 2"
Issuer: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Serial Number: 1 (0x1)
Subject: CN=T-TeleSec GlobalRoot Class 2,OU=T-Systems Trust Center,O=T-Systems Enterprise Services GmbH,C=DE
Not Valid Before: Wed Oct 01 10:40:14 2008
Not Valid After : Sat Oct 01 23:59:59 2033
Fingerprint (SHA-256):
91:E2:F5:78:8D:58:10:EB:A7:BA:58:73:7D:E1:54:8A:8E:CA:CD:01:45:98:BC:0B:14:3E:04:1B:17:05:25:52
Fingerprint (SHA1): 59:0D:2D:7D:88:4F:40:2E:61:7E:A5:62:32:17:65:CF:17:D8:94:E9
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "T-TeleSec GlobalRoot Class 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\015\055\175\210\117\100\056\141\176\245\142\062\027\145\317
\027\330\224\351
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\053\233\236\344\173\154\037\000\162\032\314\301\167\171\337\152
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\053\060\051\006\003\125\004\012\014\042\124\055\123\171\163
\164\145\155\163\040\105\156\164\145\162\160\162\151\163\145\040
\123\145\162\166\151\143\145\163\040\107\155\142\110\061\037\060
\035\006\003\125\004\013\014\026\124\055\123\171\163\164\145\155
\163\040\124\162\165\163\164\040\103\145\156\164\145\162\061\045
\060\043\006\003\125\004\003\014\034\124\055\124\145\154\145\123
\145\143\040\107\154\157\142\141\154\122\157\157\164\040\103\154
\141\163\163\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH

CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot 2011"
#
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Serial Number:5c:33:cb:62:2c:5f:b3:32
Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
Not Valid Before: Thu Jul 07 14:58:30 2011
Not Valid After : Tue Dec 31 23:59:59 2030
Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\167\060\202\002\137\240\003\002\001\002\002\010\134
\063\313\142\054\137\263\062\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\074\061\036\060\034\006\003\125\004
\003\014\025\101\164\157\163\040\124\162\165\163\164\145\144\122
\157\157\164\040\062\060\061\061\061\015\060\013\006\003\125\004
\012\014\004\101\164\157\163\061\013\060\011\006\003\125\004\006
\023\002\104\105\060\036\027\015\061\061\060\067\060\067\061\064
\065\070\063\060\132\027\015\063\060\061\062\063\061\062\063\065

\071\065\071\132\060\074\061\036\060\034\006\003\125\004\003\014
\025\101\164\157\163\040\124\162\165\163\164\145\144\122\157\157
\164\040\062\060\061\061\061\015\060\013\006\003\125\004\012\014
\004\101\164\157\163\061\013\060\011\006\003\125\004\006\023\002
\104\105\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\225\205\073\227\157\052\073\056\073\317\246\363\051
\065\276\317\030\254\076\252\331\370\115\240\076\032\107\271\274
\232\337\362\376\314\076\107\350\172\226\302\044\216\065\364\251
\014\374\202\375\155\301\162\142\047\275\352\153\353\347\212\314
\124\076\220\120\317\200\324\225\373\350\265\202\324\024\305\266
\251\125\045\127\333\261\120\366\260\140\144\131\172\151\317\003
\267\157\015\276\312\076\157\164\162\352\252\060\052\163\142\276
\111\221\141\310\021\376\016\003\052\367\152\040\334\002\025\015
\136\025\152\374\343\202\301\265\305\235\144\011\154\243\131\230
\007\047\307\033\226\053\141\164\161\154\103\361\367\065\211\020
\340\236\354\125\241\067\042\242\207\004\005\054\107\175\264\034
\271\142\051\146\050\312\267\341\223\365\244\224\003\231\271\160
\205\265\346\110\352\215\120\374\331\336\314\157\007\016\335\013
\162\235\200\060\026\007\225\077\050\016\375\305\165\117\123\326
\164\232\264\044\056\216\002\221\317\166\305\233\036\125\164\234
\170\041\261\360\055\361\013\237\302\325\226\030\037\360\124\042
\172\214\007\002\003\001\000\001\243\175\060\173\060\035\006\003
\125\035\016\004\026\004\024\247\245\006\261\054\246\011\140\356
\321\227\351\160\256\274\073\031\154\333\041\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003
\125\035\043\004\030\060\026\200\024\247\245\006\261\054\246\011
\140\356\321\227\351\160\256\274\073\031\154\333\041\060\030\006
\003\125\035\040\004\021\060\017\060\015\006\013\053\006\001\004
\001\260\055\003\004\001\001\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\046\167\064\333\224
\110\206\052\101\235\054\076\006\220\140\304\214\254\013\124\270
\037\271\173\323\007\071\344\372\076\173\262\075\116\355\237\043
\275\227\363\153\134\357\356\375\100\246\337\241\223\241\012\206
\254\357\040\320\171\001\275\170\367\031\330\044\061\064\004\001
\246\272\025\232\303\047\334\330\117\017\314\030\143\377\231\017
\016\221\153\165\026\341\041\374\330\046\307\107\267\246\317\130
\162\161\176\272\341\115\225\107\073\311\257\155\241\264\301\354
\211\366\264\017\070\265\342\144\334\045\317\246\333\353\232\134
\231\241\305\010\336\375\346\332\325\326\132\105\014\304\267\302
\265\024\357\264\021\377\016\025\265\365\365\333\306\275\353\132
\247\360\126\042\251\074\145\124\306\025\250\275\206\236\315\203
\226\150\172\161\201\211\341\013\341\352\021\033\150\010\314\151
\236\354\236\101\236\104\062\046\172\342\207\012\161\075\353\344
\132\244\322\333\305\315\306\336\140\177\271\363\117\104\222\357
\052\267\030\076\247\031\331\013\175\261\067\101\102\260\272\140
\035\362\376\011\021\260\360\207\173\247\235

```
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "Atos TrustedRoot 2011"
# Issuer: C=DE,O=Atos,CN=Atos TrustedRoot 2011
# Serial Number:5c:33:cb:62:2c:5f:b3:32
# Subject: C=DE,O=Atos,CN=Atos TrustedRoot 2011
# Not Valid Before: Thu Jul 07 14:58:30 2011
# Not Valid After : Tue Dec 31 23:59:59 2030
# Fingerprint (SHA-256):
F3:56:BE:A2:44:B7:A9:1E:B3:5D:53:CA:9A:D7:86:4A:CE:01:8E:2D:35:D5:F8:F9:6D:DF:68:A6:F4:1A:A4:74
# Fingerprint (SHA1): 2B:B1:F5:3E:55:0C:1D:C5:F1:D4:E6:B7:6A:46:4B:55:06:02:AC:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8
 "Atos TrustedRoot 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\261\365\076\125\014\035\305\361\324\346\267\152\106\113\125
\006\002\254\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\271\304\062\113\254\177\135\146\314\167\224\273\052\167\126
END
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\036\060\034\006\003\125\004\003\014\025\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\062\060
\061\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\134\063\313\142\054\137\263\062
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "QuoVadis Root CA 1 G3"
#
# Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
# Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
#
```

Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\170
\130\137\056\255\054\031\113\343\067\007\065\064\023\050\265\226
\324\145\223\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\061\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\067\062\067\064\064\132\027\015\064
\062\060\061\061\062\061\067\062\067\064\064\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\061\040\107\063\060\202\002\042\060\015\006\011\052\206

\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\240\276\120\020\216\351\362\154\100
\264\004\234\205\271\061\312\334\055\344\021\251\004\074\033\125
\301\347\130\060\035\044\264\303\357\205\336\214\054\341\301\075
\337\202\346\117\255\107\207\154\354\133\111\301\112\325\273\217
\354\207\254\177\202\232\206\354\075\003\231\122\001\322\065\236
\254\332\360\123\311\146\074\324\254\002\001\332\044\323\073\250
\002\106\257\244\034\343\370\163\130\166\267\366\016\220\015\265
\360\317\314\372\371\306\114\345\303\206\060\012\215\027\176\065
\353\305\337\273\016\234\300\215\207\343\210\070\205\147\372\076
\307\253\340\023\234\005\030\230\317\223\365\261\222\264\374\043
\323\317\325\304\047\111\340\236\074\233\010\243\213\135\052\041
\340\374\071\252\123\332\175\176\317\032\011\123\274\135\005\004
\317\241\112\217\213\166\202\015\241\370\322\307\024\167\133\220
\066\007\201\233\076\006\372\122\136\143\305\246\000\376\245\351
\122\033\122\265\222\071\162\003\011\142\275\260\140\026\156\246
\335\045\302\003\146\335\363\004\321\100\342\116\213\206\364\157
\345\203\240\047\204\136\004\301\365\220\275\060\075\304\357\250
\151\274\070\233\244\244\226\321\142\332\151\300\001\226\256\313
\304\121\064\352\014\252\377\041\216\131\217\112\134\344\141\232
\247\322\351\052\170\215\121\075\072\025\356\242\131\216\251\134
\336\305\371\220\042\345\210\105\161\335\221\231\154\172\237\075
\075\230\174\136\366\276\026\150\240\136\256\013\043\374\132\017
\252\042\166\055\311\241\020\035\344\323\104\043\220\210\237\306
\052\346\327\365\232\263\130\036\057\060\211\010\033\124\242\265
\230\043\354\010\167\034\225\135\141\321\313\211\234\137\242\112
\221\232\357\041\252\111\026\010\250\275\141\050\061\311\164\255
\205\366\331\305\261\213\321\345\020\062\115\137\213\040\072\074
\111\037\063\205\131\015\333\313\011\165\103\151\163\373\153\161
\175\360\337\304\114\175\306\243\056\310\225\171\313\163\242\216
\116\115\044\373\136\344\004\276\162\033\246\047\055\111\132\231
\172\327\134\011\040\267\177\224\271\117\361\015\034\136\210\102
\033\021\267\347\221\333\236\154\364\152\337\214\006\230\003\255
\314\050\357\245\107\363\123\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\243\227\326\363
\136\242\020\341\253\105\237\074\027\144\074\356\001\160\234\314
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\030\372\133\165\374\076\172\307\137\167\307\312
\337\317\137\303\022\304\100\135\324\062\252\270\152\327\325\025
\025\106\230\043\245\346\220\133\030\231\114\343\255\102\243\202
\061\066\210\315\351\373\304\004\226\110\213\001\307\215\001\317
\133\063\006\226\106\146\164\035\117\355\301\266\271\264\015\141
\314\143\176\327\056\167\214\226\034\052\043\150\153\205\127\166
\160\063\023\376\341\117\246\043\167\030\372\032\214\350\275\145
\311\317\077\364\311\027\334\353\307\274\300\004\056\055\106\057
\151\146\303\033\217\376\354\076\323\312\224\277\166\012\045\015

\251\173\002\034\251\320\073\137\013\300\201\072\075\144\341\277
\247\055\116\275\115\304\330\051\306\042\030\320\305\254\162\002
\202\077\252\072\242\072\042\227\061\335\010\143\303\165\024\271
\140\050\055\133\150\340\026\251\146\202\043\121\365\353\123\330
\061\233\173\351\267\235\113\353\210\026\317\371\135\070\212\111
\060\217\355\361\353\031\364\167\032\061\030\115\147\124\154\057
\157\145\371\333\075\354\041\354\136\364\364\213\312\140\145\124
\321\161\144\364\371\246\243\201\063\066\063\161\360\244\170\137
\116\255\203\041\336\064\111\215\350\131\254\235\362\166\132\066
\362\023\364\257\340\011\307\141\052\154\367\340\235\256\273\206
\112\050\157\056\356\264\171\315\220\063\303\263\166\372\365\360
\154\235\001\220\372\236\220\366\234\162\317\107\332\303\037\344
\065\040\123\362\124\321\337\141\203\246\002\342\045\070\336\205
\062\055\136\163\220\122\135\102\304\316\075\113\341\371\031\204
\035\325\242\120\314\101\373\101\024\303\275\326\311\132\243\143
\146\002\200\275\005\072\073\107\234\354\000\046\114\365\210\121
\277\250\043\177\030\007\260\013\355\213\046\241\144\323\141\112
\353\134\237\336\263\257\147\003\263\037\335\155\135\151\150\151
\253\136\072\354\174\151\274\307\073\205\116\236\025\271\264\025
\117\303\225\172\130\327\311\154\351\154\271\363\051\143\136\264
\054\360\055\075\355\132\145\340\251\133\100\302\110\231\201\155
\236\037\006\052\074\022\264\213\017\233\242\044\360\246\215\326
\172\340\113\266\144\226\143\225\204\302\112\315\034\056\044\207
\063\140\345\303
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 1 G3"
Issuer: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Serial Number:78:58:5f:2e:ad:2c:19:4b:e3:37:07:35:34:13:28:b5:96:d4:65:93
Subject: CN=QuoVadis Root CA 1 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 17:27:44 2012
Not Valid After : Sun Jan 12 17:27:44 2042
Fingerprint (SHA-256):
8A:86:6F:D1:B2:76:B5:7E:57:8E:92:1C:65:82:8A:2B:ED:58:E9:F2:F2:88:05:41:34:B7:F1:F4:BF:C9:CC:74
Fingerprint (SHA1): 1B:8E:EA:57:96:29:1A:C9:39:EA:B8:0A:81:1A:73:73:C0:93:79:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 1 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\033\216\352\127\226\051\032\311\071\352\270\012\201\032\163\163
\300\223\171\147
END

CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\244\274\133\077\376\067\232\372\144\360\342\372\005\075\013\253
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\061\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\170\130\137\056\255\054\031\113\343\067\007\065\064\023
\050\265\226\324\145\223
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "QuoVadis Root CA 2 G3"
#
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
#
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061

\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073
\133\247\046\360\165\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\104
\127\064\044\133\201\211\233\065\362\316\270\053\073\133\247\046
\360\165\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\062\040\107\063\060\036\027\015
\061\062\060\061\061\062\061\070\065\071\063\062\132\027\015\064
\062\060\061\061\062\061\070\065\071\063\062\132\060\110\061\013
\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\062\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\241\256\045\262\001\030\334\127\210
\077\106\353\371\257\342\353\043\161\342\232\321\141\146\041\137
\252\257\047\121\345\156\033\026\324\055\175\120\260\123\167\275
\170\072\140\342\144\002\233\174\206\233\326\032\216\255\377\037
\025\177\325\225\036\022\313\346\024\204\004\301\337\066\263\026
\237\212\343\311\333\230\064\316\330\063\027\050\106\374\247\311
\360\322\264\325\115\011\162\111\371\362\207\343\251\332\175\241
\175\153\262\072\045\251\155\122\104\254\370\276\156\373\334\246
\163\221\220\141\246\003\024\040\362\347\207\243\210\255\255\240
\214\377\246\013\045\122\045\347\026\001\325\313\270\065\201\014
\243\073\360\341\341\374\132\135\316\200\161\155\370\111\253\076
\073\272\270\327\200\001\373\245\353\133\263\305\136\140\052\061
\240\257\067\350\040\072\237\250\062\054\014\314\011\035\323\236
\216\135\274\114\230\356\305\032\150\173\354\123\246\351\024\065
\243\337\315\200\237\014\110\373\034\364\361\277\112\270\372\325
\214\161\112\307\037\255\376\101\232\263\203\135\362\204\126\357
\245\127\103\316\051\255\214\253\125\277\304\373\133\001\335\043
\041\241\130\000\216\303\320\152\023\355\023\343\022\053\200\334
\147\346\225\262\315\036\042\156\052\370\101\324\362\312\024\007
\215\212\125\022\306\151\365\270\206\150\057\123\136\260\322\252
\041\301\230\346\060\343\147\125\307\233\156\254\031\250\125\246

\105\006\320\043\072\333\353\145\135\052\021\021\360\073\117\312
\155\364\064\304\161\344\377\000\132\366\134\256\043\140\205\163
\361\344\020\261\045\256\325\222\273\023\301\014\340\071\332\264
\071\127\265\253\065\252\162\041\073\203\065\347\061\337\172\041
\156\270\062\010\175\035\062\221\025\112\142\162\317\343\167\241
\274\325\021\033\166\001\147\010\340\101\013\303\353\025\156\370
\244\031\331\242\253\257\342\047\122\126\053\002\212\054\024\044
\371\277\102\002\277\046\310\306\217\340\156\070\175\123\055\345
\355\230\263\225\143\150\177\371\065\364\337\210\305\140\065\222
\300\174\151\034\141\225\026\320\353\336\013\257\076\004\020\105
\145\130\120\070\257\110\362\131\266\026\362\074\015\220\002\306
\160\056\001\255\074\025\327\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\355\347\157\166
\132\277\140\354\111\133\306\245\167\273\162\026\161\233\304\075
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\221\337\200\077\103\011\176\161\302\367\353\263
\210\217\341\121\262\274\075\165\371\050\135\310\274\231\233\173
\135\252\345\312\341\012\367\350\262\323\237\335\147\061\176\272
\001\252\307\152\101\073\220\324\010\134\262\140\152\220\360\310
\316\003\142\371\213\355\373\156\052\334\006\115\074\051\017\211
\026\212\130\114\110\017\350\204\141\352\074\162\246\167\344\102
\256\210\243\103\130\171\176\256\312\245\123\015\251\075\160\275
\040\031\141\244\154\070\374\103\062\341\301\107\377\370\354\361
\021\042\062\226\234\302\366\133\151\226\173\040\014\103\101\232
\133\366\131\031\210\336\125\210\067\121\013\170\134\012\036\243
\102\375\307\235\210\017\300\362\170\002\044\124\223\257\211\207
\210\311\112\200\035\352\320\156\076\141\056\066\273\065\016\047
\226\375\146\064\073\141\162\163\361\026\134\107\006\124\111\000
\172\130\022\260\012\357\205\375\261\270\063\165\152\223\034\022
\346\140\136\157\035\177\311\037\043\313\204\141\237\036\202\104
\371\137\255\142\125\044\232\122\230\355\121\347\241\176\227\072
\346\057\037\021\332\123\200\054\205\236\253\065\020\333\042\137
\152\305\136\227\123\362\062\002\011\060\243\130\360\015\001\325
\162\306\261\174\151\173\303\365\066\105\314\141\156\136\114\224
\305\136\256\350\016\136\213\277\367\315\340\355\241\016\033\063
\356\124\030\376\017\276\357\176\204\153\103\343\160\230\333\135
\165\262\015\131\007\205\025\043\071\326\361\337\251\046\017\326
\110\307\263\246\042\365\063\067\132\225\107\237\173\272\030\025
\157\377\326\024\144\203\111\322\012\147\041\333\017\065\143\140
\050\042\343\261\225\203\315\205\246\335\057\017\347\147\122\156
\273\057\205\174\365\112\163\347\305\076\300\275\041\022\005\077
\374\267\003\111\002\133\310\045\346\342\124\070\365\171\207\214
\035\123\262\116\205\173\006\070\307\054\370\370\260\162\215\045
\345\167\122\364\003\034\110\246\120\137\210\040\060\156\362\202
\103\253\075\227\204\347\123\373\041\301\117\017\042\232\206\270
\131\052\366\107\075\031\210\055\350\205\341\236\354\205\010\152

\261\154\064\311\035\354\110\053\073\170\355\146\304\216\171\151
\203\336\177\214
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL
 CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 2 G3"
Issuer: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Serial Number:44:57:34:24:5b:81:89:9b:35:f2:ce:b8:2b:3b:5b:a7:26:f0:75:28
Subject: CN=QuoVadis Root CA 2 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 18:59:32 2012
Not Valid After : Sun Jan 12 18:59:32 2042
Fingerprint (SHA-256):
8F:E4:FB:0A:F9:3A:4D:0D:67:DB:0B:EB:B2:3E:37:C7:1B:F3:25:DC:BC:DD:24:0E:A0:4D:AF:58:B4:7E:18:40
Fingerprint (SHA1): 09:3C:61:F3:8B:8B:DC:7D:55:DF:75:38:02:05:00:E1:25:F5:C8:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 2 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\011\074\141\363\213\213\334\175\125\337\165\070\002\005\000\341
\045\365\310\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\257\014\206\156\277\100\055\177\013\076\022\120\272\022\075\006
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\062\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\104\127\064\044\133\201\211\233\065\362\316\270\053\073
\133\247\046\360\165\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "QuoVadis Root CA 3 G3"
#
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid
After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46
Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\024\056
\365\233\002\050\247\333\172\377\325\243\251\356\275\003\240\317
\022\152\035\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\110\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\036\060\034
\006\003\125\004\003\023\025\121\165\157\126\141\144\151\163\040
\122\157\157\164\040\103\101\040\063\040\107\063\060\036\027\015
\061\062\060\061\061\062\062\060\062\066\063\062\132\027\015\064
\062\060\061\061\062\062\060\062\066\063\062\132\060\110\061\013

\060\011\006\003\125\004\006\023\002\102\115\061\031\060\027\006
\003\125\004\012\023\020\121\165\157\126\141\144\151\163\040\114
\151\155\151\164\145\144\061\036\060\034\006\003\125\004\003\023
\025\121\165\157\126\141\144\151\163\040\122\157\157\164\040\103
\101\040\063\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\263\313\016\020\147\216\352\024\227
\247\062\052\012\126\066\177\150\114\307\263\157\072\043\024\221
\377\031\177\245\312\254\356\263\166\235\172\351\213\033\253\153
\061\333\372\013\123\114\257\305\245\032\171\074\212\114\377\254
\337\045\336\116\331\202\062\013\104\336\312\333\214\254\243\156
\026\203\073\246\144\113\062\211\373\026\026\070\176\353\103\342
\323\164\112\302\142\012\163\012\335\111\263\127\322\260\012\205
\235\161\074\336\243\313\300\062\363\001\071\040\103\033\065\321
\123\263\261\356\305\223\151\202\076\026\265\050\106\241\336\352
\211\011\355\103\270\005\106\212\206\365\131\107\276\033\157\001
\041\020\271\375\251\322\050\312\020\071\011\312\023\066\317\234
\255\255\100\164\171\053\002\077\064\377\372\040\151\175\323\356
\141\365\272\263\347\060\320\067\043\206\162\141\105\051\110\131
\150\157\167\246\056\201\276\007\115\157\257\316\304\105\023\221
\024\160\006\217\037\237\370\207\151\261\016\357\303\211\031\353
\352\034\141\374\172\154\212\334\326\003\013\236\046\272\022\335
\324\124\071\253\046\243\063\352\165\201\332\055\315\017\117\344
\003\321\357\025\227\033\153\220\305\002\220\223\146\002\041\261
\107\336\213\232\112\200\271\125\217\265\242\057\300\326\063\147
\332\176\304\247\264\004\104\353\107\373\346\130\271\367\014\360
\173\053\261\300\160\051\303\100\142\055\073\110\151\334\043\074
\110\353\173\011\171\251\155\332\250\060\230\317\200\162\003\210
\246\133\106\256\162\171\174\010\003\041\145\256\267\341\034\245
\261\052\242\061\336\146\004\367\300\164\350\161\336\377\075\131
\314\226\046\022\213\205\225\127\032\253\153\165\013\104\075\021
\050\074\173\141\267\342\217\147\117\345\354\074\114\140\200\151
\127\070\036\001\133\215\125\350\307\337\300\314\167\043\064\111
\165\174\366\230\021\353\055\336\355\101\056\024\005\002\177\340
\376\040\353\065\347\021\254\042\316\127\075\336\311\060\155\020
\003\205\315\361\377\214\026\265\301\262\076\210\154\140\177\220
\117\225\367\366\055\255\001\071\007\004\372\165\200\175\277\111
\120\355\357\311\304\174\034\353\200\176\333\266\320\335\023\376
\311\323\234\327\262\227\251\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\306\027\320\274
\250\352\002\103\362\033\006\231\135\053\220\040\271\327\234\344
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\064\141\331\126\265\022\207\125\115\335\243\065
\061\106\273\244\007\162\274\137\141\142\350\245\373\013\067\261
\074\266\263\372\051\235\177\002\365\244\311\250\223\267\172\161
\050\151\217\163\341\122\220\332\325\276\072\345\267\166\152\126

\200\041\337\135\346\351\072\236\345\076\366\242\151\307\052\012
\260\030\107\334\040\160\175\122\243\076\131\174\301\272\311\310
\025\100\141\312\162\326\160\254\322\267\360\034\344\206\051\360
\316\357\150\143\320\265\040\212\025\141\232\176\206\230\264\311
\302\166\373\314\272\060\026\314\243\141\306\164\023\345\153\357
\243\025\352\003\376\023\213\144\344\323\301\322\350\204\373\111
\321\020\115\171\146\353\252\375\364\215\061\036\160\024\255\334
\336\147\023\114\201\025\141\274\267\331\221\167\161\031\201\140
\273\360\130\245\265\234\013\367\217\042\125\047\300\113\001\155
\073\231\015\324\035\233\143\147\057\320\356\015\312\146\274\224
\117\246\255\355\374\356\143\254\127\077\145\045\317\262\206\217
\320\010\377\270\166\024\156\336\345\047\354\253\170\265\123\271
\266\077\350\040\371\322\250\276\141\106\312\207\214\204\363\371
\361\240\150\233\042\036\201\046\233\020\004\221\161\300\006\037
\334\240\323\271\126\247\343\230\055\177\203\235\337\214\053\234
\062\216\062\224\360\001\074\042\052\237\103\302\056\303\230\071
\007\070\173\374\136\000\102\037\363\062\046\171\203\204\366\345
\360\301\121\022\300\013\036\004\043\014\124\245\114\057\111\305
\112\321\266\156\140\015\153\374\153\213\205\044\144\267\211\016
\253\045\107\133\074\317\176\111\275\307\351\012\306\332\367\176
\016\027\010\323\110\227\320\161\222\360\017\071\076\064\152\034
\175\330\362\042\256\273\151\364\063\264\246\110\125\321\017\016
\046\350\354\266\013\055\247\205\065\315\375\131\310\237\321\315
\076\132\051\064\271\075\204\316\261\145\324\131\221\221\126\165
\041\301\167\236\371\172\341\140\235\323\255\004\030\364\174\353
\136\223\217\123\112\042\051\370\110\053\076\115\206\254\133\177
\313\006\231\131\140\330\130\145\225\215\104\321\367\177\176\047
\177\175\256\200\365\007\114\266\076\234\161\124\231\004\113\375
\130\371\230\364
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Trust for "QuoVadis Root CA 3 G3"
Issuer: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Serial Number:2e:f5:9b:02:28:a7:db:7a:ff:d5:a3:a9:ee:bd:03:a0:cf:12:6a:1d
Subject: CN=QuoVadis Root CA 3 G3,O=QuoVadis Limited,C=BM
Not Valid Before: Thu Jan 12 20:26:32 2012
Not Valid After : Sun Jan 12 20:26:32 2042
Fingerprint (SHA-256):
88:EF:81:DE:20:2E:B0:18:45:2E:43:F8:64:72:5C:EA:5F:BD:1F:C2:D9:D2:05:73:07:09:C5:D8:B8:69:0F:46
Fingerprint (SHA1): 48:12:BD:92:3C:A8:C4:39:06:E7:30:6D:27:96:E6:A4:CF:22:2E:7D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root CA 3 G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\110\022\275\222\074\250\304\071\006\347\060\155\047\226\346\244
\317\042\056\175
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\337\175\271\255\124\157\150\241\337\211\127\003\227\103\260\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\036\060\034\006\003
\125\004\003\023\025\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\101\040\063\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\024\056\365\233\002\050\247\333\172\377\325\243\251\356\275
\003\240\317\022\152\035
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G2"
#
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00
 2038
Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023

\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\226\060\202\002\176\240\003\002\001\002\002\020\013
\223\034\072\326\071\147\352\147\043\277\303\257\232\364\113\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\044\060\042\006\003\125\004\003\023\033\104\151\147\151\103\145
\162\164\040\101\163\163\165\162\145\144\040\111\104\040\122\157
\157\164\040\107\062\060\036\027\015\061\063\060\070\060\061\061
\062\060\060\060\060\132\027\015\063\070\060\061\061\065\061\062
\060\060\060\060\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\025\060\023\006\003\125\004\012\023\014\104
\151\147\151\103\145\162\164\040\111\156\143\061\031\060\027\006
\003\125\004\013\023\020\167\167\167\056\144\151\147\151\143\145
\162\164\056\143\157\155\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\101\163\163\165\162\145
\144\040\111\104\040\122\157\157\164\040\107\062\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\331\347\050
\057\122\077\066\162\111\210\223\064\363\370\152\036\061\124\200
\237\255\124\101\265\107\337\226\250\324\257\200\055\271\012\317
\165\375\211\245\175\044\372\343\042\014\053\274\225\027\013\063
\277\031\115\101\006\220\000\275\014\115\020\376\007\265\347\034
\156\042\125\061\145\227\275\323\027\322\036\142\363\333\352\154
\120\214\077\204\014\226\317\267\313\003\340\312\155\241\024\114
\033\211\335\355\000\260\122\174\257\221\154\261\070\023\321\351

\022\010\300\000\260\034\053\021\332\167\160\066\233\256\316\171
\207\334\202\160\346\011\164\160\125\151\257\243\150\237\277\335
\266\171\263\362\235\160\051\125\364\253\377\225\141\363\311\100
\157\035\321\276\223\273\323\210\052\273\235\277\162\132\126\161
\073\077\324\363\321\012\376\050\357\243\356\331\231\257\003\323
\217\140\267\362\222\241\261\275\211\211\037\060\315\303\246\056
\142\063\256\026\002\167\104\132\347\201\012\074\247\104\056\171
\270\077\004\274\134\240\207\341\033\257\121\216\315\354\054\372
\370\376\155\360\072\174\252\213\344\147\225\061\215\002\003\001
\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026
\004\024\316\303\112\271\231\125\362\270\333\140\277\251\176\275
\126\265\227\066\247\326\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\001\001\000\312\245\125\214\343\310
\101\156\151\047\247\165\021\357\074\206\066\157\322\235\306\170
\070\035\151\226\242\222\151\056\070\154\233\175\004\324\211\245
\261\061\067\212\311\041\314\253\154\315\213\034\232\326\277\110
\322\062\146\301\212\300\363\057\072\357\300\343\324\221\206\321
\120\343\003\333\163\167\157\112\071\123\355\336\046\307\265\175
\257\053\102\321\165\142\343\112\053\002\307\120\113\340\151\342
\226\154\016\104\146\020\104\217\255\005\353\370\171\254\246\033
\350\067\064\235\123\311\141\252\242\122\257\112\160\026\206\302
\072\310\261\023\160\066\330\317\356\364\012\064\325\133\114\375
\007\234\242\272\331\001\162\134\363\115\301\335\016\261\034\015
\304\143\276\255\364\024\373\211\354\242\101\016\114\314\310\127
\100\320\156\003\252\315\014\216\211\231\231\154\360\074\060\257
\070\337\157\274\243\276\051\040\047\253\164\377\023\042\170\336
\227\122\125\036\203\265\124\040\003\356\256\300\117\126\336\067
\314\303\177\252\004\047\273\323\167\270\142\333\027\174\234\050
\042\023\163\154\317\046\365\212\051\347
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G2"
Issuer: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:93:1c:3a:d6:39:67:ea:67:23:bf:c3:af:9a:f4:4b
Subject: CN=DigiCert Assured ID Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7D:05:EB:B6:82:33:9F:8C:94:51:EE:09:4E:EB:FE:FA:79:53:A1:14:ED:B2:F4:49:49:45:2F:AB:7D:2F:C1:85
Fingerprint (SHA1): A1:4B:48:D9:43:EE:0A:0E:40:90:4F:3C:E0:A4:C0:91:93:51:5D:3F
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL

CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\241\113\110\331\103\356\012\016\100\220\117\074\340\244\300\221
\223\121\135\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\222\070\271\370\143\044\202\145\054\127\063\346\376\201\217\235
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\223\034\072\326\071\147\352\147\043\277\303\257\232
\364\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST
CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Assured ID Root G3"
#
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint (SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040
\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\106\060\202\001\315\240\003\002\001\002\002\020\013
\241\132\372\035\337\240\265\111\104\257\315\044\240\154\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\044\060\042
\006\003\125\004\003\023\033\104\151\147\151\103\145\162\164\040
\101\163\163\165\162\145\144\040\111\104\040\122\157\157\164\040
\107\063\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151
\103\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004
\013\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056
\143\157\155\061\044\060\042\006\003\125\004\003\023\033\104\151
\147\151\103\145\162\164\040\101\163\163\165\162\145\144\040\111
\104\040\122\157\157\164\040\107\063\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\031\347\274\254\104\145\355\315\270\077\130\373\215\261\127
\251\104\055\005\025\362\357\013\377\020\164\237\265\142\122\137
\146\176\037\345\334\033\105\171\013\314\306\123\012\235\215\135
\002\331\251\131\336\002\132\366\225\052\016\215\070\112\212\111
\306\274\306\003\070\007\137\125\332\176\011\156\342\177\136\320

\105\040\017\131\166\020\326\240\044\360\055\336\066\362\154\051
\071\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\035\006\003\125\035\016\004\026\004
\024\313\320\275\251\341\230\005\121\241\115\067\242\203\171\316
\215\035\052\344\204\060\012\006\010\052\206\110\316\075\004\003
\003\003\147\000\060\144\002\060\045\244\201\105\002\153\022\113
\165\164\117\310\043\343\160\362\165\162\336\174\211\360\317\221
\162\141\236\136\020\222\131\126\271\203\307\020\347\070\351\130
\046\066\175\325\344\064\206\071\002\060\174\066\123\360\060\345
\142\143\072\231\342\266\243\073\233\064\372\036\332\020\222\161
\136\221\023\247\335\244\156\222\314\062\326\365\041\146\307\057
\352\226\143\152\145\105\222\225\001\264
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Assured ID Root G3"
Issuer: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:0b:a1:5a:fa:1d:df:a0:b5:49:44:af:cd:24:a0:6c:ec
Subject: CN=DigiCert Assured ID Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
7E:37:CB:8B:4C:47:09:0C:AB:36:55:1B:A6:F4:5D:B8:40:68:0F:BA:16:6A:95:2D:B1:00:71:7F:43:05:3F:C2
Fingerprint
(SHA1): F5:17:A2:4F:9A:48:C6:C9:F8:A2:00:26:9F:DC:0F:48:2C:AB:30:89
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Assured ID Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\365\027\242\117\232\110\306\311\370\242\000\046\237\334\017\110
\054\253\060\211
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\177\145\061\014\201\337\215\272\076\231\342\134\255\156\373
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\044\060\042\006\003\125\004\003\023\033\104\151\147\151
\103\145\162\164\040\101\163\163\165\162\145\144\040\111\104\040

\122\157\157\164\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\013\241\132\372\035\337\240\265\111\104\257\315\044\240
\154\354
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G2"
#
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\003\216\060\202\002\166\240\003\002\001\002\002\020\003
\072\361\346\247\021\251\240\273\050\144\261\035\011\372\345\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\062\060\036\027\015\061\063\060\070\060\061\061\062\060\060\060
\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060\060
\132\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103
\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013
\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143
\157\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147
\151\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157
\164\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\273\067\315\064\334\173\153\311\262\150\220
\255\112\165\377\106\272\041\012\010\215\365\031\124\311\373\210
\333\363\256\362\072\211\221\074\172\346\253\006\032\153\317\254
\055\350\136\011\044\104\272\142\232\176\326\243\250\176\340\124
\165\040\005\254\120\267\234\143\032\154\060\334\332\037\031\261
\327\036\336\375\327\340\313\224\203\067\256\354\037\103\116\335
\173\054\322\275\056\245\057\344\251\270\255\072\324\231\244\266
\045\351\233\153\000\140\222\140\377\117\041\111\030\367\147\220
\253\141\006\234\217\362\272\351\264\351\222\062\153\265\363\127
\350\135\033\315\214\035\253\225\004\225\111\363\065\055\226\343
\111\155\335\167\343\373\111\113\264\254\125\007\251\217\225\263
\264\043\273\114\155\105\360\366\251\262\225\060\264\375\114\125
\214\047\112\127\024\174\202\235\315\163\222\323\026\112\006\014
\214\120\321\217\036\011\276\027\241\346\041\312\375\203\345\020
\274\203\245\012\304\147\050\366\163\024\024\075\106\166\303\207
\024\211\041\064\115\257\017\105\014\246\111\241\272\273\234\305
\261\063\203\051\205\002\003\001\000\001\243\102\060\100\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\035\006\003\125\035\016\004\026\004\024\116\042\124\040\030\225
\346\343\156\346\017\372\372\271\022\355\006\027\217\071\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001

\001\000\140\147\050\224\157\016\110\143\353\061\335\352\147\030
\325\211\175\074\305\213\112\177\351\276\333\053\027\337\260\137
\163\167\052\062\023\071\201\147\102\204\043\362\105\147\065\354
\210\277\370\217\260\141\014\064\244\256\040\114\204\306\333\370
\065\341\166\331\337\246\102\273\307\104\010\206\177\066\164\044
\132\332\154\015\024\131\065\275\362\111\335\266\037\311\263\015
\107\052\075\231\057\273\134\273\265\324\040\341\231\137\123\106
\025\333\150\233\360\363\060\325\076\061\342\215\204\236\343\212
\332\332\226\076\065\023\245\137\360\371\160\120\160\107\101\021
\127\031\116\300\217\256\006\304\225\023\027\057\033\045\237\165
\362\261\216\231\241\157\023\261\101\161\376\210\052\310\117\020
\040\125\327\363\024\105\345\340\104\364\352\207\225\062\223\016
\376\123\106\372\054\235\377\213\042\271\113\331\011\105\244\336
\244\270\232\130\335\033\175\122\237\216\131\103\210\201\244\236
\046\325\157\255\335\015\306\067\175\355\003\222\033\345\167\137
\166\356\074\215\304\135\126\133\242\331\146\156\263\065\067\345
\062\266
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G2"
Issuer: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert
Inc,C=US
Serial Number:03:3a:f1:e6:a7:11:a9:a0:bb:28:64:b1:1d:09:fa:e5
Subject: CN=DigiCert Global Root G2,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
CB:3C:CB:B7:60:31:E5:E0:13:8F:8D:D3:9A:23:F9:DE:47:FF:C3:5E:43:C1:14:4C:EA:27:D4:6A:5A:B1:CB:5F
Fingerprint (SHA1): DF:3C:24:F9:BF:D6:66:76:1B:26:80:73:FE:06:D1:CC:8D:4F:82:A4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\074\044\371\277\326\146\166\033\046\200\163\376\006\321\314
\215\117\202\244
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\344\246\212\310\124\254\122\102\106\012\375\162\110\033\052\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145

\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\003\072\361\346\247\021\251\240\273\050\144\261\035\011
\372\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Global Root G3"
#
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
 31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0
Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157

\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\077\060\202\001\305\240\003\002\001\002\002\020\005
\125\126\274\362\136\244\065\065\303\244\017\325\253\105\162\060
\012\006\010\052\206\110\316\075\004\003\003\060\141\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\104\151\147\151\103\145\162\164\040\111\156
\143\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\144\151\147\151\143\145\162\164\056\143\157\155\061\040\060\036
\006\003\125\004\003\023\027\104\151\147\151\103\145\162\164\040
\107\154\157\142\141\154\040\122\157\157\164\040\107\063\060\036
\027\015\061\063\060\070\060\061\061\062\060\060\060\060\132\027
\015\063\070\060\061\061\065\061\062\060\060\060\060\132\060\141
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061
\040\060\036\006\003\125\004\003\023\027\104\151\147\151\103\145
\162\164\040\107\154\157\142\141\154\040\122\157\157\164\040\107
\063\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\335\247\331\273\212\270\013
\373\013\177\041\322\360\276\276\163\363\063\135\032\274\064\352
\336\306\233\274\320\225\366\360\314\320\013\272\141\133\121\106
\176\236\055\237\356\216\143\014\027\354\007\160\365\317\204\056
\100\203\234\350\077\101\155\073\255\323\244\024\131\066\170\235
\003\103\356\020\023\154\162\336\256\210\247\241\153\265\103\316
\147\334\043\377\003\034\243\342\076\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\035
\006\003\125\035\016\004\026\004\024\263\333\110\244\371\241\305
\330\256\066\101\314\021\143\151\142\051\274\113\306\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061
\000\255\274\362\154\077\022\112\321\055\071\303\012\011\227\163
\364\210\066\214\210\047\273\346\210\215\120\205\247\143\371\236
\062\336\146\223\017\361\314\261\011\217\335\154\253\372\153\177
\240\002\060\071\146\133\302\144\215\270\236\120\334\250\325\111
\242\355\307\334\321\111\177\027\001\270\310\206\217\116\214\210
\053\250\232\251\212\305\321\000\275\370\124\342\232\345\133\174
\263\047\027
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Global Root G3"
Issuer: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert
Inc,C=US
Serial Number:05:55:56:bc:f2:5e:a4:35:35:c3:a4:0f:d5:ab:45:72
Subject: CN=DigiCert Global Root G3,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):
31:AD:66:48:F8:10:41:38:C7:38:F3:9E:A4:32:01:33:39:3E:3A:18:CC:02:29:6E:F9:7C:2A:C9:EF:67:31:D0
Fingerprint (SHA1): 7E:04:DE:89:6A:3E:66:6D:00:E6:87:D3:3F:FA:D9:3B:E8:3D:34:9E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Global Root G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\176\004\336\211\152\076\146\155\000\346\207\323\077\372\331\073
\350\075\064\236
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\365\135\244\120\245\373\050\176\036\017\015\314\226\127\126\312
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\040\060\036\006\003\125\004\003\023\027\104\151\147\151
\103\145\162\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\005\125\126\274\362\136\244\065\065\303\244\017\325\253
\105\162
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert Trusted Root G4"

#
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint
(SHA-256):
55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\005\233\033\127\236\216\041\062\342\071\007\275\247\167
\165\134
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\220\060\202\003\170\240\003\002\001\002\002\020\005
\233\033\127\236\216\041\062\342\071\007\275\247\167\165\134\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025\060
\023\006\003\125\004\012\023\014\104\151\147\151\103\145\162\164
\040\111\156\143\061\031\060\027\006\003\125\004\013\023\020\167
\167\167\056\144\151\147\151\143\145\162\164\056\143\157\155\061

\041\060\037\006\003\125\004\003\023\030\104\151\147\151\103\145
\162\164\040\124\162\165\163\164\145\144\040\122\157\157\164\040
\107\064\060\036\027\015\061\063\060\070\060\061\061\062\060\060
\060\060\132\027\015\063\070\060\061\061\065\061\062\060\060\060
\060\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\025\060\023\006\003\125\004\012\023\014\104\151\147\151
\103\145\162\164\040\111\156\143\061\031\060\027\006\003\125\004
\013\023\020\167\167\167\056\144\151\147\151\143\145\162\164\056
\143\157\155\061\041\060\037\006\003\125\004\003\023\030\104\151
\147\151\103\145\162\164\040\124\162\165\163\164\145\144\040\122
\157\157\164\040\107\064\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\277\346\220\163\150\336\273\344\135
\112\074\060\042\060\151\063\354\302\247\045\056\311\041\075\362
\212\330\131\302\341\051\247\075\130\253\166\232\315\256\173\033
\204\015\304\060\037\363\033\244\070\026\353\126\306\227\155\035
\253\262\171\362\312\021\322\344\137\326\005\074\122\017\122\037
\306\236\025\245\176\276\237\251\127\026\131\125\162\257\150\223
\160\302\262\272\165\231\152\163\062\224\321\020\104\020\056\337
\202\363\007\204\346\164\073\155\161\342\055\014\033\356\040\325
\311\040\035\143\051\055\316\354\136\116\310\223\370\041\141\233
\064\353\005\306\136\354\133\032\274\353\311\317\315\254\064\100
\137\261\172\146\356\167\310\110\250\146\127\127\237\124\130\216
\014\053\267\117\247\060\331\126\356\312\173\135\343\255\311\117
\136\345\065\347\061\313\332\223\136\334\216\217\200\332\266\221
\230\100\220\171\303\170\307\266\261\304\265\152\030\070\003\020
\215\330\324\067\244\056\005\175\210\365\202\076\020\221\160\253
\125\202\101\062\327\333\004\163\052\156\221\001\174\041\114\324
\274\256\033\003\165\135\170\146\331\072\061\104\232\063\100\277
\010\327\132\111\244\302\346\251\240\147\335\244\047\274\241\117
\071\265\021\130\027\367\044\134\106\217\144\367\301\151\210\166
\230\166\075\131\135\102\166\207\211\227\151\172\110\360\340\242
\022\033\146\232\164\312\336\113\036\347\016\143\256\346\324\357
\222\222\072\236\075\334\000\344\105\045\211\266\232\104\031\053
\176\300\224\264\322\141\155\353\063\331\305\337\113\004\000\314
\175\034\225\303\217\367\041\262\262\021\267\273\177\362\325\214
\160\054\101\140\252\261\143\030\104\225\032\166\142\176\366\200
\260\373\350\144\246\063\321\211\007\341\275\267\346\103\244\030
\270\246\167\001\341\017\224\014\041\035\262\124\051\045\211\154
\345\016\122\121\107\164\276\046\254\266\101\165\336\172\254\137
\215\077\311\274\323\101\021\022\133\345\020\120\353\061\305\312
\162\026\042\011\337\174\114\165\077\143\354\041\137\304\040\121
\153\157\261\253\206\213\117\302\326\105\137\235\040\374\241\036
\305\300\217\242\261\176\012\046\231\365\344\151\057\230\035\055
\365\331\251\262\035\345\033\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\035\006\003\125\035\016\004\026\004\024\354\327\343\202

\322\161\135\144\114\337\056\147\077\347\272\230\256\034\017\117
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\273\141\331\175\251\154\276\027\304\221\033\303
\241\242\000\215\343\144\150\017\126\317\167\256\160\371\375\232
\112\231\271\311\170\134\014\014\137\344\346\024\051\126\013\066
\111\135\104\143\340\255\234\226\030\146\033\043\015\075\171\351
\155\153\326\124\370\322\074\301\103\100\256\035\120\365\122\374
\220\073\273\230\231\151\153\307\301\247\250\150\244\047\334\235
\371\047\256\060\205\271\366\147\115\072\076\217\131\071\042\123
\104\353\310\135\003\312\355\120\172\175\142\041\012\200\310\163
\146\321\240\005\140\137\350\245\264\247\257\250\367\155\065\234
\174\132\212\326\242\070\231\363\170\213\364\115\322\040\013\336
\004\356\214\233\107\201\162\015\300\024\062\357\060\131\056\256
\340\161\362\126\344\152\227\157\222\120\155\226\215\150\172\232
\262\066\024\172\006\362\044\271\011\021\120\327\010\261\270\211
\172\204\043\141\102\051\345\243\315\242\040\101\327\321\234\144
\331\352\046\241\213\024\327\114\031\262\120\101\161\075\077\115
\160\043\206\014\112\334\201\322\314\062\224\204\015\010\011\227
\034\117\300\356\153\040\164\060\322\340\071\064\020\205\041\025
\001\010\350\125\062\336\161\111\331\050\027\120\115\346\276\115
\321\165\254\320\312\373\101\270\103\245\252\323\303\005\104\117
\054\066\233\342\372\342\105\270\043\123\154\006\157\147\125\177
\106\265\114\077\156\050\132\171\046\322\244\250\142\227\322\036
\342\355\112\213\274\033\375\107\112\015\337\147\146\176\262\133
\101\320\073\344\364\073\364\004\143\351\357\302\124\000\121\240
\212\052\311\316\170\314\325\352\207\004\030\263\316\257\111\210
\257\363\222\231\266\263\346\141\017\322\205\000\347\120\032\344
\033\225\235\031\241\271\234\261\233\261\000\036\357\320\017\117
\102\154\311\012\274\356\103\372\072\161\245\310\115\046\245\065
\375\211\135\274\205\142\035\062\322\240\053\124\355\232\127\301
\333\372\020\317\031\267\213\112\033\217\001\266\047\225\123\350
\266\211\155\133\274\150\324\043\350\213\121\242\126\371\360\246
\200\240\326\036\263\274\017\017\123\165\051\252\352\023\167\344
\336\214\201\041\255\007\020\107\021\255\207\075\007\321\165\274
\317\363\146\176
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert Trusted Root G4"
Issuer: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Serial Number:05:9b:1b:57:9e:8e:21:32:e2:39:07:bd:a7:77:75:5c
Subject: CN=DigiCert Trusted Root G4,OU=www.digicert.com,O=DigiCert Inc,C=US
Not Valid Before: Thu Aug 01 12:00:00 2013
Not Valid After : Fri Jan 15 12:00:00 2038
Fingerprint (SHA-256):

55:2F:7B:DC:F1:A7:AF:9E:6C:E6:72:01:7F:4F:12:AB:F7:72:40:C7:8E:76:1A:C2:03:D1:D9:D2:0A:C8:99:88
Fingerprint (SHA1): DD:FB:16:CD:49:31:C9:73:A2:03:7D:3F:C8:3A:4D:7D:77:5D:05:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert Trusted Root G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\335\373\026\315\111\061\311\163\242\003\175\077\310\072\115\175
\167\135\005\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\170\362\374\252\140\037\057\264\353\311\067\272\123\056\165\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\104\151\147\151\103\145
\162\164\040\111\156\143\061\031\060\027\006\003\125\004\013\023
\020\167\167\167\056\144\151\147\151\143\145\162\164\056\143\157
\155\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\124\162\165\163\164\145\144\040\122\157\157
\164\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\233\033\127\236\216\041\062\342\071\007\275\247\167
\165\134
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "COMODO RSA Certification Authority"
#
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater
Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater
Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\114\252\371\312\333\143\157\340\037\367\116\330\133\003
\206\235
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\330\060\202\003\300\240\003\002\001\002\002\020\114
\252\371\312\333\143\157\340\037\367\116\330\133\003\206\235\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\205\061\013\060\011\006\003\125\004\006\023\002\107\102\061\033
\060\031\006\003\125\004\010\023\022\107\162\145\141\164\145\162
\040\115\141\156\143\150\145\163\164\145\162\061\020\060\016\006
\003\125\004\007\023\007\123\141\154\146\157\162\144\061\032\060
\030\006\003\125\004\012\023\021\103\117\115\117\104\117\040\103
\101\040\114\151\155\151\164\145\144\061\053\060\051\006\003\125
\004\003\023\042\103\117\115\117\104\117\040\122\123\101\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\061\061\071
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062

\063\065\071\065\071\132\060\201\205\061\013\060\011\006\003\125
\004\006\023\002\107\102\061\033\060\031\006\003\125\004\010\023
\022\107\162\145\141\164\145\162\040\115\141\156\143\150\145\163
\164\145\162\061\020\060\016\006\003\125\004\007\023\007\123\141
\154\146\157\162\144\061\032\060\030\006\003\125\004\012\023\021
\103\117\115\117\104\117\040\103\101\040\114\151\155\151\164\145
\144\061\053\060\051\006\003\125\004\003\023\042\103\117\115\117
\104\117\040\122\123\101\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\221
\350\124\222\322\012\126\261\254\015\044\335\305\317\104\147\164
\231\053\067\243\175\043\160\000\161\274\123\337\304\372\052\022
\217\113\177\020\126\275\237\160\162\267\141\177\311\113\017\027
\247\075\343\260\004\141\356\377\021\227\307\364\206\076\012\372
\076\134\371\223\346\064\172\331\024\153\347\234\263\205\240\202
\172\166\257\161\220\327\354\375\015\372\234\154\372\337\260\202
\364\024\176\371\276\304\246\057\117\177\231\177\265\374\147\103
\162\275\014\000\326\211\353\153\054\323\355\217\230\034\024\253
\176\345\343\156\374\330\250\344\222\044\332\103\153\142\270\125
\375\352\301\274\154\266\213\363\016\215\232\344\233\154\151\231
\370\170\110\060\105\325\255\341\015\074\105\140\374\062\226\121
\047\274\147\303\312\056\266\153\352\106\307\307\040\240\261\037
\145\336\110\010\272\244\116\251\362\203\106\067\204\353\350\314
\201\110\103\147\116\162\052\233\134\275\114\033\050\212\134\042
\173\264\253\230\331\356\340\121\203\303\011\106\116\155\076\231
\372\225\027\332\174\063\127\101\074\215\121\355\013\266\134\257
\054\143\032\337\127\310\077\274\351\135\304\233\257\105\231\342
\243\132\044\264\272\251\126\075\317\157\252\377\111\130\276\360
\250\377\364\270\255\351\067\373\272\270\364\013\072\371\350\103
\102\036\211\330\204\313\023\361\331\273\341\211\140\270\214\050
\126\254\024\035\234\012\347\161\353\317\016\335\075\251\226\241
\110\275\074\367\257\265\015\042\114\300\021\201\354\126\073\366
\323\242\342\133\267\262\004\042\122\225\200\223\151\350\216\114
\145\361\221\003\055\160\164\002\352\213\147\025\051\151\122\002
\273\327\337\120\152\125\106\277\240\243\050\141\177\160\320\303
\242\252\054\041\252\107\316\050\234\006\105\166\277\202\030\047
\264\325\256\264\313\120\346\153\364\114\206\161\060\351\246\337
\026\206\340\330\377\100\335\373\320\102\210\177\243\063\072\056
\134\036\101\021\201\143\316\030\161\153\053\354\246\212\267\061
\134\072\152\107\340\303\171\131\326\040\032\257\362\152\230\252
\162\274\127\112\322\113\235\273\020\374\260\114\101\345\355\035
\075\136\050\235\234\314\277\263\121\332\247\107\345\204\123\002
\003\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004
\026\004\024\273\257\176\002\075\372\246\361\074\204\216\255\356
\070\230\354\331\062\062\324\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206

\367\015\001\001\014\005\000\003\202\002\001\000\012\361\325\106
\204\267\256\121\273\154\262\115\101\024\000\223\114\234\313\345
\300\124\317\240\045\216\002\371\375\260\242\015\365\040\230\074
\023\055\254\126\242\260\326\176\021\222\351\056\272\236\056\232
\162\261\275\031\104\154\141\065\242\232\264\026\022\151\132\214
\341\327\076\244\032\350\057\003\364\256\141\035\020\033\052\244
\213\172\305\376\005\246\341\300\326\310\376\236\256\217\053\272
\075\231\370\330\163\011\130\106\156\246\234\364\327\047\323\225
\332\067\203\162\034\323\163\340\242\107\231\003\070\135\325\111
\171\000\051\034\307\354\233\040\034\007\044\151\127\170\262\071
\374\072\204\240\265\234\174\215\277\056\223\142\047\267\071\332
\027\030\256\275\074\011\150\377\204\233\074\325\326\013\003\343
\127\236\024\367\321\353\117\310\275\207\043\267\266\111\103\171
\205\134\272\353\222\013\241\306\350\150\250\114\026\261\032\231
\012\350\123\054\222\273\241\011\030\165\014\145\250\173\313\043
\267\032\302\050\205\303\033\377\320\053\142\357\244\173\011\221
\230\147\214\024\001\315\150\006\152\143\041\165\003\200\210\212
\156\201\306\205\362\251\244\055\347\364\245\044\020\107\203\312
\315\364\215\171\130\261\006\233\347\032\052\331\235\001\327\224
\175\355\003\112\312\360\333\350\251\001\076\365\126\231\311\036
\216\111\075\273\345\011\271\340\117\111\222\075\026\202\100\314
\314\131\306\346\072\355\022\056\151\074\154\225\261\375\252\035
\173\177\206\276\036\016\062\106\373\373\023\217\165\177\114\213
\113\106\143\376\000\064\100\160\301\303\271\241\335\246\160\342
\004\263\101\274\351\200\221\352\144\234\172\341\042\003\251\234
\156\157\016\145\117\154\207\207\136\363\156\240\371\165\245\233
\100\350\123\262\047\235\112\271\300\167\041\215\377\207\362\336
\274\214\357\027\337\267\111\013\321\362\156\060\013\032\016\116
\166\355\021\374\365\351\126\262\175\277\307\155\012\223\214\245
\320\300\266\035\276\072\116\224\242\327\156\154\013\302\212\174
\372\040\363\304\344\345\315\015\250\313\221\222\261\174\205\354
\265\024\151\146\016\202\347\315\316\310\055\246\121\177\041\301
\065\123\205\006\112\135\237\255\273\033\137\164
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "COMODO RSA Certification Authority"
Issuer: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Serial Number:4c:aa:f9:ca:db:63:6f:e0:1f:f7:4e:d8:5b:03:86:9d
Subject: CN=COMODO RSA Certification Authority,O=COMODO CA Limited,L=Salford,ST=Greater Manchester,C=GB
Not Valid Before: Tue Jan 19 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):

52:F0:E1:C4:E5:8E:C6:29:29:1B:60:31:7F:07:46:71:B8:5D:7E:A8:0D:5B:07:27:34:63:53:4B:32:B4:02:34
#
Fingerprint (SHA1): AF:E5:D2:44:A8:D1:19:42:30:FF:47:9F:E2:F8:97:BB:CD:7A:8C:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "COMODO RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\257\345\322\104\250\321\031\102\060\377\107\237\342\370\227\273
\315\172\214\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\061\260\161\100\066\314\024\066\221\255\304\076\375\354\030
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\107\102
\061\033\060\031\006\003\125\004\010\023\022\107\162\145\141\164
\145\162\040\115\141\156\143\150\145\163\164\145\162\061\020\060
\016\006\003\125\004\007\023\007\123\141\154\146\157\162\144\061
\032\060\030\006\003\125\004\012\023\021\103\117\115\117\104\117
\040\103\101\040\114\151\155\151\164\145\144\061\053\060\051\006
\003\125\004\003\023\042\103\117\115\117\104\117\040\122\123\101
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\114\252\371\312\333\143\157\340\037\367\116\330\133\003
\206\235
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust RSA Certification Authority"
#
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2

```
#
 Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\336\060\202\003\306\240\003\002\001\002\002\020\001
\375\155\060\374\243\312\121\250\033\274\144\016\065\003\055\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\210\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023
\060\021\006\003\125\004\010\023\012\116\145\167\040\112\145\162
\163\145\171\061\024\060\022\006\003\125\004\007\023\013\112\145
\162\163\145\171\040\103\151\164\171\061\036\060\034\006\003\125
\004\012\023\025\124\150\145\040\125\123\105\122\124\122\125\123
\124\040\116\145\164\167\157\162\153\061\056\060\054\006\003\125
\004\003\023\045\125\123\105\122\124\162\165\163\164\040\122\123
\101\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
```

\101\165\164\150\157\162\151\164\171\060\036\027\015\061\060\060
\062\060\061\060\060\060\060\060\060\132\027\015\063\070\060\061
\061\070\062\063\065\071\065\071\132\060\201\210\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125
\004\010\023\012\116\145\167\040\112\145\162\163\145\171\061\024
\060\022\006\003\125\004\007\023\013\112\145\162\163\145\171\040
\103\151\164\171\061\036\060\034\006\003\125\004\012\023\025\124
\150\145\040\125\123\105\122\124\122\125\123\124\040\116\145\164
\167\157\162\153\061\056\060\054\006\003\125\004\003\023\045\125
\123\105\122\124\162\165\163\164\040\122\123\101\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\200\022\145\027\066\016\303\333\010\263\320
\254\127\015\166\355\315\047\323\114\255\120\203\141\342\252\040
\115\011\055\144\011\334\316\211\237\314\075\251\354\366\317\301
\334\361\323\261\326\173\067\050\021\053\107\332\071\306\274\072
\031\264\137\246\275\175\235\243\143\102\266\166\362\251\073\053
\221\370\342\157\320\354\026\040\220\011\076\342\350\164\311\030
\264\221\324\142\144\333\177\243\006\361\210\030\152\220\042\074
\274\376\023\360\207\024\173\366\344\037\216\324\344\121\306\021
\147\106\010\121\313\206\024\124\077\274\063\376\176\154\234\377
\026\235\030\275\121\216\065\246\247\146\310\162\147\333\041\146
\261\324\233\170\003\300\120\072\350\314\360\334\274\236\114\376
\257\005\226\065\037\127\132\267\377\316\371\075\267\054\266\366
\124\335\310\347\022\072\115\256\114\212\267\134\232\264\267\040
\075\312\177\042\064\256\176\073\150\146\001\104\347\001\116\106
\123\233\063\140\367\224\276\123\067\220\163\103\363\062\303\123
\357\333\252\376\164\116\151\307\153\214\140\223\336\304\307\014
\337\341\062\256\314\223\073\121\170\225\147\213\356\075\126\376
\014\320\151\017\033\017\363\045\046\153\063\155\367\156\107\372
\163\103\345\176\016\245\146\261\051\174\062\204\143\125\211\304
\015\301\223\124\060\031\023\254\323\175\067\247\353\135\072\154
\065\134\333\101\327\022\332\251\111\013\337\330\200\212\011\223
\142\216\265\146\317\045\210\315\204\270\261\077\244\071\017\331
\002\236\353\022\114\225\174\363\153\005\251\136\026\203\314\270
\147\342\350\023\235\314\133\202\323\114\263\355\133\377\336\345
\163\254\043\073\055\000\277\065\125\164\011\111\330\111\130\032
\177\222\066\346\121\222\016\363\046\175\034\115\027\274\311\354
\103\046\320\277\101\137\100\251\104\104\364\231\347\127\207\236
\120\037\127\124\250\076\375\164\143\057\261\120\145\011\346\130
\102\056\103\032\114\264\360\045\107\131\372\004\036\223\324\046
\106\112\120\201\262\336\276\170\267\374\147\025\341\311\127\204
\036\017\143\326\351\142\272\326\137\125\056\352\134\306\050\010
\004\045\071\270\016\053\251\362\114\227\034\007\077\015\122\365
\355\357\057\202\017\002\003\001\000\001\243\102\060\100\060\035
\006\003\125\035\016\004\026\004\024\123\171\277\132\252\053\112
\317\124\200\341\330\233\300\235\362\262\003\146\313\060\016\006

\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015
\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202\002
\001\000\134\324\174\015\317\367\001\175\101\231\145\014\163\305
\122\237\313\370\317\231\006\177\033\332\103\025\237\236\002\125
\127\226\024\361\122\074\047\207\224\050\355\037\072\001\067\242
\166\374\123\120\300\204\233\306\153\116\272\214\041\117\242\216
\125\142\221\363\151\025\330\274\210\343\304\252\013\375\357\250
\351\113\125\052\006\040\155\125\170\051\031\356\137\060\134\113
\044\021\125\377\044\232\156\136\052\053\356\013\115\237\177\367
\001\070\224\024\225\103\007\011\373\140\251\356\034\253\022\214
\240\232\136\247\230\152\131\155\213\077\010\373\310\321\105\257
\030\025\144\220\022\017\163\050\056\305\342\044\116\374\130\354
\360\364\105\376\042\263\353\057\216\322\331\105\141\005\301\227
\157\250\166\162\217\213\214\066\257\277\015\005\316\161\215\346
\246\157\037\154\246\161\142\305\330\320\203\162\014\361\147\021
\211\014\234\023\114\162\064\337\274\325\161\337\252\161\335\341
\271\154\214\074\022\135\145\332\275\127\022\266\103\153\377\345
\336\115\146\021\121\317\231\256\354\027\266\350\161\221\214\336
\111\376\335\065\161\242\025\047\224\034\317\141\343\046\273\157
\243\147\045\041\135\346\335\035\013\056\150\033\073\202\257\354
\203\147\205\324\230\121\164\261\271\231\200\211\377\177\170\031
\134\171\112\140\056\222\100\256\114\067\052\054\311\307\142\310
\016\135\367\066\133\312\340\045\045\001\264\335\032\007\234\167
\000\077\320\334\325\354\075\324\372\273\077\314\205\326\157\177
\251\055\337\271\002\367\365\227\232\265\065\332\303\147\260\207
\112\251\050\236\043\216\377\134\047\153\341\260\117\363\007\356
\000\056\324\131\207\313\122\101\225\352\364\107\327\356\144\101
\125\174\215\131\002\225\335\142\235\302\271\356\132\050\164\204
\245\233\267\220\307\014\007\337\365\211\066\164\062\326\050\301
\260\260\013\340\234\114\303\034\326\374\343\151\265\107\106\201
\057\242\202\253\323\143\104\160\304\215\377\055\063\272\255\217
\173\265\160\210\256\076\031\317\100\050\330\374\310\220\273\135
\231\042\365\122\346\130\305\037\210\061\103\356\210\035\327\306
\216\074\103\152\035\247\030\336\175\075\026\361\142\371\312\220
\250\375
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust RSA Certification
 Authority"
Issuer: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New
Jersey,C=US
Serial Number:01:fd:6d:30:fc:a3:ca:51:a8:1b:bc:64:0e:35:03:2d
Subject: CN=USERTrust RSA Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New

Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010
Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
E7:93:C9:B0:2F:D8:AA:13:E2:1C:31:22:8A:CC:B0:81:19:64:3B:74:9C:89:89:64:B1:74:6D:46:C3:D4:CB:D2
Fingerprint (SHA1): 2B:8F:1B:57:33:0D:BB:A2:D0:7A:6C:51:F7:0E:E9:0D:DA:B9:AD:8E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust RSA Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\053\217\033\127\063\015\273\242\320\172\154\121\367\016\351\015
\332\271\255\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\376\151\321\221\267\031\063\243\162\250\017\341\125\345\265
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\122\123\101\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\001\375\155\060\374\243\312\121\250\033\274\144\016\065
\003\055
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "USERTrust ECC Certification Authority"
#
Issuer: CN=USERTrust
 ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New
Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010

Not Valid After : Mon Jan 18 23:59:59 2038
Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\217\060\202\002\025\240\003\002\001\002\002\020\134
\213\231\305\132\224\305\322\161\126\336\315\211\200\314\046\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\210\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\023\060\021\006
\003\125\004\010\023\012\116\145\167\040\112\145\162\163\145\171
\061\024\060\022\006\003\125\004\007\023\013\112\145\162\163\145
\171\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116

\145\164\167\157\162\153\061\056\060\054\006\003\125\004\003\023
\045\125\123\105\122\124\162\165\163\164\040\105\103\103\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\060\036\027\015\061\060\060\062\060\061
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\210\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\023\060\021\006\003\125\004\010\023
\012\116\145\167\040\112\145\162\163\145\171\061\024\060\022\006
\003\125\004\007\023\013\112\145\162\163\145\171\040\103\151\164
\171\061\036\060\034\006\003\125\004\012\023\025\124\150\145\040
\125\123\105\122\124\122\125\123\124\040\116\145\164\167\157\162
\153\061\056\060\054\006\003\125\004\003\023\045\125\123\105\122
\124\162\165\163\164\040\105\103\103\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\032\254\124\132\251\371\150
\043\347\172\325\044\157\123\306\132\330\113\253\306\325\266\321
\346\163\161\256\335\234\326\014\141\375\333\240\211\003\270\005
\024\354\127\316\356\135\077\342\041\263\316\367\324\212\171\340
\243\203\176\055\227\320\141\304\361\231\334\045\221\143\253\177
\060\243\264\160\342\307\241\063\234\363\277\056\134\123\261\137
\263\175\062\177\212\064\343\171\171\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\072\341\011\206\324\317\031\302
\226\166\164\111\166\334\340\065\306\143\143\232\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\066\147\241\026\010\334\344\227\000\101\035\116\276\341\143\001
\317\073\252\102\021\144\240\235\224\071\002\021\171\134\173\035
\372\144\271\356\026\102\263\277\212\302\011\304\354\344\261\115
\002\061\000\351\052\141\107\214\122\112\113\116\030\160\366\326
\104\326\156\365\203\272\155\130\275\044\331\126\110\352\357\304
\242\106\201\210\152\072\106\321\251\233\115\311\141\332\321\135
\127\152\030
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "USERTrust ECC Certification
Authority"
Issuer: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Serial Number:5c:8b:99:c5:5a:94:c5:d2:71:56:de:cd:89:80:cc:26
Subject: CN=USERTrust ECC Certification Authority,O=The USERTRUST Network,L=Jersey City,ST=New Jersey,C=US
Not Valid Before: Mon Feb 01 00:00:00 2010

```
# Not Valid After : Mon Jan 18 23:59:59 2038
# Fingerprint (SHA-256):
4F:F4:60:D5:4B:9C:86:DA:BF:BC:FC:57:12:E0:40:0D:2B:ED:3F:BC:4D:4F:BD:AA:86:E0:6A:DC:D2:A9:AD:7A
# Fingerprint (SHA1): D1:CB:CA:5D:B2:D5:2A:7F:69:3B:67:4D:E5:F0:5A:1D:0C:95:7D:F0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "USERTrust ECC Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\313\312\135\262\325\052\177\151\073\147\115\345\360\132\035
\014\225\175\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\372\150\274\331\265\177\255\375\311\035\006\203\050\314\044\301
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\116\145\167\040\112
\145\162\163\145\171\061\024\060\022\006\003\125\004\007\023\013
\112\145\162\163\145\171\040\103\151\164\171\061\036\060\034\006
\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124\122
\125\123\124\040\116\145\164\167\157\162\153\061\056\060\054\006
\003\125\004\003\023\045\125\123\105\122\124\162\165\163\164\040
\105\103\103\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\213\231\305\132\224\305\322\161\126\336\315\211\200
\314\046
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "GlobalSign ECC Root CA - R5"
#
# Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign
 ECC Root CA - R5
# Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
# Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
# Not Valid Before: Tue Nov 13 00:00:00 2012
# Not Valid After : Tue Jan 19 03:14:07 2038
# Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
```

Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\036\060\202\001\244\240\003\002\001\002\002\021\140
\131\111\340\046\056\273\125\371\012\167\212\161\371\112\330\154
\060\012\006\010\052\206\110\316\075\004\003\003\060\120\061\044
\060\042\006\003\125\004\013\023\033\107\154\157\142\141\154\123
\151\147\156\040\105\103\103\040\122\157\157\164\040\103\101\040
\055\040\122\065\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156\060\036
\027\015\061\062\061\061\061\063\060\060\060\060\060\060\132\027
\015\063\070\060\061\061\071\060\063\061\064\060\067\132\060\120
\061\044\060\042\006\003\125\004\013\023\033\107\154\157\142\141
\154\123\151\147\156\040\105\103\103\040\122\157\157\164\040\103
\101\040\055\040\122\065\061\023\060\021\006\003\125\004\012\023
\012\107\154\157\142\141\154\123\151\147\156\061\023\060\021\006
\003\125\004\003\023\012\107\154\157\142\141\154\123\151\147\156
\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053
\201\004\000\042\003\142\000\004\107\105\016\226\373\175\135\277
\351\071\321\041\370\237\013\266\325\173\036\222\072\110\131\034

\360\142\061\055\300\172\050\376\032\247\134\263\266\314\227\347
\105\324\130\372\321\167\155\103\242\300\207\145\064\012\037\172
\335\353\074\063\241\305\235\115\244\157\101\225\070\177\311\036
\204\353\321\236\111\222\207\224\207\014\072\205\112\146\237\235
\131\223\115\227\141\006\206\112\243\102\060\100\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006
\003\125\035\016\004\026\004\024\075\346\051\110\233\352\007\312
\041\104\112\046\336\156\336\322\203\320\237\131\060\012\006\010
\052\206\110\316\075\004\003\003\003\150\000\060\145\002\061\000
\345\151\022\311\156\333\306\061\272\011\101\341\227\370\373\375
\232\342\175\022\311\355\174\144\323\313\005\045\213\126\331\240
\347\136\135\116\013\203\234\133\166\051\240\011\046\041\152\142
\002\060\161\322\265\217\134\352\073\341\170\011\205\250\165\222
\073\310\134\375\110\357\015\164\042\250\010\342\156\305\111\316
\307\014\274\247\141\151\361\367\073\341\052\313\371\053\363\146
\220\067
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R5"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Serial Number:60:59:49:e0:26:2e:bb:55:f9:0a:77:8a:71:f9:4a:d8:6c
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R5
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
17:9F:BC:14:8A:3D:D0:0F:D2:4E:A1:34:58:CC:43:BF:A7:F5:9C:81:82:D7:83:A5:13:F6:EB:EC:10:0C:89:24
Fingerprint (SHA1): 1F:24:C6:30:CD:A4:18:EF:20:69:FF:AD:4F:DD:5F:46:3A:1B:69:AA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\044\306\060\315\244\030\357\040\151\377\255\117\335\137\106
\072\033\151\252
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\237\255\073\034\002\036\212\272\027\164\070\201\014\242\274\010
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164

\040\103\101\040\055\040\122\065\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\140\131\111\340\046\056\273\125\371\012\167\212\161\371
\112\330\154
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Staat der Nederlanden Root CA - G3"
#
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
#
 Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040

\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\004\000
\230\242\071\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\053\060\051\006\003\125\004\003\014\042\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\122\157\157\164\040\103\101\040\055\040\107\063\060\036
\027\015\061\063\061\061\061\064\061\061\062\070\064\062\132\027
\015\062\070\061\061\061\063\062\063\060\060\060\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\036\060
\034\006\003\125\004\012\014\025\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\061\053\060
\051\006\003\125\004\003\014\042\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\040\122\157
\157\164\040\103\101\040\055\040\107\063\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\276\062\242\124\017
\160\373\054\134\131\353\154\304\244\121\350\205\052\263\314\112
\064\362\260\137\363\016\307\034\075\123\036\210\010\150\330\157
\075\255\302\236\314\202\147\007\047\207\150\161\072\237\165\226
\042\106\005\260\355\255\307\133\236\052\336\234\374\072\306\225
\247\365\027\147\030\347\057\111\010\014\134\317\346\314\064\355
\170\373\120\261\334\153\062\360\242\376\266\074\344\354\132\227
\307\077\036\160\010\060\240\334\305\263\155\157\320\202\162\021
\253\322\201\150\131\202\027\267\170\222\140\372\314\336\077\204
\353\215\070\063\220\012\162\043\372\065\314\046\161\061\321\162
\050\222\331\133\043\155\146\265\155\007\102\353\246\063\316\222
\333\300\366\154\143\170\315\312\116\075\265\345\122\233\361\276
\073\346\124\140\260\146\036\011\253\007\376\124\211\021\102\321
\367\044\272\140\170\032\230\367\311\021\375\026\301\065\032\124
\165\357\103\323\345\256\116\316\347\173\303\306\116\141\121\113
\253\232\105\113\241\037\101\275\110\123\025\161\144\013\206\263
\345\056\276\316\244\033\301\051\204\242\265\313\010\043\166\103
\042\044\037\027\004\324\156\234\306\374\177\053\146\032\354\212
\345\326\317\115\365\143\011\267\025\071\326\173\254\353\343\174
\351\116\374\165\102\310\355\130\225\014\006\102\242\234\367\344
\160\263\337\162\157\132\067\100\211\330\205\244\327\361\013\336
\103\031\324\112\130\054\214\212\071\236\277\204\207\361\026\073
\066\014\351\323\264\312\154\031\101\122\011\241\035\260\152\277
\202\357\160\121\041\062\334\005\166\214\313\367\144\344\003\120

\257\214\221\147\253\305\362\356\130\330\336\276\367\347\061\317
\154\311\073\161\301\325\210\265\145\274\300\350\027\027\007\022
\265\134\322\253\040\223\264\346\202\203\160\066\305\315\243\215
\255\213\354\243\301\103\207\346\103\342\064\276\225\213\065\355
\007\071\332\250\035\172\237\066\236\022\260\014\145\022\220\025
\140\331\046\100\104\343\126\140\245\020\324\152\074\375\101\334
\016\132\107\266\357\227\141\165\117\331\376\307\262\035\324\355
\135\111\263\251\152\313\146\204\023\325\134\240\334\337\156\167
\006\321\161\165\310\127\157\257\017\167\133\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024
\124\255\372\307\222\127\256\312\065\234\056\022\373\344\272\135
\040\334\224\127\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\060\231\235\005\062\310\136\016
\073\230\001\072\212\244\347\007\367\172\370\347\232\337\120\103
\123\227\052\075\312\074\107\230\056\341\025\173\361\222\363\141
\332\220\045\026\145\300\237\124\135\016\003\073\133\167\002\234
\204\266\015\230\137\064\335\073\143\302\303\050\201\302\234\051
\056\051\342\310\303\001\362\063\352\052\252\314\011\010\367\145
\147\306\315\337\323\266\053\247\275\314\321\016\160\137\270\043
\321\313\221\116\012\364\310\172\345\331\143\066\301\324\337\374
\042\227\367\140\135\352\051\057\130\262\275\130\275\215\226\117
\020\165\277\110\173\075\121\207\241\074\164\042\302\374\007\177
\200\334\304\254\376\152\301\160\060\260\351\216\151\342\054\151
\201\224\011\272\335\376\115\300\203\214\224\130\300\106\040\257
\234\037\002\370\065\125\111\057\106\324\300\360\240\226\002\017
\063\305\161\363\236\043\175\224\267\375\072\323\011\203\006\041
\375\140\075\256\062\300\322\356\215\246\360\347\264\202\174\012
\314\160\311\171\200\370\376\114\367\065\204\031\212\061\373\012
\331\327\177\233\360\242\232\153\303\005\112\355\101\140\024\060
\321\252\021\102\156\323\043\002\004\013\306\145\335\335\122\167
\332\201\153\262\250\372\001\070\271\226\352\052\154\147\227\211
\224\236\274\341\124\325\344\152\170\357\112\275\053\232\075\100
\176\306\300\165\322\156\373\150\060\354\354\213\235\371\111\065
\232\032\054\331\263\225\071\325\036\222\367\246\271\145\057\345
\075\155\072\110\114\010\334\344\050\022\050\276\175\065\134\352
\340\026\176\023\033\152\327\076\327\236\374\055\165\262\301\024
\325\043\003\333\133\157\013\076\170\057\015\336\063\215\026\267
\110\347\203\232\201\017\173\301\103\115\125\004\027\070\112\121
\325\131\242\211\164\323\237\276\036\113\327\306\155\267\210\044
\157\140\221\244\202\205\133\126\101\274\320\104\253\152\023\276
\321\054\130\267\022\063\130\262\067\143\334\023\365\224\035\077
\100\121\365\117\365\072\355\310\305\353\302\036\035\026\225\172
\307\176\102\161\223\156\113\025\267\060\337\252\355\127\205\110
\254\035\152\335\071\151\344\341\171\170\276\316\005\277\241\014
\367\200\173\041\147\047\060\131
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Staat der Nederlanden Root CA - G3"
Issuer: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Serial Number: 10003001 (0x98a239)
Subject: CN=Staat der Nederlanden Root CA - G3,O=Staat der Nederlanden,C=NL
Not Valid Before: Thu Nov 14 11:28:42 2013
Not Valid After : Mon Nov 13 23:00:00 2028
Fingerprint (SHA-256):
3C:4F:B0:B9:5A:B8:B3:00:32:F4:32:B8:6F:53:5F:E1:72:C1:85:D0:FD:39:86:58:37:CF:36:18:7F:A6:F4:28
Fingerprint (SHA1): D8:EB:6B:41:51:92:59:E0:F3:E7:85:00:C0:3D:B6:88:97:C9:EE:FC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\330\353\153\101\121\222\131\340\363\347\205\000\300\075\266\210
\227\311\356\374
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\013\106\147\007\333\020\057\031\214\065\120\140\321\013\364\067
END
CKA_ISSUER
MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\242\071
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Commercial Root CA 1"
#
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02

Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid
Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\140\060\202\003\110\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\310\104\265\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\112
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\047\060\045\006\003\125\004\003\023\036\111\144\145\156
\124\162\165\163\164\040\103\157\155\155\145\162\143\151\141\154
\040\122\157\157\164\040\103\101\040\061\060\036\027\015\061\064
\060\061\061\066\061\070\061\062\062\063\132\027\015\063\064\060
\061\061\066\061\070\061\062\062\063\132\060\112\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\111\144\145\156\124\162\165\163\164\061\047\060
\045\006\003\125\004\003\023\036\111\144\145\156\124\162\165\163
\164\040\103\157\155\155\145\162\143\151\141\154\040\122\157\157

\164\040\103\101\040\061\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\247\120\031\336\077\231\075\324\063
\106\361\157\121\141\202\262\251\117\217\147\211\135\204\331\123
\335\014\050\331\327\360\377\256\225\103\162\231\371\265\135\174
\212\301\102\341\061\120\164\321\201\015\174\315\233\041\253\103
\342\254\255\136\206\156\363\011\212\037\132\062\275\242\353\224
\371\350\134\012\354\377\230\322\257\161\263\264\123\237\116\207
\357\222\274\275\354\117\062\060\210\113\027\136\127\304\123\302
\366\002\227\215\331\142\053\277\044\037\142\215\337\303\270\051
\113\111\170\074\223\140\210\042\374\231\332\066\310\302\242\324
\054\124\000\147\065\156\163\277\002\130\360\244\335\345\260\242
\046\172\312\340\066\245\031\026\365\375\267\357\256\077\100\365
\155\132\004\375\316\064\312\044\334\164\043\033\135\063\023\022
\135\304\001\045\366\060\335\002\135\237\340\325\107\275\264\353
\033\241\273\111\111\330\237\133\002\363\212\344\044\220\344\142
\117\117\301\257\213\016\164\027\250\321\162\210\152\172\001\111
\314\264\106\171\306\027\261\332\230\036\007\131\372\165\041\205
\145\335\220\126\316\373\253\245\140\235\304\235\371\122\260\213
\275\207\371\217\053\043\012\043\166\073\367\063\341\311\000\363
\151\371\113\242\340\116\274\176\223\071\204\007\367\104\160\176
\376\007\132\345\261\254\321\030\314\362\065\345\111\111\010\312
\126\311\075\373\017\030\175\213\073\301\023\302\115\217\311\117
\016\067\351\037\241\016\152\337\142\056\313\065\006\121\171\054
\310\045\070\364\372\113\247\211\134\234\322\343\015\071\206\112
\164\174\325\131\207\302\077\116\014\134\122\364\075\367\122\202
\361\352\243\254\375\111\064\032\050\363\101\210\072\023\356\350
\336\377\231\035\137\272\313\350\036\362\271\120\140\300\061\323
\163\345\357\276\240\355\063\013\164\276\040\040\304\147\154\360
\010\003\172\125\200\177\106\116\226\247\364\036\076\341\366\330
\011\341\063\144\053\143\327\062\136\237\371\300\173\017\170\157
\227\274\223\232\371\234\022\220\170\172\200\207\025\327\162\164
\234\125\164\170\261\272\341\156\160\004\272\117\240\272\150\303
\173\377\061\360\163\075\075\224\052\261\013\101\016\240\376\115
\210\145\153\171\063\264\327\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\355\104\031\300
\323\360\006\213\356\244\173\276\102\347\046\124\310\216\066\166
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\015\256\220\062\366\246\113\174\104\166\031\141
\036\047\050\315\136\124\357\045\274\343\010\220\371\051\327\256
\150\010\341\224\000\130\357\056\056\176\123\122\214\266\134\007
\352\210\272\231\213\120\224\327\202\200\337\141\011\000\223\255
\015\024\346\316\301\362\067\224\170\260\137\234\263\242\163\270
\217\005\223\070\315\215\076\260\270\373\300\317\261\362\354\055
\055\033\314\354\252\232\263\252\140\202\033\055\073\303\204\075
\127\212\226\036\234\165\270\323\060\315\140\010\203\220\323\216

\124\361\115\146\300\135\164\003\100\243\356\205\176\302\037\167
\234\006\350\301\247\030\135\122\225\355\311\335\045\236\155\372
\251\355\243\072\064\320\131\173\332\355\120\363\065\277\355\353
\024\115\061\307\140\364\332\361\207\234\342\110\342\306\305\067
\373\006\020\372\165\131\146\061\107\051\332\166\232\034\351\202
\256\357\232\271\121\367\210\043\232\151\225\142\074\345\125\200
\066\327\124\002\377\361\271\135\316\324\043\157\330\105\204\112
\133\145\357\211\014\335\024\247\040\313\030\245\045\264\015\371
\001\360\242\322\364\000\310\164\216\241\052\110\216\145\333\023
\304\342\045\027\175\353\276\207\133\027\040\124\121\223\112\123
\003\013\354\135\312\063\355\142\375\105\307\057\133\334\130\240
\200\071\346\372\327\376\023\024\246\355\075\224\112\102\164\324
\303\167\131\163\315\217\106\276\125\070\357\372\350\221\062\352
\227\130\004\042\336\070\303\314\274\155\311\063\072\152\012\151
\077\240\310\352\162\217\214\143\206\043\275\155\074\226\236\225
\340\111\114\252\242\271\052\033\234\066\201\170\355\303\350\106
\342\046\131\104\165\036\331\165\211\121\315\020\204\235\141\140
\313\135\371\227\042\115\216\230\346\343\177\366\133\273\256\315
\312\112\201\153\136\013\363\121\341\164\053\351\176\047\247\331
\231\111\116\370\245\200\333\045\017\034\143\142\212\311\063\147
\153\074\020\203\306\255\336\250\315\026\216\215\360\007\067\161
\237\362\253\374\101\365\301\213\354\000\067\135\011\345\116\200
\357\372\261\134\070\006\245\033\112\341\334\070\055\074\334\253
\037\220\032\325\112\234\356\321\160\154\314\356\364\127\370\030
\272\204\156\207
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Commercial Root CA 1"
Issuer: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:c8:44:b5:00:00:00:02
Subject: CN=IdenTrust Commercial Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 18:12:23 2014
Not Valid After : Mon Jan 16 18:12:23 2034
Fingerprint (SHA-256):
5D:56:49:9B:E4:D2:E0:8B:CF:CA:D0:8A:3E:38:72:3D:50:50:3B:DE:70:69:48:E4:2F:55:60:30:19:E5:28:AE
Fingerprint (SHA1): DF:71:7E:AA:4A:D9:4E:C9:55:84:99:60:2D:48:DE:5F:BC:F0:3A:25
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Commercial Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\337\161\176\252\112\331\116\311\125\204\231\140\055\110\336\137

\274\360\072\045
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\263\076\167\163\165\356\240\323\343\176\111\143\111\131\273\307
END
CKA_ISSUER
MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\047\060\045\006\003\125\004\003\023\036\111\144
\145\156\124\162\165\163\164\040\103\157\155\155\145\162\143\151
\141\154\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\310\104\265\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "IdenTrust Public Sector Root CA 1"
#
Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid
After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):
30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\012
\001\102\200\000\000\001\105\043\317\106\174\000\000\000\002\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\115
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163
\164\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156
\124\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143
\164\157\162\040\122\157\157\164\040\103\101\040\061\060\036\027
\015\061\064\060\061\061\066\061\067\065\063\063\062\132\027\015
\063\064\060\061\061\066\061\067\065\063\063\062\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060\020
\006\003\125\004\012\023\011\111\144\145\156\124\162\165\163\164
\061\052\060\050\006\003\125\004\003\023\041\111\144\145\156\124
\162\165\163\164\040\120\165\142\154\151\143\040\123\145\143\164
\157\162\040\122\157\157\164\040\103\101\040\061\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\266\042\224
\374\244\110\257\350\107\153\012\373\047\166\344\362\077\212\073
\172\112\054\061\052\214\215\260\251\303\061\153\250\167\166\204
\046\266\254\201\102\015\010\353\125\130\273\172\370\274\145\175
\362\240\155\213\250\107\351\142\166\036\021\356\010\024\321\262
\104\026\364\352\320\372\036\057\136\333\313\163\101\256\274\000
\260\112\053\100\262\254\341\073\113\302\055\235\344\241\233\354
\032\072\036\360\010\263\320\344\044\065\007\237\234\264\311\122
\155\333\007\312\217\265\133\360\203\363\117\307\055\245\310\255
\313\225\040\244\061\050\127\130\132\344\215\033\232\253\236\015
\014\362\012\063\071\042\071\012\227\056\363\123\167\271\104\105
\375\204\313\066\040\201\131\055\232\157\155\110\110\141\312\114
\337\123\321\257\122\274\104\237\253\057\153\203\162\357\165\200
\332\006\063\033\135\310\332\143\306\115\315\254\146\061\315\321
\336\076\207\020\066\341\271\244\172\357\140\120\262\313\312\246
\126\340\067\257\253\064\023\071\045\350\071\146\344\230\172\252
\022\230\234\131\146\206\076\255\361\260\312\076\006\017\173\360
\021\113\067\240\104\155\173\313\250\214\161\364\325\265\221\066
\314\360\025\306\053\336\121\027\261\227\114\120\075\261\225\131

\174\005\175\055\041\325\000\277\001\147\242\136\173\246\134\362
\367\042\361\220\015\223\333\252\104\121\146\314\175\166\003\353
\152\250\052\070\031\227\166\015\153\212\141\371\274\366\356\166
\375\160\053\335\051\074\370\012\036\133\102\034\213\126\057\125
\033\034\241\056\265\307\026\346\370\252\074\222\216\151\266\001
\301\265\206\235\211\017\013\070\224\124\350\352\334\236\075\045
\274\123\046\355\325\253\071\252\305\100\114\124\253\262\264\331
\331\370\327\162\333\034\274\155\275\145\137\357\210\065\052\146
\057\356\366\263\145\360\063\215\174\230\101\151\106\017\103\034
\151\372\233\265\320\141\152\315\312\113\331\114\220\106\253\025
\131\241\107\124\051\056\203\050\137\034\302\242\253\162\027\000
\006\216\105\354\213\342\063\075\177\332\031\104\344\142\162\303
\337\042\306\362\126\324\335\137\225\162\355\155\137\367\110\003
\133\375\305\052\240\366\163\043\204\020\033\001\347\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\343\161\340\236\330\247\102\331\333\161\221\153\224\223
\353\303\243\321\024\243\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\107\372\335\012\260\021
\221\070\255\115\135\367\345\016\227\124\031\202\110\207\124\214
\252\144\231\330\132\376\210\001\305\130\245\231\261\043\124\043
\267\152\035\040\127\345\001\142\101\027\323\011\333\165\313\156
\124\220\165\376\032\237\201\012\302\335\327\367\011\320\133\162
\025\344\036\011\152\075\063\363\041\232\346\025\176\255\121\325
\015\020\355\175\102\300\217\356\300\232\010\325\101\326\134\016
\041\151\156\200\141\016\025\300\270\317\305\111\022\122\314\276
\072\314\324\056\070\005\336\065\375\037\157\270\200\150\230\075
\115\240\312\100\145\322\163\174\365\213\331\012\225\077\330\077
\043\155\032\321\052\044\031\331\205\263\027\357\170\156\251\130
\321\043\323\307\023\355\162\045\177\135\261\163\160\320\177\006
\227\011\204\051\200\141\035\372\136\377\163\254\240\343\211\270
\034\161\025\306\336\061\177\022\334\341\155\233\257\347\350\237
\165\170\114\253\106\073\232\316\277\005\030\135\115\025\074\026
\232\031\120\004\232\262\232\157\145\213\122\137\074\130\004\050
\045\300\146\141\061\176\271\340\165\271\032\250\201\326\162\027
\263\305\003\061\065\021\170\170\242\340\351\060\214\177\200\337
\130\337\074\272\047\226\342\200\064\155\343\230\323\144\047\254
\110\176\050\167\134\306\045\141\045\370\205\014\145\372\304\062
\057\245\230\005\344\370\013\147\026\026\306\202\270\062\031\371
\371\271\171\334\037\315\353\257\253\016\335\033\333\105\344\172
\347\002\342\225\135\374\151\360\123\151\141\225\165\171\013\136
\125\346\070\034\224\251\131\063\236\310\161\164\171\177\121\211
\266\310\152\270\060\310\152\070\303\156\236\341\067\026\352\005
\142\114\133\022\107\355\247\264\263\130\126\307\111\363\177\022
\150\011\061\161\360\155\370\116\107\373\326\205\356\305\130\100
\031\244\035\247\371\113\103\067\334\150\132\117\317\353\302\144
\164\336\264\025\331\364\124\124\032\057\034\327\227\161\124\220

\216\331\040\235\123\053\177\253\217\342\352\060\274\120\067\357
\361\107\265\175\174\054\004\354\150\235\264\111\104\020\364\162
\113\034\144\347\374\346\153\220\335\151\175\151\375\000\126\245
\267\254\266\255\267\312\076\001\357\234
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL
 CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "IdenTrust Public Sector Root CA 1"
Issuer: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Serial Number:0a:01:42:80:00:00:01:45:23:cf:46:7c:00:00:00:02
Subject: CN=IdenTrust Public Sector Root CA 1,O=IdenTrust,C=US
Not Valid Before: Thu Jan 16 17:53:32 2014
Not Valid After : Mon Jan 16 17:53:32 2034
Fingerprint (SHA-256):
30:D0:89:5A:9A:44:8A:26:20:91:63:55:22:D1:F5:20:10:B5:86:7A:CA:E1:2C:78:EF:95:8F:D4:F4:38:9F:2F
Fingerprint (SHA1): BA:29:41:60:77:98:3F:F4:F3:EF:F2:31:05:3B:2E:EA:6D:4D:45:FD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IdenTrust Public Sector Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\272\051\101\140\167\230\077\364\363\357\362\061\005\073\056\352
\155\115\105\375
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\006\245\260\374\211\235\272\364\153\214\032\144\315\325\272
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\111\144\145\156\124\162
\165\163\164\061\052\060\050\006\003\125\004\003\023\041\111\144
\145\156\124\162\165\163\164\040\120\165\142\154\151\143\040\123
\145\143\164\157\162\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\012\001\102\200\000\000\001\105\043\317\106\174\000\000
\000\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "Entrust Root Certification Authority - G2"
#
# Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use
only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
# Serial Number: 1246989352 (0x4a538c28)
#
 Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use
only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
# Not Valid Before: Tue Jul 07 17:25:54 2009
# Not Valid After : Sat Dec 07 17:55:54 2030
# Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39
# Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
```

\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\076\060\202\003\046\240\003\002\001\002\002\004\112
\123\214\050\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\276\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156\164
\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006\003
\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156\164
\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055\164
\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060\050
\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164\054
\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165\163
\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\062\060\036\027\015\060\071\060\067\060\067\061\067\062
\065\065\064\132\027\015\063\060\061\062\060\067\061\067\065\065
\065\064\132\060\201\276\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\026\060\024\006\003\125\004\012\023\015\105\156
\164\162\165\163\164\054\040\111\156\143\056\061\050\060\046\006
\003\125\004\013\023\037\123\145\145\040\167\167\167\056\145\156
\164\162\165\163\164\056\156\145\164\057\154\145\147\141\154\055
\164\145\162\155\163\061\071\060\067\006\003\125\004\013\023\060
\050\143\051\040\062\060\060\071\040\105\156\164\162\165\163\164
\054\040\111\156\143\056\040\055\040\146\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\062\060\060\006\003\125\004\003\023\051\105\156\164\162\165
\163\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\062\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\272\204\266\162\333\236\014\153\342\231\351
\060\001\247\166\352\062\270\225\101\032\311\332\141\116\130\162
\317\376\366\202\171\277\163\141\006\012\245\047\330\263\137\323
\105\116\034\162\326\116\062\362\162\212\017\367\203\031\320\152
\200\200\000\105\036\260\307\347\232\277\022\127\047\034\243\150
\057\012\207\275\152\153\016\136\145\363\034\167\325\324\205\215
\160\041\264\263\062\347\213\242\325\206\071\002\261\270\322\107
\316\344\311\111\304\073\247\336\373\124\175\127\276\360\350\156

\302\171\262\072\013\125\342\120\230\026\062\023\134\057\170\126
\301\302\224\263\362\132\344\047\232\237\044\327\306\354\320\233
\045\202\343\314\302\304\105\305\214\227\172\006\153\052\021\237
\251\012\156\110\073\157\333\324\021\031\102\367\217\007\277\365
\123\137\234\076\364\027\054\346\151\254\116\062\114\142\167\352
\267\350\345\273\064\274\031\213\256\234\121\347\267\176\265\123
\261\063\042\345\155\317\160\074\032\372\342\233\147\266\203\364
\215\245\257\142\114\115\340\130\254\144\064\022\003\370\266\215
\224\143\044\244\161\002\003\001\000\001\243\102\060\100\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\152\162\046\172\320\036
\357\175\347\073\151\121\324\154\215\237\220\022\146\253\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\171\237\035\226\306\266\171\077\042\215\207\323\207\003
\004\140\152\153\232\056\131\211\163\021\254\103\321\365\023\377
\215\071\053\300\362\275\117\160\214\251\057\352\027\304\013\124
\236\324\033\226\230\063\074\250\255\142\242\000\166\253\131\151
\156\006\035\176\304\271\104\215\230\257\022\324\141\333\012\031
\106\107\363\353\367\143\301\100\005\100\245\322\267\364\265\232
\066\277\251\210\166\210\004\125\004\053\234\207\177\032\067\074
\176\055\245\032\330\324\211\136\312\275\254\075\154\330\155\257
\325\363\166\017\315\073\210\070\042\235\154\223\232\304\075\277
\202\033\145\077\246\017\135\252\374\345\262\025\312\265\255\306
\274\075\320\204\350\352\006\162\260\115\071\062\170\277\076\021
\234\013\244\235\232\041\363\360\233\013\060\170\333\301\334\207
\103\376\274\143\232\312\305\302\034\311\307\215\377\073\022\130
\010\346\266\075\354\172\054\116\373\203\226\316\014\074\151\207
\124\163\244\163\302\223\377\121\020\254\025\124\001\330\374\005
\261\211\241\177\164\203\232\111\327\334\116\173\212\110\157\213
\105\366
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL
CK_FALSE

Trust for "Entrust Root Certification Authority - G2"
Issuer: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number: 1246989352 (0x4a538c28)
Subject: CN=Entrust Root Certification Authority - G2,OU="(c) 2009 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Jul 07 17:25:54 2009
Not Valid After : Sat Dec 07 17:55:54 2030
Fingerprint (SHA-256):
43:DF:57:74:B0:3E:7F:EF:5F:E4:0D:93:1A:7B:ED:F1:BB:2E:6B:42:73:8C:4E:6D:38:41:10:3D:3A:A7:F3:39

Fingerprint (SHA1): 8C:F4:27:FD:79:0C:3A:D1:66:06:8D:E8:1E:57:EF:BB:93:22:72:D4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\214\364\047\375\171\014\072\321\146\006\215\350\036\127\357\273
\223\042\162\324
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\113\342\311\221\226\145\014\364\016\132\223\222\240\012\376\262
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\060\071\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\112\123\214\050
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Entrust Root Certification Authority - EC1"
#
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037

Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\002\371\060\202\002\200\240\003\002\001\002\002\015\000

\246\213\171\051\000\000\000\000\120\320\221\371\060\012\006\010
\052\206\110\316\075\004\003\003\060\201\277\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\026\060\024\006\003\125\004
\012\023\015\105\156\164\162\165\163\164\054\040\111\156\143\056
\061\050\060\046\006\003\125\004\013\023\037\123\145\145\040\167
\167\167\056\145\156\164\162\165\163\164\056\156\145\164\057\154
\145\147\141\154\055\164\145\162\155\163\061\071\060\067\006\003
\125\004\013\023\060\050\143\051\040\062\060\061\062\040\105\156
\164\162\165\163\164\054\040\111\156\143\056\040\055\040\146\157
\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145
\040\157\156\154\171\061\063\060\061\006\003\125\004\003\023\052
\105\156\164\162\165\163\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\105\103\061\060\036\027\015\061\062
\061\062\061\070\061\065\062\065\063\066\132\027\015\063\067\061
\062\061\070\061\065\065\065\063\066\132\060\201\277\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\026\060\024\006\003
\125\004\012\023\015\105\156\164\162\165\163\164\054\040\111\156
\143\056\061\050\060\046\006\003\125\004\013\023\037\123\145\145
\040\167\167\167\056\145\156\164\162\165\163\164\056\156\145\164
\057\154\145\147\141\154\055\164\145\162\155\163\061\071\060\067
\006\003\125\004\013\023\060\050\143\051\040\062\060\061\062\040
\105\156\164\162\165\163\164\054\040\111\156\143\056\040\055\040
\146\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165
\163\145\040\157\156\154\171\061\063\060\061\006\003\125\004\003
\023\052\105\156\164\162\165\163\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\105\103\061\060\166\060\020
\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042
\003\142\000\004\204\023\311\320\272\155\101\173\342\154\320\353
\125\137\146\002\032\044\364\133\211\151\107\343\270\302\175\361
\362\002\305\237\240\366\133\325\213\006\031\206\117\123\020\155
\007\044\047\241\240\370\325\107\031\141\114\175\312\223\047\352
\164\014\357\157\226\011\376\143\354\160\135\066\255\147\167\256
\311\235\174\125\104\072\242\143\121\037\365\343\142\324\251\107
\007\076\314\040\243\102\060\100\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\267\143\347\032\335\215\351\010\246\125\203\244
\340\152\120\101\145\021\102\111\060\012\006\010\052\206\110\316
\075\004\003\003\003\147\000\060\144\002\060\141\171\330\345\102
\107\337\034\256\123\231\027\266\157\034\175\341\277\021\224\321
\003\210\165\344\215\211\244\212\167\106\336\155\141\357\002\365
\373\265\337\314\376\116\377\376\251\346\247\002\060\133\231\327
\205\067\006\265\173\010\375\353\047\213\112\224\371\341\372\247
\216\046\010\350\174\222\150\155\163\330\157\046\254\041\002\270
\231\267\046\101\133\045\140\256\320\110\032\356\006
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Entrust Root Certification Authority - EC1"
Issuer: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:a6:8b:79:29:00:00:00:00:50:d0:91:f9
Subject: CN=Entrust Root Certification Authority - EC1,OU="(c) 2012 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Tue Dec 18 15:25:36 2012
Not Valid After : Fri Dec 18 15:55:36 2037
Fingerprint (SHA-256):
02:ED:0E:B2:8C:14:DA:45:16:5C:56:67:91:70:0D:64:51:D7:FB:56:F0:B2:AB:1D:3B:8E:B0:70:E5:6E:DF:F5
Fingerprint (SHA1): 20:D8:06:40:DF:9B:25:F5:12:25:3A:11:EA:F7:59:8A:EB:14:B5:47
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - EC1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\330\006\100\337\233\045\365\022\045\072\021\352\367\131\212
\353\024\265\107
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\176\035\360\130\305\111\154\044\073\075\355\230\030\355\274
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\277\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\062\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\063\060
\061\006\003\125\004\003\023\052\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\105
\103\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\015\000\246\213\171\051\000\000\000\000\120\320\221\371
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CFCA EV ROOT"
#
Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)
Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Not Valid Before: Wed Aug 08 03:07:01 2012
Not Valid After : Mon Dec 31 03:07:01 2029
Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
#
Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\215\060\202\003\165\240\003\002\001\002\002\004\030
\112\314\326\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\126\061\013\060\011\006\003\125\004\006\023\002\103

\116\061\060\060\056\006\003\125\004\012\014\047\103\150\151\156
\141\040\106\151\156\141\156\143\151\141\154\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\061\025\060\023\006\003\125\004\003\014\014\103\106
\103\101\040\105\126\040\122\117\117\124\060\036\027\015\061\062
\060\070\060\070\060\063\060\067\060\061\132\027\015\062\071\061
\062\063\061\060\063\060\067\060\061\132\060\126\061\013\060\011
\006\003\125\004\006\023\002\103\116\061\060\060\056\006\003\125
\004\012\014\047\103\150\151\156\141\040\106\151\156\141\156\143
\151\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\025\060\023\006
\003\125\004\003\014\014\103\106\103\101\040\105\126\040\122\117
\117\124\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\327\135\153\315\020\077\037\005\131\325\005\115\067
\261\016\354\230\053\216\025\035\372\223\113\027\202\041\161\020
\122\327\121\144\160\026\302\125\151\115\216\025\155\237\277\014
\033\302\340\243\147\326\014\254\317\042\256\257\167\124\052\113
\114\212\123\122\172\303\356\056\336\263\161\045\301\351\135\075
\356\241\057\243\367\052\074\311\043\035\152\253\035\241\247\361
\363\354\240\325\104\317\025\317\162\057\035\143\227\350\231\371
\375\223\244\124\200\114\122\324\122\253\056\111\337\220\315\270
\137\276\077\336\241\312\115\040\324\045\350\204\051\123\267\261
\210\037\377\372\332\220\237\012\251\055\101\077\261\361\030\051
\356\026\131\054\064\111\032\250\006\327\250\210\322\003\162\172
\062\342\352\150\115\156\054\226\145\173\312\131\372\362\342\335
\356\060\054\373\314\106\254\304\143\353\157\177\066\053\064\163
\022\224\177\337\314\046\236\361\162\135\120\145\131\217\151\263
\207\136\062\157\303\030\212\265\225\217\260\172\067\336\132\105
\073\307\066\341\357\147\321\071\323\227\133\163\142\031\110\055
\207\034\006\373\164\230\040\111\163\360\005\322\033\261\240\243
\267\033\160\323\210\151\271\132\326\070\364\142\334\045\213\170
\277\370\350\176\270\134\311\225\117\137\247\055\271\040\153\317
\153\335\365\015\364\202\267\364\262\146\056\020\050\366\227\132
\173\226\026\217\001\031\055\154\156\177\071\130\006\144\203\001
\203\203\303\115\222\335\062\306\207\244\067\351\026\316\252\055
\150\257\012\201\145\072\160\301\233\255\115\155\124\312\052\055
\113\205\033\263\200\346\160\105\015\153\136\065\360\177\073\270
\234\344\004\160\211\022\045\223\332\012\231\042\140\152\143\140
\116\166\006\230\116\275\203\255\035\130\212\045\205\322\307\145
\036\055\216\306\337\266\306\341\177\212\004\041\025\051\164\360
\076\234\220\235\014\056\361\212\076\132\252\014\011\036\307\325
\074\243\355\227\303\036\064\372\070\371\010\016\343\300\135\053
\203\321\126\152\311\266\250\124\123\056\170\062\147\075\202\177
\164\320\373\341\266\005\140\271\160\333\216\013\371\023\130\157
\161\140\020\122\020\271\301\101\011\357\162\037\147\061\170\377
\226\005\215\002\003\001\000\001\243\143\060\141\060\037\006\003
\125\035\043\004\030\060\026\200\024\343\376\055\375\050\320\013

\265\272\266\242\304\277\006\252\005\214\223\373\057\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\343\376\055\375\050\320\013
\265\272\266\242\304\277\006\252\005\214\223\373\057\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\045\306\272\153\353\207\313\336\202\071\226\075\360\104\247
\153\204\163\003\336\235\053\117\272\040\177\274\170\262\317\227
\260\033\234\363\327\171\056\365\110\266\322\373\027\210\346\323
\172\077\355\123\023\320\342\057\152\171\313\000\043\050\346\036
\067\127\065\211\204\302\166\117\064\066\255\147\303\316\101\006
\210\305\367\356\330\032\270\326\013\177\120\377\223\252\027\113
\214\354\355\122\140\262\244\006\352\116\353\364\153\031\375\353
\365\032\340\045\052\232\334\307\101\066\367\310\164\005\204\071
\225\071\326\013\073\244\047\372\010\330\134\036\370\004\140\122
\021\050\050\003\377\357\123\146\000\245\112\064\026\146\174\375
\011\244\256\236\147\032\157\101\013\153\006\023\233\217\206\161
\005\264\057\215\211\146\063\051\166\124\232\021\370\047\372\262
\077\221\340\316\015\033\363\060\032\255\277\042\135\033\323\277
\045\005\115\341\222\032\177\231\237\074\104\223\312\324\100\111
\154\200\207\327\004\072\303\062\122\065\016\126\370\245\335\175
\304\213\015\021\037\123\313\036\262\027\266\150\167\132\340\324
\313\310\007\256\365\072\056\216\067\267\320\001\113\103\051\167
\214\071\227\217\202\132\370\121\345\211\240\030\347\150\177\135
\012\056\373\243\107\016\075\246\043\172\306\001\307\217\310\136
\277\155\200\126\276\212\044\272\063\352\237\341\062\021\236\361
\322\117\200\366\033\100\257\070\236\021\120\171\163\022\022\315
\346\154\235\054\210\162\074\060\201\006\221\042\352\131\255\332
\031\056\042\302\215\271\214\207\340\146\274\163\043\137\041\144
\143\200\110\365\240\074\030\075\224\310\110\101\035\100\272\136
\376\376\126\071\241\310\317\136\236\031\144\106\020\332\027\221
\267\005\200\254\213\231\222\175\347\242\330\007\013\066\047\347
\110\171\140\212\303\327\023\134\370\162\100\337\112\313\317\231
\000\012\000\013\021\225\332\126\105\003\210\012\237\147\320\325
\171\261\250\215\100\155\015\302\172\100\372\363\137\144\107\222
\313\123\271\273\131\316\117\375\320\025\123\001\330\337\353\331
\346\166\357\320\043\273\073\251\171\263\325\002\051\315\211\243
\226\017\112\065\347\116\102\300\165\315\007\317\346\054\353\173
\056
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CFCA EV ROOT"
Issuer: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
Serial Number: 407555286 (0x184accd6)

```
# Subject: CN=CFCA EV ROOT,O=China Financial Certification Authority,C=CN
# Not Valid Before: Wed Aug 08 03:07:01 2012
# Not Valid After : Mon Dec 31 03:07:01 2029
# Fingerprint (SHA-256):
5C:C3:D7:8E:4E:1D:5E:45:54:7A:04:E6:87:3E:64:F9:0C:F9:53:6D:1C:CC:2E:F8:00:F3:55:C4:C5:FD:70:FD
# Fingerprint (SHA1): E2:B8:29:4B:55:84:AB:6B:58:C2:90:46:6C:AC:3F:B8:39:8F:84:83
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA EV ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\270\051\113\125\204\253\153\130\302\220\106\154\254\077\270
\071\217\204\203
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\164\341\266\355\046\172\172\104\060\063\224\253\173\047\201\060
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\060\060\056\006\003\125\004\012\014\047\103\150\151\156\141\040
\106\151\156\141\156\143\151\141\154\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\025\060\023\006\003\125\004\003\014\014\103\106\103\101
\040\105\126\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\030\112\314\326
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "OISTE WISeKey Global Root GB CA"
#
# Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
# Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
# Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
# Not Valid Before:
 Mon Dec 01 15:00:32 2014
# Not Valid After : Thu Dec 01 15:10:31 2039
# Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
# Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
```

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_ID UTF8
"0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\265\060\202\002\235\240\003\002\001\002\002\020\166
\261\040\122\164\360\205\207\106\263\370\043\032\366\302\300\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\155
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060
\016\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061
\042\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040
\106\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162
\163\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111
\123\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142
\141\154\040\122\157\157\164\040\107\102\040\103\101\060\036\027
\015\061\064\061\062\060\061\061\065\060\060\063\062\132\027\015
\063\071\061\062\060\061\061\065\061\060\063\061\132\060\155\061
\013\060\011\006\003\125\004\006\023\002\103\110\061\020\060\016
\006\003\125\004\012\023\007\127\111\123\145\113\145\171\061\042
\060\040\006\003\125\004\013\023\031\117\111\123\124\105\040\106
\157\165\156\144\141\164\151\157\156\040\105\156\144\157\162\163
\145\144\061\050\060\046\006\003\125\004\003\023\037\117\111\123
\124\105\040\127\111\123\145\113\145\171\040\107\154\157\142\141

\154\040\122\157\157\164\040\107\102\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\330\027\267
\034\112\044\052\326\227\261\312\342\036\373\175\070\357\230\365
\262\071\230\116\047\270\021\135\173\322\045\224\210\202\025\046
\152\033\061\273\250\133\041\041\053\330\017\116\237\132\361\261
\132\344\171\326\062\043\053\341\123\314\231\105\134\173\117\255
\274\277\207\112\013\113\227\132\250\366\110\354\175\173\015\315
\041\006\337\236\025\375\101\212\110\267\040\364\241\172\033\127
\324\135\120\377\272\147\330\043\231\037\310\077\343\336\377\157
\133\167\261\153\156\270\311\144\367\341\312\101\106\016\051\161
\320\271\043\374\311\201\137\116\367\157\337\277\204\255\163\144
\273\267\102\216\151\366\324\166\035\176\235\247\270\127\212\121
\147\162\327\324\250\270\225\124\100\163\003\366\352\364\353\376
\050\102\167\077\235\043\033\262\266\075\200\024\007\114\056\117
\367\325\012\026\015\275\146\103\067\176\043\103\171\303\100\206
\365\114\051\332\216\232\255\015\245\004\207\210\036\205\343\351
\123\325\233\310\213\003\143\170\353\340\031\112\156\273\057\153
\063\144\130\223\255\151\277\217\033\357\202\110\307\002\003\001
\000\001\243\121\060\117\060\013\006\003\125\035\017\004\004\003
\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\065
\017\310\066\143\136\342\243\354\371\073\146\025\316\121\122\343
\221\232\075\060\020\006\011\053\006\001\004\001\202\067\025\001
\004\003\002\001\000\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\100\114\373\207\262\231\201
\220\176\235\305\260\260\046\315\210\173\053\062\215\156\270\041
\161\130\227\175\256\067\024\257\076\347\367\232\342\175\366\161
\230\231\004\252\103\164\170\243\343\111\141\076\163\214\115\224
\340\371\161\304\266\026\016\123\170\037\326\242\207\057\002\071
\201\051\074\257\025\230\041\060\376\050\220\000\214\321\341\313
\372\136\310\375\370\020\106\073\242\170\102\221\027\164\125\012
\336\120\147\115\146\321\247\377\375\331\300\265\250\243\212\316
\146\365\017\103\315\247\053\127\173\143\106\152\252\056\122\330
\364\355\341\155\255\051\220\170\110\272\341\043\252\243\211\354
\265\253\226\300\264\113\242\035\227\236\172\362\156\100\161\337
\150\361\145\115\316\174\005\337\123\145\251\245\360\261\227\004
\160\025\106\003\230\324\322\277\124\264\240\130\175\122\157\332
\126\046\142\324\330\333\211\061\157\034\360\042\302\323\142\034
\065\315\114\151\025\124\032\220\230\336\353\036\137\312\167\307
\313\216\075\103\151\234\232\130\320\044\073\337\033\100\226\176
\065\255\201\307\116\161\272\210\023
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GB CA"
Issuer: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:76:b1:20:52:74:f0:85:87:46:b3:f8:23:1a:f6:c2:c0
Subject: CN=OISTE WISeKey Global Root GB CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Mon Dec 01 15:00:32 2014
Not Valid After : Thu Dec
01 15:10:31 2039
Fingerprint (SHA-256):
6B:9C:08:E8:6E:B0:F7:67:CF:AD:65:CD:98:B6:21:49:E5:49:4A:67:F5:84:5E:7B:D1:ED:01:9F:27:B8:6B:D6
Fingerprint (SHA1): 0F:F9:40:76:18:D3:D7:6A:4B:98:F0:A8:35:9E:0C:FD:27:AC:CC:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GB CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\371\100\166\030\323\327\152\113\230\360\250\065\236\014\375
\047\254\314\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\244\353\271\141\050\056\267\057\230\260\065\046\220\231\121\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\102\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\166\261\040\122\164\360\205\207\106\263\370\043\032\366
\302\300
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SZAFIR ROOT CA2"
#
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015

Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):
A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE
CKA_CLASS CK_OBJECT_CLASS
CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\003\162\060\202\002\132\240\003\002\001\002\002\024\076
\212\135\007\354\125\322\062\325\267\343\266\137\001\353\055\334
\344\326\344\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\121\061\013\060\011\006\003\125\004\006\023\002\120
\114\061\050\060\046\006\003\125\004\012\014\037\113\162\141\152
\157\167\141\040\111\172\142\141\040\122\157\172\154\151\143\172
\145\156\151\157\167\141\040\123\056\101\056\061\030\060\026\006
\003\125\004\003\014\017\123\132\101\106\111\122\040\122\117\117
\124\040\103\101\062\060\036\027\015\061\065\061\060\061\071\060
\067\064\063\063\060\132\027\015\063\065\061\060\061\071\060\067
\064\063\063\060\132\060\121\061\013\060\011\006\003\125\004\006
\023\002\120\114\061\050\060\046\006\003\125\004\012\014\037\113
\162\141\152\157\167\141\040\111\172\142\141\040\122\157\172\154
\151\143\172\145\156\151\157\167\141\040\123\056\101\056\061\030

\060\026\006\003\125\004\003\014\017\123\132\101\106\111\122\040
\122\117\117\124\040\103\101\062\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\267\274\076\120\250\113\315
\100\265\316\141\347\226\312\264\241\332\014\042\260\372\265\173
\166\000\167\214\013\317\175\250\206\314\046\121\344\040\075\205
\014\326\130\343\347\364\052\030\235\332\321\256\046\356\353\123
\334\364\220\326\023\112\014\220\074\303\364\332\322\216\015\222
\072\334\261\261\377\070\336\303\272\055\137\200\271\002\275\112
\235\033\017\264\303\302\301\147\003\335\334\033\234\075\263\260
\336\000\036\250\064\107\273\232\353\376\013\024\275\066\204\332
\015\040\277\372\133\313\251\026\040\255\071\140\356\057\165\266
\347\227\234\371\076\375\176\115\157\115\057\357\210\015\152\372
\335\361\075\156\040\245\240\022\264\115\160\271\316\327\162\073
\211\223\247\200\204\034\047\111\162\111\265\377\073\225\236\301
\314\310\001\354\350\016\212\012\226\347\263\246\207\345\326\371
\005\053\015\227\100\160\074\272\254\165\132\234\325\115\235\002
\012\322\113\233\146\113\106\007\027\145\255\237\154\210\000\334
\042\211\340\341\144\324\147\274\061\171\141\074\273\312\101\315
\134\152\000\310\074\070\216\130\257\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\056\026
\251\112\030\265\313\314\365\157\120\363\043\137\370\135\347\254
\360\310\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\001\001\000\265\163\370\003\334\131\133\035\166\351
\243\052\173\220\050\262\115\300\063\117\252\232\261\324\270\344
\047\377\251\226\231\316\106\340\155\174\114\242\070\244\006\160
\360\364\101\021\354\077\107\215\077\162\207\371\073\375\244\157
\053\123\000\340\377\071\271\152\007\016\353\035\034\366\242\162
\220\313\202\075\021\202\213\322\273\237\052\257\041\346\143\206
\235\171\031\357\367\273\014\065\220\303\212\355\117\017\365\314
\022\331\244\076\273\240\374\040\225\137\117\046\057\021\043\203
\116\165\007\017\277\233\321\264\035\351\020\004\376\312\140\217
\242\114\270\255\317\341\220\017\315\256\012\307\135\173\267\120
\322\324\141\372\325\025\333\327\237\207\121\124\353\245\343\353
\311\205\240\045\040\067\373\216\316\014\064\204\341\074\201\262
\167\116\103\245\210\137\206\147\241\075\346\264\134\141\266\076
\333\376\267\050\305\242\007\256\265\312\312\215\052\022\357\227
\355\302\060\244\311\052\172\373\363\115\043\033\231\063\064\240
\056\365\251\013\077\324\135\341\317\204\237\342\031\302\137\212
\326\040\036\343\163\267
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SZAFIR ROOT CA2"
Issuer: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Serial Number:3e:8a:5d:07:ec:55:d2:32:d5:b7:e3:b6:5f:01:eb:2d:dc:e4:d6:e4
#
Subject: CN=SZAFIR ROOT CA2,O=Krajowa Izba Rozliczeniowa S.A.,C=PL
Not Valid Before: Mon Oct 19 07:43:30 2015
Not Valid After : Fri Oct 19 07:43:30 2035
Fingerprint (SHA-256):
A1:33:9D:33:28:1A:0B:56:E5:57:D3:D3:2B:1C:E7:F9:36:7E:B0:94:BD:5F:A7:2A:7E:50:04:C8:DE:D7:CA:FE
Fingerprint (SHA1): E2:52:FA:95:3F:ED:DB:24:60:BD:6E:28:F3:9C:CC:CF:5E:B3:3F:DE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SZAFIR ROOT CA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\342\122\372\225\077\355\333\044\140\275\156\050\363\234\314\317
\136\263\077\336
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\144\301\211\260\044\261\214\261\007\176\211\236\121\236\231
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\050\060\046\006\003\125\004\012\014\037\113\162\141\152\157\167
\141\040\111\172\142\141\040\122\157\172\154\151\143\172\145\156
\151\157\167\141\040\123\056\101\056\061\030\060\026\006\003\125
\004\003\014\017\123\132\101\106\111\122\040\122\117\117\124\040
\103\101\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\076\212\135\007\354\125\322\062\325\267\343\266\137\001
\353\055\334\344\326\344
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum Trusted Network CA 2"
#
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL
Serial Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9
Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL

Not Valid Before: Thu Oct 06 08:39:56 2011
Not Valid After : Sat Oct 06 08:39:56 2046
Fingerprint (SHA-256):
B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
#
Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\041\326\320\112\117\045\017\311\062\067\374\252\136\022
\215\351
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\322\060\202\003\272\240\003\002\001\002\002\020\041
\326\320\112\117\045\017\311\062\067\374\252\136\022\215\351\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\201
\200\061\013\060\011\006\003\125\004\006\023\002\120\114\061\042
\060\040\006\003\125\004\012\023\031\125\156\151\172\145\164\157
\040\124\145\143\150\156\157\154\157\147\151\145\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162

\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\044\060\042\006
\003\125\004\003\023\033\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\116\145\164\167\157\162\153\040\103\101\040
\062\060\042\030\017\062\060\061\061\061\060\060\066\060\070\063
\071\065\066\132\030\017\062\060\064\066\061\060\060\066\060\070
\063\071\065\066\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\120\114\061\042\060\040\006\003\125\004\012\023\031
\125\156\151\172\145\164\157\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\123\056\101\056\061\047\060\045\006\003\125
\004\013\023\036\103\145\162\164\165\155\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\061\044\060\042\006\003\125\004\003\023\033\103\145\162
\164\165\155\040\124\162\165\163\164\145\144\040\116\145\164\167
\157\162\153\040\103\101\040\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\275\371\170\370\346\325\200
\014\144\235\206\033\226\144\147\077\042\072\036\165\001\175\357
\373\134\147\214\311\314\134\153\251\221\346\271\102\345\040\113
\233\332\233\173\271\231\135\331\233\200\113\327\204\100\053\047
\323\350\272\060\273\076\011\032\247\111\225\357\053\100\044\302
\227\307\247\356\233\045\357\250\012\000\227\205\132\252\235\334
\051\311\342\065\007\353\160\115\112\326\301\263\126\270\241\101
\070\233\321\373\061\177\217\340\137\341\261\077\017\216\026\111
\140\327\006\215\030\371\252\046\020\253\052\323\320\321\147\215
\033\106\276\107\060\325\056\162\321\305\143\332\347\143\171\104
\176\113\143\044\211\206\056\064\077\051\114\122\213\052\247\300
\342\221\050\211\271\300\133\371\035\331\347\047\255\377\232\002
\227\301\306\120\222\233\002\054\275\251\271\064\131\012\277\204
\112\377\337\376\263\237\353\331\236\340\230\043\354\246\153\167
\026\052\333\314\255\073\034\244\207\334\106\163\136\031\142\150
\105\127\344\220\202\102\273\102\326\360\141\340\301\243\075\146
\243\135\364\030\356\210\311\215\027\105\051\231\062\165\002\061
\356\051\046\310\153\002\346\265\142\105\177\067\025\132\043\150
\211\324\076\336\116\047\260\360\100\014\274\115\027\313\115\242
\263\036\320\006\132\335\366\223\317\127\165\231\365\372\206\032
\147\170\263\277\226\376\064\334\275\347\122\126\345\263\345\165
\173\327\101\221\005\334\135\151\343\225\015\103\271\374\203\226
\071\225\173\154\200\132\117\023\162\306\327\175\051\172\104\272
\122\244\052\325\101\106\011\040\376\042\240\266\133\060\215\274
\211\014\325\327\160\370\207\122\375\332\357\254\121\056\007\263
\116\376\320\011\332\160\357\230\372\126\346\155\333\265\127\113
\334\345\054\045\025\310\236\056\170\116\370\332\234\236\206\054
\312\127\363\032\345\310\222\213\032\202\226\172\303\274\120\022
\151\330\016\132\106\213\072\353\046\372\043\311\266\260\201\276
\102\000\244\370\326\376\060\056\307\322\106\366\345\216\165\375
\362\314\271\320\207\133\314\006\020\140\273\203\065\267\136\147
\336\107\354\231\110\361\244\241\025\376\255\214\142\216\071\125

\117\071\026\271\261\143\235\377\267\002\003\001\000\001\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\266\241
\124\071\002\303\240\077\216\212\274\372\324\370\034\246\321\072
\016\375\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\015\006\011\052\206\110\206\367\015\001\001\015\005
\000\003\202\002\001\000\161\245\016\316\344\351\277\077\070\325
\211\132\304\002\141\373\114\305\024\027\055\213\117\123\153\020
\027\374\145\204\307\020\111\220\336\333\307\046\223\210\046\157
\160\326\002\136\071\240\367\217\253\226\265\245\023\134\201\024
\155\016\201\202\021\033\212\116\306\117\245\335\142\036\104\337
\011\131\364\133\167\013\067\351\213\040\306\370\012\116\056\130
\034\353\063\320\317\206\140\311\332\373\200\057\236\114\140\204
\170\075\041\144\326\373\101\037\030\017\347\311\165\161\275\275
\134\336\064\207\076\101\260\016\366\271\326\077\011\023\226\024
\057\336\232\035\132\271\126\316\065\072\260\137\160\115\136\343
\051\361\043\050\162\131\266\253\302\214\146\046\034\167\054\046
\166\065\213\050\247\151\240\371\073\365\043\335\205\020\164\311
\220\003\126\221\347\257\272\107\324\022\227\021\042\343\242\111
\224\154\347\267\224\113\272\055\244\332\063\213\114\246\104\377
\132\074\306\035\144\330\265\061\344\246\074\172\250\127\013\333
\355\141\032\313\361\316\163\167\143\244\207\157\114\121\070\326
\344\137\307\237\266\201\052\344\205\110\171\130\136\073\370\333
\002\202\147\301\071\333\303\164\113\075\066\036\371\051\223\210
\150\133\250\104\031\041\360\247\350\201\015\054\350\223\066\264
\067\262\312\260\033\046\172\232\045\037\232\232\200\236\113\052
\077\373\243\232\376\163\062\161\302\236\306\162\341\212\150\047
\361\344\017\264\304\114\245\141\223\370\227\020\007\052\060\045
\251\271\310\161\270\357\150\314\055\176\365\340\176\017\202\250
\157\266\272\154\203\103\167\315\212\222\027\241\236\133\170\026
\075\105\342\063\162\335\341\146\312\231\323\311\305\046\375\015
\150\004\106\256\266\331\233\214\276\031\276\261\306\362\031\343
\134\002\312\054\330\157\112\007\331\311\065\332\100\165\362\304
\247\031\157\236\102\020\230\165\346\225\213\140\274\355\305\022
\327\212\316\325\230\134\126\226\003\305\356\167\006\065\377\317
\344\356\077\023\141\356\333\332\055\205\360\315\256\235\262\030
\011\105\303\222\241\162\027\374\107\266\240\013\054\361\304\336
\103\150\010\152\137\073\360\166\143\373\314\006\054\246\306\342
\016\265\271\276\044\217
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Network CA 2"
Issuer: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies S.A.,C=PL

```
# Serial
 Number:21:d6:d0:4a:4f:25:0f:c9:32:37:fc:aa:5e:12:8d:e9
# Subject: CN=Certum Trusted Network CA 2,OU=Certum Certification Authority,O=Unizeto Technologies
S.A.,C=PL
# Not Valid Before: Thu Oct 06 08:39:56 2011
# Not Valid After : Sat Oct 06 08:39:56 2046
# Fingerprint (SHA-256):
B6:76:F2:ED:DA:E8:77:5C:D3:6C:B0:F6:3C:D1:D4:60:39:61:F4:9E:62:65:BA:01:3A:2F:03:07:B6:D0:B8:04
# Fingerprint (SHA1): D3:DD:48:3E:2B:BF:4C:05:E8:AF:10:F5:FA:76:26:CF:D3:DC:30:92
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Network CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\323\335\110\076\053\277\114\005\350\257\020\365\372\166\046\317
\323\334\060\222
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\155\106\236\331\045\155\010\043\133\136\164\175\036\047\333\362
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\042\060\040\006\003\125\004\012\023\031\125\156\151\172\145
\164\157\040\124\145\143\150\156\157\154\157\147\151\145\163\040
\123\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103
\145\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\044\060
\042\006\003\125\004\003\023\033\103\145\162\164\165\155\040\124
\162\165\163\164\145\144\040\116\145\164\167\157\162\153\040\103
\101\040\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\041\326\320\112\117\045\017\311\062\067\374\252\136\022
\215\351
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Hellenic Academic and Research Institutions RootCA 2015"
#
# Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research
Institutions Cert. Authority,L=Athens,C=GR
# Serial Number: 0 (0x0)
```

```
#
 Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research
Institutions Cert. Authority,L=Athens,C=GR
# Not Valid Before: Tue Jul 07 10:11:21 2015
# Not Valid After : Sat Jun 30 10:11:21 2040
# Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
# Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\013\060\202\003\363\240\003\002\001\002\002\001\000
```

\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156\163
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164
\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
\164\103\101\040\062\060\061\065\060\036\027\015\061\065\060\067
\060\067\061\060\061\061\062\061\132\027\015\064\060\060\066\063
\060\061\060\061\061\062\061\132\060\201\246\061\013\060\011\006
\003\125\004\006\023\002\107\122\061\017\060\015\006\003\125\004
\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003\125
\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143\141
\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162
\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040
\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171\061
\100\060\076\006\003\125\004\003\023\067\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\122\157\157\164\103\101\040\062\060\061
\065\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\302\370\251\077\033\211\374\074\074\004\135\075\220\066
\260\221\072\171\074\146\132\357\155\071\001\111\032\264\267\317
\177\115\043\123\267\220\000\343\023\052\050\246\061\361\221\000
\343\050\354\256\041\101\316\037\332\375\175\022\133\001\203\017
\271\260\137\231\341\362\022\203\200\115\006\076\337\254\257\347
\241\210\153\061\257\360\213\320\030\063\270\333\105\152\064\364
\002\200\044\050\012\002\025\225\136\166\052\015\231\072\024\133
\366\313\313\123\274\023\115\001\210\067\224\045\033\102\274\042
\330\216\243\226\136\072\331\062\333\076\350\360\020\145\355\164
\341\057\247\174\257\047\064\273\051\175\233\266\317\011\310\345
\323\012\374\210\145\145\164\012\334\163\034\134\315\100\261\034
\324\266\204\214\114\120\317\150\216\250\131\256\302\047\116\202
\242\065\335\024\364\037\377\262\167\325\207\057\252\156\175\044
\047\347\306\313\046\346\345\376\147\007\143\330\105\015\335\072
\131\145\071\130\172\222\231\162\075\234\204\136\210\041\270\325
\364\054\374\331\160\122\117\170\270\275\074\053\213\225\230\365
\263\321\150\317\040\024\176\114\134\137\347\213\345\365\065\201
\031\067\327\021\010\267\146\276\323\112\316\203\127\000\072\303
\201\370\027\313\222\066\135\321\243\330\165\033\341\213\047\352
\172\110\101\375\105\031\006\255\047\231\116\301\160\107\335\265
\237\201\123\022\345\261\214\110\135\061\103\027\343\214\306\172
\143\226\113\051\060\116\204\116\142\031\136\074\316\227\220\245

\177\001\353\235\340\370\213\211\335\045\230\075\222\266\176\357
\331\361\121\121\175\055\046\310\151\131\141\340\254\152\270\052
\066\021\004\172\120\275\062\204\276\057\334\162\325\327\035\026
\107\344\107\146\040\077\364\226\305\257\216\001\172\245\017\172
\144\365\015\030\207\331\256\210\325\372\204\301\072\300\151\050
\055\362\015\150\121\252\343\245\167\306\244\220\016\241\067\213
\061\043\107\301\011\010\353\156\367\170\233\327\202\374\204\040
\231\111\031\266\022\106\261\373\105\125\026\251\243\145\254\234
\007\017\352\153\334\037\056\006\162\354\206\210\022\344\055\333
\137\005\057\344\360\003\323\046\063\347\200\302\315\102\241\027
\064\013\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\161\025\147\310\310\311\275\165\135
\162\320\070\030\152\235\363\161\044\124\013\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\165
\273\155\124\113\252\020\130\106\064\362\142\327\026\066\135\010
\136\325\154\310\207\275\264\056\106\362\061\370\174\352\102\265
\223\026\125\334\241\014\022\240\332\141\176\017\130\130\163\144
\162\307\350\105\216\334\251\362\046\077\306\171\214\261\123\010
\063\201\260\126\023\276\346\121\134\330\233\012\117\113\234\126
\123\002\351\117\366\015\140\352\115\102\125\350\174\033\041\041
\323\033\072\314\167\362\270\220\361\150\307\371\132\376\372\055
\364\277\311\365\105\033\316\070\020\052\067\212\171\243\264\343
\011\154\205\206\223\377\211\226\047\170\201\217\147\343\106\164
\124\216\331\015\151\342\112\364\115\164\003\377\262\167\355\225
\147\227\344\261\305\253\277\152\043\350\324\224\342\104\050\142
\304\113\342\360\330\342\051\153\032\160\176\044\141\223\173\117
\003\062\045\015\105\044\053\226\264\106\152\277\112\013\367\232
\217\301\254\032\305\147\363\157\064\322\372\163\143\214\357\026
\260\250\244\106\052\370\353\022\354\162\264\357\370\053\176\214
\122\300\213\204\124\371\057\076\343\125\250\334\146\261\331\341
\137\330\263\214\131\064\131\244\253\117\154\273\037\030\333\165
\253\330\313\222\315\224\070\141\016\007\006\037\113\106\020\361
\025\276\215\205\134\073\112\053\201\171\017\264\151\237\111\120
\227\115\367\016\126\135\300\225\152\302\066\303\033\150\311\365
\052\334\107\232\276\262\316\305\045\350\372\003\271\332\371\026
\156\221\204\365\034\050\310\374\046\314\327\034\220\126\247\137
\157\072\004\274\315\170\211\013\216\017\057\243\252\117\242\033
\022\075\026\010\100\017\361\106\114\327\252\173\010\301\012\365
\155\047\336\002\217\312\303\265\053\312\351\353\310\041\123\070
\245\314\073\330\167\067\060\242\117\331\157\321\362\100\255\101
\172\027\305\326\112\065\211\267\101\325\174\206\177\125\115\203
\112\245\163\040\300\072\257\220\361\232\044\216\331\216\161\312
\173\270\206\332\262\217\231\076\035\023\015\022\021\356\324\253
\360\351\025\166\002\344\340\337\252\040\036\133\141\205\144\100
\251\220\227\015\255\123\322\132\035\207\152\000\227\145\142\264
\276\157\152\247\365\054\102\355\062\255\266\041\236\276\274

END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions RootCA 2015"
Issuer: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:11:21 2015
Not Valid After : Sat Jun 30 10:11:21 2040
Fingerprint (SHA-256):
A0:40:92:9A:02:CE:53:B4:AC:F4:F2:FF:C6:98:1C:E4:49:6F:75:5E:6D:45:FE:0B:2A:69:2B:CD:52:52:3F:36
Fingerprint (SHA1): 01:0C:06:95:A6:98:19:14:FF:BF:5F:C6:B0:B6:95:EA:29:E9:12:A6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\001\014\006\225\246\230\031\024\377\277\137\306\260\266\225\352
\051\351\022\246
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\377\342\333\003\331\313\113\351\017\255\204\375\173\030\316
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003
\023\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157
\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Hellenic Academic and Research Institutions ECC RootCA 2015"
#
Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
#
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150

\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\303\060\202\002\112\240\003\002\001\002\002\001\000
\060\012\006\010\052\206\110\316\075\004\003\002\060\201\252\061
\013\060\011\006\003\125\004\006\023\002\107\122\061\017\060\015
\006\003\125\004\007\023\006\101\164\150\145\156\163\061\104\060
\102\006\003\125\004\012\023\073\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\145\162\164\056\040\101\165\164\150\157\162
\151\164\171\061\104\060\102\006\003\125\004\003\023\073\110\145
\154\154\145\156\151\143\040\101\143\141\144\145\155\151\143\040
\141\156\144\040\122\145\163\145\141\162\143\150\040\111\156\163
\164\151\164\165\164\151\157\156\163\040\105\103\103\040\122\157
\157\164\103\101\040\062\060\061\065\060\036\027\015\061\065\060
\067\060\067\061\060\063\067\061\062\132\027\015\064\060\060\066
\063\060\061\060\063\067\061\062\132\060\201\252\061\013\060\011
\006\003\125\004\006\023\002\107\122\061\017\060\015\006\003\125
\004\007\023\006\101\164\150\145\156\163\061\104\060\102\006\003
\125\004\012\023\073\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\145\162\164\056\040\101\165\164\150\157\162\151\164\171
\061\104\060\102\006\003\125\004\003\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\105\103\103\040\122\157\157\164\103
\101\040\062\060\061\065\060\166\060\020\006\007\052\206\110\316
\075\002\001\006\005\053\201\004\000\042\003\142\000\004\222\240
\101\350\113\202\204\134\342\370\061\021\231\206\144\116\011\045
\057\235\101\057\012\256\065\117\164\225\262\121\144\153\215\153
\346\077\160\225\360\005\104\107\246\162\070\120\166\225\002\132
\216\256\050\236\371\055\116\231\357\054\110\157\114\045\051\350
\321\161\133\337\035\301\165\067\264\327\372\173\172\102\234\152
\012\126\132\174\151\013\252\200\011\044\154\176\301\106\243\102
\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\035\006\003\125\035\016\004\026\004\024\264\042
\013\202\231\044\001\016\234\273\344\016\375\277\373\227\040\223
\231\052\060\012\006\010\052\206\110\316\075\004\003\002\003\147
\000\060\144\002\060\147\316\026\142\070\242\254\142\105\247\251
\225\044\300\032\047\234\062\073\300\300\325\272\251\347\370\004

\103\123\205\356\122\041\336\235\365\045\203\076\236\130\113\057
\327\147\023\016\041\002\060\005\341\165\001\336\150\355\052\037
\115\114\011\010\015\354\113\255\144\027\050\347\165\316\105\145
\162\041\027\313\042\101\016\214\023\230\070\232\124\155\233\312
\342\174\352\002\130\042\221
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hellenic Academic and Research Institutions ECC RootCA 2015"
Issuer: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions ECC RootCA 2015,O=Hellenic Academic and Research Institutions Cert. Authority,L=Athens,C=GR
Not Valid Before: Tue Jul 07 10:37:12 2015
Not Valid After : Sat Jun 30 10:37:12 2040
Fingerprint (SHA-256):
44:B5:45:AA:8A:25:E6:5A:73:CA:15:DC:27:FC:36:D2:4C:1C:B9:95:3A:06:65:39:B1:15:82:DC:48:7B:48:33
Fingerprint (SHA1): 9F:F1:71:8D:92:D5:9A:F3:7D:74:97:B4:BC:6F:84:68:0B:BA:B6:66
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions ECC RootCA 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\361\161\215\222\325\232\363\175\164\227\264\274\157\204\150
\013\272\266\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\201\345\264\027\353\302\365\341\113\015\101\173\111\222\376\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\252\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\017\060\015\006\003\125\004\007\023\006\101\164\150\145\156
\163\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165
\164\150\157\162\151\164\171\061\104\060\102\006\003\125\004\003
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\105\103
\103\040\122\157\157\164\103\101\040\062\060\061\065
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X1"
#
Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00
Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS
CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END

CKA_VALUE
MULTILINE_OCTAL
\060\202\005\153\060\202\003\123\240\003\002\001\002\002\021\000
\202\020\317\260\322\100\343\131\104\143\340\273\143\202\213\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\051
\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156\145
\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145\141
\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003\125
\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130\061
\060\036\027\015\061\065\060\066\060\064\061\061\060\064\063\070
\132\027\015\063\065\060\066\060\064\061\061\060\064\063\070\132
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\255\350\044\163\364\024\067\363\233\236\053\127\050\034
\207\276\334\267\337\070\220\214\156\074\346\127\240\170\367\165
\302\242\376\365\152\156\366\000\117\050\333\336\150\206\154\104
\223\266\261\143\375\024\022\153\277\037\322\352\061\233\041\176
\321\063\074\272\110\365\335\171\337\263\270\377\022\361\041\232
\113\301\212\206\161\151\112\146\146\154\217\176\074\160\277\255
\051\042\006\363\344\300\346\200\256\342\113\217\267\231\176\224
\003\237\323\107\227\174\231\110\043\123\350\070\256\117\012\157
\203\056\321\111\127\214\200\164\266\332\057\320\070\215\173\003
\160\041\033\165\362\060\074\372\217\256\335\332\143\253\353\026
\117\302\216\021\113\176\317\013\350\377\265\167\056\364\262\173
\112\340\114\022\045\014\160\215\003\051\240\341\123\044\354\023
\331\356\031\277\020\263\112\214\077\211\243\141\121\336\254\207
\007\224\364\143\161\354\056\342\157\133\230\201\341\211\134\064
\171\154\166\357\073\220\142\171\346\333\244\232\057\046\305\320
\020\341\016\336\331\020\216\026\373\267\367\250\367\307\345\002
\007\230\217\066\010\225\347\342\067\226\015\066\165\236\373\016
\162\261\035\233\274\003\371\111\005\330\201\335\005\264\052\326
\101\351\254\001\166\225\012\017\330\337\325\275\022\037\065\057
\050\027\154\322\230\301\250\011\144\167\156\107\067\272\316\254
\131\136\150\235\177\162\326\211\305\006\101\051\076\131\076\335
\046\365\044\311\021\247\132\243\114\100\037\106\241\231\265\247
\072\121\156\206\073\236\175\162\247\022\005\170\131\355\076\121
\170\025\013\003\217\215\320\057\005\262\076\173\112\034\113\163
\005\022\374\306\352\340\120\023\174\103\223\164\263\312\164\347
\216\037\001\010\320\060\324\133\161\066\264\007\272\301\060\060
\134\110\267\202\073\230\246\175\140\212\242\243\051\202\314\272
\275\203\004\033\242\203\003\101\241\326\005\361\033\302\266\360
\250\174\206\073\106\250\110\052\210\334\166\232\166\277\037\152

\245\075\031\217\353\070\363\144\336\310\053\015\012\050\377\367
\333\342\025\102\324\042\320\047\135\341\171\376\030\347\160\210
\255\116\346\331\213\072\306\335\047\121\156\377\274\144\365\063
\103\117\002\003\001\000\001\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\171\264\131\346\173\266\345\344\001
\163\200\010\210\310\032\130\366\351\233\156\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\125
\037\130\251\274\262\250\120\320\014\261\330\032\151\040\047\051
\010\254\141\165\134\212\156\370\202\345\151\057\325\366\126\113
\271\270\163\020\131\323\041\227\176\347\114\161\373\262\322\140
\255\071\250\013\352\027\041\126\205\361\120\016\131\353\316\340
\131\351\272\311\025\357\206\235\217\204\200\366\344\351\221\220
\334\027\233\142\033\105\360\146\225\322\174\157\302\352\073\357
\037\317\313\326\256\047\361\251\260\310\256\375\175\176\232\372
\042\004\353\377\331\177\352\221\053\042\261\027\016\217\362\212
\064\133\130\330\374\001\311\124\271\270\046\314\212\210\063\211
\114\055\204\074\202\337\356\226\127\005\272\054\273\367\304\267
\307\116\073\202\276\061\310\042\163\163\222\321\302\200\244\071
\071\020\063\043\202\114\074\237\206\262\125\230\035\276\051\206
\214\042\233\236\342\153\073\127\072\202\160\115\334\011\307\211
\313\012\007\115\154\350\135\216\311\357\316\253\307\273\265\053
\116\105\326\112\320\046\314\345\162\312\010\152\245\225\343\025
\241\367\244\355\311\054\137\245\373\377\254\050\002\056\276\327
\173\273\343\161\173\220\026\323\007\136\106\123\174\067\007\102
\214\323\304\226\234\325\231\265\052\340\225\032\200\110\256\114
\071\007\316\314\107\244\122\225\053\272\270\373\255\322\063\123
\175\345\035\115\155\325\241\261\307\102\157\346\100\047\065\134
\243\050\267\007\215\347\215\063\220\347\043\237\373\120\234\171
\154\106\325\264\025\263\226\156\176\233\014\226\072\270\122\055
\077\326\133\341\373\010\302\204\376\044\250\243\211\332\254\152
\341\030\052\261\250\103\141\133\323\037\334\073\215\166\362\055
\350\215\165\337\027\063\154\075\123\373\173\313\101\137\377\334
\242\320\141\070\341\226\270\254\135\213\067\327\165\325\063\300
\231\021\256\235\101\301\162\165\204\276\002\101\102\137\147\044
\110\224\321\233\047\276\007\077\271\270\117\201\164\121\341\172
\267\355\235\043\342\276\340\325\050\004\023\074\061\003\236\335
\172\154\217\306\007\030\306\177\336\107\216\077\050\236\004\006
\317\245\124\064\167\275\354\211\233\351\027\103\337\133\333\137
\376\216\036\127\242\315\100\235\176\142\042\332\336\030\047
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X1"

Issuer: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Serial Number:00:82:10:cf:b0:d2:40:e3:59:44:63:e0:bb:63:82:8b:00
#
Subject: CN=ISRG Root X1,O=Internet Security Research Group,C=US
Not Valid Before: Thu Jun 04 11:04:38 2015
Not Valid After : Mon Jun 04 11:04:38 2035
Fingerprint (SHA-256):
96:BC:EC:06:26:49:76:F3:74:60:77:9A:CF:28:C5:A7:CF:E8:A3:C0:AA:E1:1A:8F:FC:EE:05:C0:BD:DF:08:C6
Fingerprint (SHA1): CA:BD:2A:79:A1:07:6A:31:F2:1D:25:36:35:CB:03:9D:43:29:A5:E8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\312\275\052\171\241\007\152\061\362\035\045\066\065\313\003\235
\103\051\245\350
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\014\322\371\340\332\027\163\351\355\206\115\245\343\160\347\116
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\202\020\317\260\322\100\343\131\104\143\340\273\143
\202\213\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM"
#
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
Not Valid After : Tue Jan 01 00:00:00 2030
Fingerprint (SHA-256):

EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\017\135
\223\215\060\147\066\310\006\035\032\307\124\204\151\007\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\060\073\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\021\060\017
\006\003\125\004\012\014\010\106\116\115\124\055\122\103\115\061
\031\060\027\006\003\125\004\013\014\020\101\103\040\122\101\111
\132\040\106\116\115\124\055\122\103\115\060\036\027\015\060\070
\061\060\062\071\061\065\065\071\065\066\132\027\015\063\060\060
\061\060\061\060\060\060\060\060\060\132\060\073\061\013\060\011
\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003\125
\004\012\014\010\106\116\115\124\055\122\103\115\061\031\060\027
\006\003\125\004\013\014\020\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\272\161\200\172\114\206\156\177
\310\023\155\300\306\175\034\000\227\217\054\014\043\273\020\232
\100\251\032\267\207\210\370\233\126\152\373\346\173\216\213\222
\216\247\045\135\131\021\333\066\056\267\121\027\037\251\010\037
\004\027\044\130\252\067\112\030\337\345\071\324\127\375\327\301
\054\221\001\221\342\042\324\003\300\130\374\167\107\354\217\076
\164\103\272\254\064\215\115\070\166\147\216\260\310\157\060\063

\130\161\134\264\365\153\156\324\001\120\270\023\176\154\112\243
\111\321\040\031\356\274\300\051\030\145\247\336\376\357\335\012
\220\041\347\032\147\222\102\020\230\137\117\060\274\076\034\105
\264\020\327\150\100\024\300\100\372\347\167\027\172\346\013\217
\145\133\074\331\232\122\333\265\275\236\106\317\075\353\221\005
\002\300\226\262\166\114\115\020\226\073\222\372\234\177\017\231
\337\276\043\065\105\036\002\134\376\265\250\233\231\045\332\136
\363\042\303\071\365\344\052\056\323\306\037\304\154\252\305\034
\152\001\005\112\057\322\305\301\250\064\046\135\146\245\322\002
\041\371\030\267\006\365\116\231\157\250\253\114\121\350\317\120
\030\305\167\310\071\011\054\111\222\062\231\250\273\027\027\171
\260\132\305\346\243\304\131\145\107\065\203\136\251\350\065\013
\231\273\344\315\040\306\233\112\006\071\265\150\374\042\272\356
\125\214\053\116\352\363\261\343\374\266\231\232\325\102\372\161
\115\010\317\207\036\152\161\175\371\323\264\351\245\161\201\173
\302\116\107\226\245\366\166\205\243\050\217\351\200\156\201\123
\245\155\137\270\110\371\302\371\066\246\056\111\377\270\226\302
\214\007\263\233\210\130\374\353\033\034\336\055\160\342\227\222
\060\241\211\343\274\125\250\047\326\113\355\220\255\213\372\143
\045\131\055\250\065\335\312\227\063\274\345\315\307\235\321\354
\357\136\016\112\220\006\046\143\255\271\331\065\055\007\272\166
\145\054\254\127\217\175\364\007\224\327\201\002\226\135\243\007
\111\325\172\320\127\371\033\347\123\106\165\252\260\171\102\313
\150\161\010\351\140\275\071\151\316\364\257\303\126\100\307\255
\122\242\011\344\157\206\107\212\037\353\050\047\135\203\040\257
\004\311\154\126\232\213\106\365\002\003\001\000\001\243\201\203
\060\201\200\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\367
\175\305\375\304\350\232\033\167\144\247\365\035\240\314\277\207
\140\232\155\060\076\006\003\125\035\040\004\067\060\065\060\063
\006\004\125\035\040\000\060\053\060\051\006\010\053\006\001\005
\005\007\002\001\026\035\150\164\164\160\072\057\057\167\167\167
\056\143\145\162\164\056\146\156\155\164\056\145\163\057\144\160
\143\163\057\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\007\220\112\337\363\043\116\360\303
\234\121\145\233\234\042\242\212\014\205\363\163\051\153\115\376
\001\342\251\014\143\001\277\004\147\245\235\230\137\375\001\023
\372\354\232\142\351\206\376\266\142\322\156\114\224\373\300\165
\105\174\145\014\370\262\067\317\254\017\317\215\157\371\031\367
\217\354\036\362\160\236\360\312\270\357\267\377\166\067\166\133
\366\156\210\363\257\142\062\042\223\015\072\152\216\024\146\014
\055\123\164\127\145\036\325\262\335\043\201\073\245\146\043\047
\147\011\217\341\167\252\103\315\145\121\010\355\121\130\376\346
\071\371\313\107\204\244\025\361\166\273\244\356\244\073\304\137
\357\262\063\226\021\030\267\311\145\276\030\341\243\244\334\372
\030\371\323\274\023\233\071\172\064\272\323\101\373\372\062\212
\052\267\053\206\013\151\203\070\276\315\212\056\013\160\255\215

\046\222\356\036\365\001\053\012\331\326\227\233\156\340\250\031
\034\072\041\213\014\036\100\255\003\347\335\146\176\365\271\040
\015\003\350\226\371\202\105\324\071\340\240\000\135\327\230\346
\175\236\147\163\303\232\052\367\253\213\241\072\024\357\064\274
\122\016\211\230\232\004\100\204\035\176\105\151\223\127\316\353
\316\370\120\174\117\034\156\004\103\233\371\326\073\043\030\351
\352\216\321\115\106\215\361\073\344\152\312\272\373\043\267\233
\372\231\001\051\132\130\132\055\343\371\324\155\016\046\255\301
\156\064\274\062\370\014\005\372\145\243\333\073\067\203\042\351
\326\334\162\063\375\135\362\040\275\166\074\043\332\050\367\371
\033\353\131\144\325\334\137\162\176\040\374\315\211\265\220\147
\115\142\172\077\116\255\035\303\071\376\172\364\050\026\337\101
\366\110\200\005\327\017\121\171\254\020\253\324\354\003\146\346
\152\260\272\061\222\102\100\152\276\072\323\162\341\152\067\125
\274\254\035\225\267\151\141\362\103\221\164\346\240\323\012\044
\106\241\010\257\326\332\105\031\226\324\123\035\133\204\171\360
\300\367\107\357\213\217\305\006\256\235\114\142\235\377\106\004
\370\323\311\266\020\045\100\165\376\026\252\311\112\140\206\057
\272\357\060\167\344\124\342\270\204\231\130\200\252\023\213\121
\072\117\110\366\213\266\263
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM"
Issuer: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Serial Number:5d:93:8d:30:67:36:c8:06:1d:1a:c7:54:84:69:07
Subject: OU=AC RAIZ FNMT-RCM,O=FNMT-RCM,C=ES
Not Valid Before: Wed Oct 29 15:59:56 2008
#
Not Valid After : Tue Jan 01 00:00:00 2030
Fingerprint (SHA-256):
EB:C5:57:0C:29:01:8C:4D:67:B1:AA:12:7B:AF:12:F7:03:B4:61:1E:BC:17:B7:DA:B5:57:38:94:17:9B:93:FA
Fingerprint (SHA1): EC:50:35:07:B2:15:C4:95:62:19:E2:A8:9A:5B:42:99:2C:4C:2C:20
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\120\065\007\262\025\304\225\142\031\342\250\232\133\102\231
\054\114\054\040
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\342\011\004\264\323\275\321\240\024\375\032\322\107\304\127\035
END

CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\031\060\027\006\003\125\004\013\014\020\101\103\040
\122\101\111\132\040\106\116\115\124\055\122\103\115
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\135\223\215\060\147\066\310\006\035\032\307\124\204\151
\007
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 1"
#
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\101\060\202\002\051\240\003\002\001\002\002\023\006
\154\237\317\231\277\214\012\071\342\360\170\212\103\346\226\066
\133\312\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\061\060\036\027\015
\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\063
\070\060\061\061\067\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\061\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\262\170\200\161\312\170\325\343
\161\257\107\200\120\164\175\156\330\327\210\166\364\231\150\367
\130\041\140\371\164\204\001\057\254\002\055\206\323\240\103\172
\116\262\244\320\066\272\001\276\215\333\110\310\007\027\066\114
\364\356\210\043\307\076\353\067\365\265\031\370\111\150\260\336
\327\271\166\070\035\141\236\244\376\202\066\245\345\112\126\344
\105\341\371\375\264\026\372\164\332\234\233\065\071\057\372\260
\040\120\006\154\172\320\200\262\246\371\257\354\107\031\217\120
\070\007\334\242\207\071\130\370\272\325\251\371\110\147\060\226
\356\224\170\136\157\211\243\121\300\060\206\146\241\105\146\272
\124\353\243\303\221\371\110\334\377\321\350\060\055\175\055\164
\160\065\327\210\044\367\236\304\131\156\273\163\207\027\362\062
\106\050\270\103\372\267\035\252\312\264\362\237\044\016\055\113
\367\161\134\136\151\377\352\225\002\313\070\212\256\120\070\157
\333\373\055\142\033\305\307\036\124\341\167\340\147\310\017\234
\207\043\326\077\100\040\177\040\200\304\200\114\076\073\044\046
\216\004\256\154\232\310\252\015\002\003\001\000\001\243\102\060
\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\204\030\314
\205\064\354\274\014\224\224\056\010\131\234\307\262\020\116\012
\010\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\001\001\000\230\362\067\132\101\220\241\032\305\166\121
\050\040\066\043\016\256\346\050\273\252\370\224\256\110\244\060
\177\033\374\044\215\113\264\310\241\227\366\266\361\172\160\310
\123\223\314\010\050\343\230\045\317\043\244\371\336\041\323\174
\205\011\255\116\232\165\072\302\013\152\211\170\166\104\107\030
\145\154\215\101\216\073\177\232\313\364\265\247\120\327\005\054
\067\350\003\113\255\351\141\240\002\156\365\362\360\305\262\355
\133\267\334\372\224\134\167\236\023\245\177\122\255\225\362\370

\223\073\336\213\134\133\312\132\122\133\140\257\024\367\113\357
\243\373\237\100\225\155\061\124\374\102\323\307\106\037\043\255
\331\017\110\160\232\331\165\170\161\321\162\103\064\165\156\127
\131\302\002\134\046\140\051\317\043\031\026\216\210\103\245\324
\344\313\010\373\043\021\103\350\103\051\162\142\241\251\135\136
\010\324\220\256\270\330\316\024\302\320\125\362\206\366\304\223
\103\167\146\141\300\271\350\101\327\227\170\140\003\156\112\162
\256\245\321\175\272\020\236\206\154\033\212\271\131\063\370\353
\304\220\276\361\271
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 1"
Issuer: CN=Amazon Root CA 1,O=Amazon,C=US
Serial Number:06:6c:9f:cf:99:bf:8c:0a:39:e2:f0:78:8a:43:e6:96:36:5b:ca
Subject: CN=Amazon Root CA 1,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sun Jan 17 00:00:00 2038
Fingerprint (SHA-256):
8E:CD:E6:88:4F:3D:87:B1:12:5B:A3:1A:C3:FC:B1:3D:70:16:DE:7F:57:CC:90:4F:E1:CB:97:C6:AE:98:19:6E
Fingerprint (SHA1): 8D:A7:F9:65:EC:5E:FC:37:91:0F:1C:6E:59:FD:C1:CC:6A:6E:DE:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\247\371\145\354\136\374\067\221\017\034\156\131\375\301\314
\152\156\336\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\306\277\256\354\376\255\057\030\306\210\150\060\374\310\346
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\317\231\277\214\012\071\342\360\170\212\103
\346\226\066\133\312
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 2"
#
Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
Subject: CN=Amazon Root CA 2,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint
(SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\101\060\202\003\051\240\003\002\001\002\002\023\006
\154\237\322\226\065\206\237\012\017\345\206\170\370\133\046\273
\212\067\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157
\156\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172
\157\156\040\122\157\157\164\040\103\101\040\062\060\036\027\015

\061\065\060\065\062\066\060\060\060\060\060\060\132\027\015\064
\060\060\065\062\066\060\060\060\060\060\060\132\060\071\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\017\060\015\006
\003\125\004\012\023\006\101\155\141\172\157\156\061\031\060\027
\006\003\125\004\003\023\020\101\155\141\172\157\156\040\122\157
\157\164\040\103\101\040\062\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\255\226\237\055\234\112\114\112
\201\171\121\231\354\212\313\153\140\121\023\274\115\155\006\374
\260\010\215\335\031\020\152\307\046\014\065\330\300\157\040\204
\351\224\261\233\205\003\303\133\333\112\350\310\370\220\166\331
\133\117\343\114\350\006\066\115\314\232\254\075\014\220\053\222
\324\006\031\140\254\067\104\171\205\201\202\255\132\067\340\015
\314\235\246\114\122\166\352\103\235\267\004\321\120\366\125\340
\325\322\246\111\205\351\067\351\312\176\256\134\225\115\110\232
\077\256\040\132\155\210\225\331\064\270\122\032\103\220\260\277
\154\005\271\266\170\267\352\320\344\072\074\022\123\142\377\112
\362\173\276\065\005\251\022\064\343\363\144\164\142\054\075\000
\111\132\050\376\062\104\273\207\335\145\047\002\161\073\332\112
\367\037\332\315\367\041\125\220\117\017\354\256\202\341\237\153
\331\105\323\273\360\137\207\355\074\054\071\206\332\077\336\354
\162\125\353\171\243\255\333\335\174\260\272\034\316\374\336\117
\065\166\317\017\370\170\037\152\066\121\106\047\141\133\351\236
\317\360\242\125\175\174\045\212\157\057\264\305\317\204\056\053
\375\015\121\020\154\373\137\033\274\033\176\305\256\073\230\001
\061\222\377\013\127\364\232\262\271\127\351\253\357\015\166\321
\360\356\364\316\206\247\340\156\351\264\151\241\337\151\366\063
\306\151\056\227\023\236\245\207\260\127\020\201\067\311\123\263
\273\177\366\222\321\234\320\030\364\222\156\332\203\117\246\143
\231\114\245\373\136\357\041\144\172\040\137\154\144\205\025\313
\067\351\142\014\013\052\026\334\001\056\062\332\076\113\365\236
\072\366\027\100\224\357\236\221\010\206\372\276\143\250\132\063
\354\313\164\103\225\371\154\151\122\066\307\051\157\374\125\003
\134\037\373\237\275\107\353\347\111\107\225\013\116\211\042\011
\111\340\365\141\036\361\277\056\212\162\156\200\131\377\127\072
\371\165\062\243\116\137\354\355\050\142\331\115\163\362\314\201
\027\140\355\315\353\334\333\247\312\305\176\002\275\362\124\010
\124\375\264\055\011\054\027\124\112\230\321\124\341\121\147\010
\322\355\156\176\157\077\322\055\201\131\051\146\313\220\071\225
\021\036\164\047\376\335\353\257\002\003\001\000\001\243\102\060
\100\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\260\014\360
\114\060\364\005\130\002\110\375\063\345\122\257\113\204\343\146
\122\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\003\202\002\001\000\252\250\200\217\016\170\243\340\242\324\315
\346\365\230\172\073\352\000\003\260\227\016\223\274\132\250\366
\054\214\162\207\251\261\374\177\163\375\143\161\170\245\207\131

\317\060\341\015\020\262\023\132\155\202\365\152\346\200\237\240
\005\013\150\344\107\153\307\152\337\266\375\167\062\162\345\030
\372\011\364\240\223\054\135\322\214\165\205\166\145\220\014\003
\171\267\061\043\143\255\170\203\011\206\150\204\312\377\371\317
\046\232\222\171\347\315\113\305\347\141\247\027\313\363\251\022
\223\223\153\247\350\057\123\222\304\140\130\260\314\002\121\030
\133\205\215\142\131\143\266\255\264\336\232\373\046\367\000\047
\300\135\125\067\164\231\311\120\177\343\131\056\104\343\054\045
\356\354\114\062\167\264\237\032\351\113\135\040\305\332\375\034
\207\026\306\103\350\324\273\046\232\105\160\136\251\013\067\123
\342\106\173\047\375\340\106\362\211\267\314\102\266\313\050\046
\156\331\245\311\072\310\101\023\140\367\120\214\025\256\262\155
\032\025\032\127\170\346\222\052\331\145\220\202\077\154\002\257
\256\022\072\047\226\066\004\327\035\242\200\143\251\233\361\345
\272\264\174\024\260\116\311\261\037\164\137\070\366\121\352\233
\372\054\242\021\324\251\055\047\032\105\261\257\262\116\161\015
\300\130\106\326\151\006\313\123\313\263\376\153\101\315\101\176
\175\114\017\174\162\171\172\131\315\136\112\016\254\233\251\230
\163\171\174\264\364\314\271\270\007\014\262\164\134\270\307\157
\210\241\220\247\364\252\371\277\147\072\364\032\025\142\036\267
\237\276\075\261\051\257\147\241\022\362\130\020\031\123\003\060
\033\270\032\211\366\234\275\227\003\216\243\011\363\035\213\041
\361\264\337\344\034\321\237\145\002\006\352\134\326\023\263\204
\357\242\245\134\214\167\051\247\150\300\153\256\100\322\250\264
\352\315\360\215\113\070\234\031\232\033\050\124\270\211\220\357
\312\165\201\076\036\362\144\044\307\030\257\116\377\107\236\007
\366\065\145\244\323\012\126\377\365\027\144\154\357\250\042\045
\111\223\266\337\000\027\332\130\176\135\356\305\033\260\321\321
\137\041\020\307\371\363\272\002\012\047\007\305\361\326\307\323
\340\373\011\140\154
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 2"
Issuer: CN=Amazon Root CA 2,O=Amazon,C=US
Serial Number:06:6c:9f:d2:96:35:86:9f:0a:0f:e5:86:78:f8:5b:26:bb:8a:37
Subject: CN=Amazon Root CA 2,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After :
Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
1B:A5:B2:AA:8C:65:40:1A:82:96:01:18:F8:0B:EC:4F:62:30:4D:83:CE:C4:71:3A:19:C3:9C:01:1E:A4:6D:B4
Fingerprint (SHA1): 5A:8C:EF:45:D7:A6:98:59:76:7A:8C:8B:44:96:B5:78:CF:47:4B:1A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\132\214\357\105\327\246\230\131\166\172\214\213\104\226\265\170
\317\107\113\032
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\345\215\316\250\102\342\172\300\052\134\174\236\046\277\146
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\322\226\065\206\237\012\017\345\206\170\370
\133\046\273\212\067
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 3"
#
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a
Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint (SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\266\060\202\001\133\240\003\002\001\002\002\023\006
\154\237\325\164\227\066\146\077\073\013\232\331\350\236\166\003
\362\112\060\012\006\010\052\206\110\316\075\004\003\002\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\063\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004
\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\063\060\131\060\023\006\007\052\206\110\316\075\002
\001\006\010\052\206\110\316\075\003\001\007\003\102\000\004\051
\227\247\306\101\177\300\015\233\350\001\033\126\306\362\122\245
\272\055\262\022\350\322\056\327\372\311\305\330\252\155\037\163
\201\073\073\230\153\071\174\063\245\305\116\206\216\200\027\150
\142\105\127\175\104\130\035\263\067\345\147\010\353\146\336\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\035\006\003\125\035\016\004\026\004\024\253
\266\333\327\006\236\067\254\060\206\007\221\160\307\234\304\031
\261\170\300\060\012\006\010\052\206\110\316\075\004\003\002\003
\111\000\060\106\002\041\000\340\205\222\243\027\267\215\371\053
\006\245\223\254\032\230\150\141\162\372\341\241\320\373\034\170
\140\246\103\231\305\270\304\002\041\000\234\002\357\361\224\234
\263\226\371\353\306\052\370\266\054\376\072\220\024\026\327\214
\143\044\110\034\337\060\175\325\150\073
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 3"
Issuer: CN=Amazon Root CA 3,O=Amazon,C=US
Serial Number:06:6c:9f:d5:74:97:36:66:3f:3b:0b:9a:d9:e8:9e:76:03:f2:4a
Subject: CN=Amazon Root CA 3,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
18:CE:6C:FE:7B:F1:4E:60:B2:E3:47:B8:DF:E8:68:CB:31:D0:2E:BB:3A:DA:27:15:69:F5:03:43:B4:6D:B3:A4
Fingerprint
(SHA1): 0D:44:DD:8C:3C:8C:1A:1A:58:75:64:81:E9:0F:2E:2A:FF:B3:D2:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\015\104\335\214\074\214\032\032\130\165\144\201\351\017\056\052
\377\263\322\156
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\240\324\357\013\367\265\330\111\225\052\354\365\304\374\201\207
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\325\164\227\066\146\077\073\013\232\331\350
\236\166\003\362\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Amazon Root CA 4"
#
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92

Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\362\060\202\001\170\240\003\002\001\002\002\023\006
\154\237\327\301\273\020\114\051\103\345\161\173\173\054\310\032
\301\016\060\012\006\010\052\206\110\316\075\004\003\003\060\071
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\017\060
\015\006\003\125\004\012\023\006\101\155\141\172\157\156\061\031
\060\027\006\003\125\004\003\023\020\101\155\141\172\157\156\040
\122\157\157\164\040\103\101\040\064\060\036\027\015\061\065\060
\065\062\066\060\060\060\060\060\060\132\027\015\064\060\060\065
\062\066\060\060\060\060\060\060\132\060\071\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\017\060\015\006\003\125\004
\012\023\006\101\155\141\172\157\156\061\031\060\027\006\003\125
\004\003\023\020\101\155\141\172\157\156\040\122\157\157\164\040
\103\101\040\064\060\166\060\020\006\007\052\206\110\316\075\002
\001\006\005\053\201\004\000\042\003\142\000\004\322\253\212\067
\117\243\123\015\376\301\212\173\113\250\173\106\113\143\260\142
\366\055\033\333\010\161\041\322\000\350\143\275\232\047\373\360
\071\156\135\352\075\245\311\201\252\243\133\040\230\105\135\026
\333\375\350\020\155\343\234\340\343\275\137\204\142\363\160\144
\063\240\313\044\057\160\272\210\241\052\240\165\370\201\256\142
\006\304\201\333\071\156\051\260\036\372\056\134\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001

\206\060\035\006\003\125\035\016\004\026\004\024\323\354\307\072
\145\156\314\341\332\166\232\126\373\234\363\206\155\127\345\201
\060\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060
\145\002\060\072\213\041\361\275\176\021\255\320\357\130\226\057
\326\353\235\176\220\215\053\317\146\125\303\054\343\050\251\160
\012\107\016\360\067\131\022\377\055\231\224\050\116\052\117\065
\115\063\132\002\061\000\352\165\000\116\073\304\072\224\022\221
\311\130\106\235\041\023\162\247\210\234\212\344\114\112\333\226
\324\254\213\153\153\111\022\123\063\255\327\344\276\044\374\265
\012\166\324\245\274\020
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Amazon Root CA 4"
Issuer: CN=Amazon Root CA 4,O=Amazon,C=US
Serial Number:06:6c:9f:d7:c1:bb:10:4c:29:43:e5:71:7b:7b:2c:c8:1a:c1:0e
Subject: CN=Amazon Root CA 4,O=Amazon,C=US
Not Valid Before: Tue May 26 00:00:00 2015
Not Valid After : Sat May 26 00:00:00 2040
Fingerprint (SHA-256):
E3:5D:28:41:9E:D0:20:25:CF:A6:90:38:CD:62:39:62:45:8D:A5:C6:95:FB:DE:A3:C2:2B:0B:FB:25:89:70:92
#
Fingerprint (SHA1): F6:10:84:07:D6:F8:BB:67:98:0C:C2:E2:44:C2:EB:AE:1C:EF:63:BE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Amazon Root CA 4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\020\204\007\326\370\273\147\230\014\302\342\104\302\353\256
\034\357\143\276
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\274\047\325\353\027\215\006\152\151\325\375\211\107\264\315
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\017\060\015\006\003\125\004\012\023\006\101\155\141\172\157\156
\061\031\060\027\006\003\125\004\003\023\020\101\155\141\172\157
\156\040\122\157\157\164\040\103\101\040\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\023\006\154\237\327\301\273\020\114\051\103\345\161\173\173
\054\310\032\301\016
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST Root CA 3 2013"
#
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\016\060\202\002\366\240\003\002\001\002\002\003\017
\335\254\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003

\014\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\101\040\063\040\062\060\061\063\060\036\027\015\061\063\060\071
\062\060\060\070\062\065\065\061\132\027\015\062\070\060\071\062
\060\060\070\062\065\065\061\132\060\105\061\013\060\011\006\003
\125\004\006\023\002\104\105\061\025\060\023\006\003\125\004\012
\014\014\104\055\124\162\165\163\164\040\107\155\142\110\061\037
\060\035\006\003\125\004\003\014\026\104\055\124\122\125\123\124
\040\122\157\157\164\040\103\101\040\063\040\062\060\061\063\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\304\173\102\222\202\037\354\355\124\230\216\022\300\312\011\337
\223\156\072\223\134\033\344\020\167\236\116\151\210\154\366\341
\151\362\366\233\242\141\261\275\007\040\164\230\145\361\214\046
\010\315\250\065\312\200\066\321\143\155\350\104\172\202\303\154
\136\336\273\350\066\322\304\150\066\214\237\062\275\204\042\340
\334\302\356\020\106\071\155\257\223\071\256\207\346\303\274\011
\311\054\153\147\133\331\233\166\165\114\013\340\273\305\327\274
\076\171\362\137\276\321\220\127\371\256\366\146\137\061\277\323
\155\217\247\272\112\363\043\145\273\267\357\243\045\327\012\352
\130\266\357\210\372\372\171\262\122\130\325\360\254\214\241\121
\164\051\225\252\121\073\220\062\003\237\034\162\164\220\336\075
\355\141\322\345\343\375\144\107\345\271\267\112\251\367\037\256
\226\206\004\254\057\343\244\201\167\267\132\026\377\330\017\077
\366\267\170\314\244\257\372\133\074\022\133\250\122\211\162\357
\210\363\325\104\201\206\225\043\237\173\335\274\331\064\357\174
\224\074\252\300\101\302\343\235\120\032\300\344\031\042\374\263
\002\003\001\000\001\243\202\001\005\060\202\001\001\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\077\220\310\175\307\025\157
\363\044\217\251\303\057\113\242\017\041\262\057\347\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201\276
\006\003\125\035\037\004\201\266\060\201\263\060\164\240\162\240
\160\206\156\154\144\141\160\072\057\057\144\151\162\145\143\164
\157\162\171\056\144\055\164\162\165\163\164\056\156\145\164\057
\103\116\075\104\055\124\122\125\123\124\045\062\060\122\157\157
\164\045\062\060\103\101\045\062\060\063\045\062\060\062\060\061
\063\054\117\075\104\055\124\162\165\163\164\045\062\060\107\155
\142\110\054\103\075\104\105\077\143\145\162\164\151\146\151\143
\141\164\145\162\145\166\157\143\141\164\151\157\156\154\151\163
\164\060\073\240\071\240\067\206\065\150\164\164\160\072\057\057
\143\162\154\056\144\055\164\162\165\163\164\056\156\145\164\057
\143\162\154\057\144\055\164\162\165\163\164\137\162\157\157\164
\137\143\141\137\063\137\062\060\061\063\056\143\162\154\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\016\131\016\130\344\164\110\043\104\317\064\041\265\234
\024\032\255\232\113\267\263\210\155\134\251\027\160\360\052\237
\215\173\371\173\205\372\307\071\350\020\010\260\065\053\137\317
\002\322\323\234\310\013\036\356\005\124\256\067\223\004\011\175

\154\217\302\164\274\370\034\224\276\061\001\100\055\363\044\040
\267\204\125\054\134\310\365\164\112\020\031\213\243\307\355\065
\326\011\110\323\016\300\272\071\250\260\106\002\260\333\306\210
\131\302\276\374\173\261\053\317\176\142\207\125\226\314\001\157
\233\147\041\225\065\213\370\020\374\161\033\267\113\067\151\246
\073\326\354\213\356\301\260\363\045\311\217\222\175\241\352\303
\312\104\277\046\245\164\222\234\343\164\353\235\164\331\313\115
\207\330\374\264\151\154\213\240\103\007\140\170\227\351\331\223
\174\302\106\274\233\067\122\243\355\212\074\023\251\173\123\113
\111\232\021\005\054\013\156\126\254\037\056\202\154\340\151\147
\265\016\155\055\331\344\300\025\361\077\372\030\162\341\025\155
\047\133\055\060\050\053\237\110\232\144\053\231\357\362\165\111
\137\134
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

#
 Trust for "D-TRUST Root CA 3 2013"
Issuer: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Serial Number: 1039788 (0xfddac)
Subject: CN=D-TRUST Root CA 3 2013,O=D-Trust GmbH,C=DE
Not Valid Before: Fri Sep 20 08:25:51 2013
Not Valid After : Wed Sep 20 08:25:51 2028
Fingerprint (SHA-256):
A1:A8:6D:04:12:1E:B8:7F:02:7C:66:F5:33:03:C2:8E:57:39:F9:43:FC:84:B3:8A:D6:AF:00:90:35:DD:94:57
Fingerprint (SHA1): 6C:7C:CC:E7:D4:AE:51:5F:99:08:CD:3F:F6:E8:C3:78:DF:6F:EF:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root CA 3 2013"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\154\174\314\347\324\256\121\137\231\010\315\077\366\350\303\170
\337\157\357\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\267\042\146\230\176\326\003\340\301\161\346\165\315\126\105\277
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\037\060\035\006\003\125\004\003\014
\026\104\055\124\122\125\123\124\040\122\157\157\164\040\103\101
\040\063\040\062\060\061\063
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\017\335\254
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
#
Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)
Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun
Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\143\060\202\003\113\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145\040
\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003\125
\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154\151
\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157\152
\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165\162
\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055\060
\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145\162
\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145
\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060\064
\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040\113
\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040\123
\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165\162
\165\155\040\061\060\036\027\015\061\063\061\061\062\065\060\070
\062\065\065\065\132\027\015\064\063\061\060\062\065\060\070\062
\065\065\065\132\060\201\322\061\013\060\011\006\003\125\004\006
\023\002\124\122\061\030\060\026\006\003\125\004\007\023\017\107
\145\142\172\145\040\055\040\113\157\143\141\145\154\151\061\102
\060\100\006\003\125\004\012\023\071\124\165\162\153\151\171\145
\040\102\151\154\151\155\163\145\154\040\166\145\040\124\145\153
\156\157\154\157\152\151\153\040\101\162\141\163\164\151\162\155
\141\040\113\165\162\165\155\165\040\055\040\124\125\102\111\124
\101\113\061\055\060\053\006\003\125\004\013\023\044\113\141\155
\165\040\123\145\162\164\151\146\151\153\141\163\171\157\156\040
\115\145\162\153\145\172\151\040\055\040\113\141\155\165\040\123
\115\061\066\060\064\006\003\125\004\003\023\055\124\125\102\111

\124\101\113\040\113\141\155\165\040\123\115\040\123\123\114\040
\113\157\153\040\123\145\162\164\151\146\151\153\141\163\151\040
\055\040\123\165\162\165\155\040\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\257\165\060\063\252\273
\153\323\231\054\022\067\204\331\215\173\227\200\323\156\347\377
\233\120\225\076\220\225\126\102\327\031\174\046\204\215\222\372
\001\035\072\017\342\144\070\267\214\274\350\210\371\213\044\253
\056\243\365\067\344\100\216\030\045\171\203\165\037\073\377\154
\250\305\306\126\370\264\355\212\104\243\253\154\114\374\035\320
\334\357\150\275\317\344\252\316\360\125\367\242\064\324\203\153
\067\174\034\302\376\265\003\354\127\316\274\264\265\305\355\000
\017\123\067\052\115\364\117\014\203\373\206\317\313\376\214\116
\275\207\371\247\213\041\127\234\172\337\003\147\211\054\235\227
\141\247\020\270\125\220\177\016\055\047\070\164\337\347\375\332
\116\022\343\115\025\042\002\310\340\340\374\017\255\212\327\311
\124\120\314\073\017\312\026\200\204\320\121\126\303\216\126\177
\211\042\063\057\346\205\012\275\245\250\033\066\336\323\334\054
\155\073\307\023\275\131\043\054\346\345\244\367\330\013\355\352
\220\100\104\250\225\273\223\325\320\200\064\266\106\170\016\037
\000\223\106\341\356\351\371\354\117\027\002\003\001\000\001\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\145\077
\307\212\206\306\074\335\074\124\134\065\370\072\355\122\014\107
\127\310\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\052\077\341\361\062\216\256\341\230
\134\113\136\317\153\036\152\011\322\042\251\022\307\136\127\175
\163\126\144\200\204\172\223\344\011\271\020\315\237\052\047\341
\000\167\276\110\310\065\250\201\237\344\270\054\311\177\016\260
\322\113\067\135\352\271\325\013\136\064\275\364\163\051\303\355
\046\025\234\176\010\123\212\130\215\320\113\050\337\301\263\337
\040\363\371\343\343\072\337\314\234\224\330\116\117\303\153\027
\267\367\162\350\255\146\063\265\045\123\253\340\370\114\251\235
\375\362\015\272\256\271\331\252\306\153\371\223\273\256\253\270
\227\074\003\032\272\103\306\226\271\105\162\070\263\247\241\226
\075\221\173\176\300\041\123\114\207\355\362\013\124\225\121\223
\325\042\245\015\212\361\223\016\076\124\016\260\330\311\116\334
\362\061\062\126\352\144\371\352\265\235\026\146\102\162\363\177
\323\261\061\103\374\244\216\027\361\155\043\253\224\146\370\255
\373\017\010\156\046\055\177\027\007\011\262\214\373\120\300\237
\226\215\317\266\375\000\235\132\024\232\277\002\104\365\301\302
\237\042\136\242\017\241\343
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER

CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1"
Issuer: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Serial Number: 1 (0x1)
Subject: CN=TUBITAK Kamu SM SSL Kok Sertifikasi - Surum 1,OU=Kamu Sertifikasyon Merkezi - Kamu SM,O=Turkiye Bilimsel ve Teknolojik Arastirma Kurumu - TUBITAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Mon Nov 25 08:25:55 2013
Not Valid After : Sun Oct 25 08:25:55 2043
Fingerprint (SHA-256):
46:ED:C3:68:90:46:D5:3A:45:3F:B3:10:4A:B8:0D:CA:EC:65:8B:26:60:EA:16:29:DD:7E:86:79:90:64:87:16
Fingerprint (SHA1): 31:43:64:9B:EC:CE:27:EC:ED:3A:3F:0B:8F:0D:E4:E8:91:DD:EE:CA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TUBITAK Kamu SM SSL Kok Sertifikasi
 - Surum 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\061\103\144\233\354\316\047\354\355\072\077\013\217\015\344\350
\221\335\356\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\334\000\201\334\151\057\076\057\260\073\366\075\132\221\216\111
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\322\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\023\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\102\060\100\006\003
\125\004\012\023\071\124\165\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\163\164\151\162\155\141\040\113\165
\162\165\155\165\040\055\040\124\125\102\111\124\101\113\061\055
\060\053\006\003\125\004\013\023\044\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\040\055\040\113\141\155\165\040\123\115\061\066\060
\064\006\003\125\004\003\023\055\124\125\102\111\124\101\113\040
\113\141\155\165\040\123\115\040\123\123\114\040\113\157\153\040
\123\145\162\164\151\146\151\153\141\163\151\040\055\040\123\165
\162\165\155\040\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GDCA TrustAUTH R5 ROOT"
#
Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY
CO.,LTD.",C=CN
Serial Number:7d:09:97:fe:f0:47:ea:7a
Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY
CO.,LTD.",C=CN
Not Valid Before: Wed Nov 26 05:13:15 2014
Not Valid After : Mon Dec 31 15:59:59 2040
Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\175\011\227\376\360\107\352\172
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\210\060\202\003\160\240\003\002\001\002\002\010\175
\011\227\376\360\107\352\172\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\142\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\062\060\060\006\003\125\004\012\014\051
\107\125\101\116\107\040\104\117\116\107\040\103\105\122\124\111
\106\111\103\101\124\105\040\101\125\124\110\117\122\111\124\131
\040\103\117\056\054\114\124\104\056\061\037\060\035\006\003\125
\004\003\014\026\107\104\103\101\040\124\162\165\163\164\101\125
\124\110\040\122\065\040\122\117\117\124\060\036\027\015\061\064
\061\061\062\066\060\065\061\063\061\065\132\027\015\064\060\061
\062\063\061\061\065\065\071\065\071\132\060\142\061\013\060\011
\006\003\125\004\006\023\002\103\116\061\062\060\060\006\003\125
\004\012\014\051\107\125\101\116\107\040\104\117\116\107\040\103
\105\122\124\111\106\111\103\101\124\105\040\101\125\124\110\117
\122\111\124\131\040\103\117\056\054\114\124\104\056\061\037\060
\035\006\003\125\004\003\014\026\107\104\103\101\040\124\162\165
\163\164\101\125\124\110\040\122\065\040\122\117\117\124\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\331
\243\026\360\310\164\164\167\233\357\063\015\073\006\176\125\374
\265\140\217\166\206\022\102\175\126\146\076\210\202\355\162\143
\016\236\213\335\064\054\002\121\121\303\031\375\131\124\204\311
\361\153\263\114\260\351\350\106\135\070\306\242\247\056\021\127
\272\202\025\242\234\217\155\260\231\112\012\362\353\211\160\143
\116\171\304\267\133\275\242\135\261\362\101\002\053\255\251\072
\243\354\171\012\354\137\072\343\375\357\200\074\255\064\233\032
\253\210\046\173\126\242\202\206\037\353\065\211\203\177\137\256
\051\116\075\266\156\354\256\301\360\047\233\256\343\364\354\357
\256\177\367\206\075\162\172\353\245\373\131\116\247\353\225\214
\042\071\171\341\055\010\217\314\274\221\270\101\367\024\301\043
\251\303\255\232\105\104\263\262\327\054\315\306\051\342\120\020
\256\134\313\202\216\027\030\066\175\227\346\210\232\260\115\064
\011\364\054\271\132\146\052\260\027\233\236\036\166\235\112\146
\061\101\337\077\373\305\006\357\033\266\176\032\106\066\367\144
\143\073\343\071\030\043\347\147\165\024\325\165\127\222\067\275
\276\152\033\046\120\362\066\046\006\220\305\160\001\144\155\166
\146\341\221\333\156\007\300\141\200\056\262\056\057\214\160\247
\321\073\074\263\221\344\156\266\304\073\160\362\154\222\227\011
\315\107\175\030\300\363\273\236\017\326\213\256\007\266\132\017
\316\013\014\107\247\345\076\270\275\175\307\233\065\240\141\227
\072\101\165\027\314\053\226\167\052\222\041\036\331\225\166\040
\147\150\317\015\275\337\326\037\011\152\232\342\314\163\161\244
\057\175\022\200\267\123\060\106\136\113\124\231\017\147\311\245
\310\362\040\301\202\354\235\021\337\302\002\373\032\073\321\355
\040\232\357\145\144\222\020\015\052\342\336\160\361\030\147\202
\214\141\336\270\274\321\057\234\373\017\320\053\355\033\166\271
\344\071\125\370\370\241\035\270\252\200\000\114\202\347\262\177
\011\270\274\060\240\057\015\365\122\236\216\367\222\263\012\000

\035\000\124\227\006\340\261\007\331\307\017\134\145\175\074\155
\131\127\344\355\245\215\351\100\123\237\025\113\240\161\366\032
\041\343\332\160\006\041\130\024\207\205\167\171\252\202\171\002
\003\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004
\026\004\024\342\311\100\237\115\316\350\232\241\174\317\016\077
\145\305\051\210\152\031\121\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\321\111\127\340
\247\314\150\130\272\001\017\053\031\315\215\260\141\105\254\021
\355\143\120\151\370\037\177\276\026\217\375\235\353\013\252\062
\107\166\322\147\044\355\275\174\063\062\227\052\307\005\206\146
\015\027\175\024\025\033\324\353\375\037\232\366\136\227\151\267
\032\045\244\012\263\221\077\137\066\254\213\354\127\250\076\347
\201\212\030\127\071\205\164\032\102\307\351\133\023\137\217\371
\010\351\222\164\215\365\107\322\253\073\326\373\170\146\116\066
\175\371\351\222\351\004\336\375\111\143\374\155\373\024\161\223
\147\057\107\112\267\271\377\036\052\163\160\106\060\277\132\362
\057\171\245\341\215\014\331\371\262\143\067\214\067\145\205\160
\152\134\133\011\162\271\255\143\074\261\335\370\374\062\277\067
\206\344\273\216\230\047\176\272\037\026\341\160\021\362\003\337
\045\142\062\047\046\030\062\204\237\377\000\072\023\272\232\115
\364\117\270\024\160\042\261\312\053\220\316\051\301\160\364\057
\235\177\362\220\036\326\132\337\267\106\374\346\206\372\313\340
\040\166\172\272\246\313\365\174\336\142\245\261\213\356\336\202
\146\212\116\072\060\037\077\200\313\255\047\272\014\136\327\320
\261\126\312\167\161\262\265\165\241\120\251\100\103\027\302\050
\331\317\122\213\133\310\143\324\102\076\240\063\172\106\056\367
\012\040\106\124\176\152\117\061\361\201\176\102\164\070\145\163
\047\356\306\174\270\216\327\245\072\327\230\241\234\214\020\125
\323\333\113\354\100\220\362\315\156\127\322\142\016\174\127\223
\261\247\155\315\235\203\273\052\347\345\266\073\161\130\255\375
\321\105\274\132\221\356\123\025\157\323\105\011\165\156\272\220
\135\036\004\317\067\337\036\250\146\261\214\346\040\152\357\374
\110\116\164\230\102\257\051\157\056\152\307\373\175\321\146\061
\042\314\206\000\176\146\203\014\102\364\275\064\222\303\032\352
\117\312\176\162\115\013\160\214\246\110\273\246\241\024\366\373
\130\104\231\024\256\252\013\223\151\240\051\045\112\245\313\053
\335\212\146\007\026\170\025\127\161\033\354\365\107\204\363\236
\061\067\172\325\177\044\255\344\274\375\375\314\156\203\350\014
\250\267\101\154\007\335\275\074\206\227\057\322
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Trust for "GDCA TrustAUTH R5 ROOT"
# Issuer: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY
CO.,LTD.",C=CN
# Serial Number:7d:09:97:fe:f0:47:ea:7a
# Subject: CN=GDCA TrustAUTH R5 ROOT,O="GUANG DONG CERTIFICATE AUTHORITY
CO.,LTD.",C=CN
# Not Valid Before: Wed Nov 26 05:13:15 2014
# Not Valid After : Mon Dec 31 15:59:59 2040
# Fingerprint (SHA-256):
BF:FF:8F:D0:44:33:48:7D:6A:8A:A6:0C:1A:29:76:7A:9F:C2:BB:B0:5E:42:0F:71:3A:13:B9:92:89:1D:38:93
# Fingerprint (SHA1): 0F:36:38:5B:81:1A:25:C3:9B:31:4E:83:CA:E9:34:66:70:CC:74:B4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GDCA TrustAUTH R5 ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\066\070\133\201\032\045\303\233\061\116\203\312\351\064\146
\160\314\164\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\143\314\331\075\064\065\134\157\123\243\342\010\160\110\037\264
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\107\125\101\116\107\040
\104\117\116\107\040\103\105\122\124\111\106\111\103\101\124\105
\040\101\125\124\110\117\122\111\124\131\040\103\117\056\054\114
\124\104\056\061\037\060\035\006\003\125\004\003\014\026\107\104
\103\101\040\124\162\165\163\164\101\125\124\110\040\122\065\040
\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\175\011\227\376\360\107\352\172
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "SSL.com Root Certification Authority RSA"
#
# Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
# Serial Number:7b:2c:9b:d3:16:80:32:99
# Subject: CN=SSL.com Root Certification
```

Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:39:39 2016
Not Valid After : Tue Feb 12 17:39:39 2041
Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\335\060\202\003\305\240\003\002\001\002\002\010\173
\054\233\323\026\200\062\231\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\174\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014\005
\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014\007
\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004\012
\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151\157
\156\061\061\060\057\006\003\125\004\003\014\050\123\123\114\056
\143\157\155\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171

\040\122\123\101\060\036\027\015\061\066\060\062\061\062\061\067
\063\071\063\071\132\027\015\064\061\060\062\061\062\061\067\063
\071\063\071\132\060\174\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\061\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157
\155\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\371\017\335\243\053\175\313\320\052\376\354\147\205
\246\347\056\033\272\167\341\343\365\257\244\354\372\112\135\221
\304\127\107\153\030\167\153\166\362\375\223\344\075\017\302\026
\236\013\146\303\126\224\236\027\203\205\316\126\357\362\026\375
\000\142\365\042\011\124\350\145\027\116\101\271\340\117\106\227
\252\033\310\270\156\142\136\151\261\137\333\052\002\176\374\154
\312\363\101\330\355\320\350\374\077\141\110\355\260\003\024\035
\020\016\113\031\340\273\116\354\206\145\377\066\363\136\147\002
\013\235\206\125\141\375\172\070\355\376\342\031\000\267\157\241
\120\142\165\164\074\240\372\310\045\222\264\156\172\042\307\370
\036\241\343\262\335\221\061\253\053\035\004\377\245\112\004\067
\351\205\244\063\053\375\342\326\125\064\174\031\244\112\150\307
\262\250\323\267\312\241\223\210\353\301\227\274\214\371\035\331
\042\204\044\164\307\004\075\152\251\051\223\314\353\270\133\341
\376\137\045\252\064\130\310\301\043\124\235\033\230\021\303\070
\234\176\075\206\154\245\017\100\206\174\002\364\134\002\117\050
\313\256\161\237\017\072\310\063\376\021\045\065\352\374\272\305
\140\075\331\174\030\325\262\251\323\165\170\003\162\042\312\072
\303\037\357\054\345\056\251\372\236\054\266\121\106\375\257\003
\326\352\140\150\352\205\026\066\153\205\351\036\300\263\335\304
\044\334\200\052\201\101\155\224\076\310\340\311\201\101\000\236
\136\277\177\305\010\230\242\030\054\102\100\263\371\157\070\047
\113\116\200\364\075\201\107\340\210\174\352\034\316\265\165\134
\121\056\034\053\177\032\162\050\347\000\265\321\164\306\327\344
\237\255\007\223\266\123\065\065\374\067\344\303\366\135\026\276
\041\163\336\222\012\370\240\143\152\274\226\222\152\076\370\274
\145\125\233\336\365\015\211\046\004\374\045\032\246\045\151\313
\302\155\312\174\342\131\137\227\254\353\357\056\310\274\327\033
\131\074\053\314\362\031\310\223\153\047\143\031\317\374\351\046
\370\312\161\233\177\223\376\064\147\204\116\231\353\374\263\170
\011\063\160\272\146\246\166\355\033\163\353\032\245\015\304\042
\023\040\224\126\012\116\054\154\116\261\375\317\234\011\272\242
\063\355\207\002\003\001\000\001\243\143\060\141\060\035\006\003
\125\035\016\004\026\004\024\335\004\011\007\242\365\172\175\122
\123\022\222\225\356\070\200\045\015\246\131\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003

\125\035\043\004\030\060\026\200\024\335\004\011\007\242\365\172
\175\122\123\022\222\225\356\070\200\045\015\246\131\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\040\030\021\224\051\373\046\235\034\036\036\160\141\361\225
\162\223\161\044\255\150\223\130\216\062\257\033\263\160\003\374
\045\053\164\205\220\075\170\152\364\271\213\245\227\073\265\030
\221\273\036\247\371\100\133\221\371\125\231\257\036\021\320\134
\035\247\146\343\261\224\007\014\062\071\246\352\033\260\171\330
\035\234\160\104\343\212\335\304\371\225\037\212\070\103\077\001
\205\245\107\247\075\106\262\274\345\042\150\367\173\234\330\054
\076\012\041\310\055\063\254\277\305\201\231\061\164\301\165\161
\305\276\261\360\043\105\364\235\153\374\031\143\235\243\274\004
\306\030\013\045\273\123\211\017\263\200\120\336\105\356\104\177
\253\224\170\144\230\323\366\050\335\207\330\160\145\164\373\016
\271\023\353\247\017\141\251\062\226\314\336\273\355\143\114\030
\273\251\100\367\240\124\156\040\210\161\165\030\352\172\264\064
\162\340\043\047\167\134\266\220\352\206\045\100\253\357\063\017
\313\237\202\276\242\040\373\366\265\055\032\346\302\205\261\164
\017\373\310\145\002\244\122\001\107\335\111\042\301\277\330\353
\153\254\176\336\354\143\063\025\267\043\010\217\306\017\215\101
\132\335\216\305\271\217\345\105\077\170\333\272\322\033\100\261
\376\161\115\077\340\201\242\272\136\264\354\025\340\223\335\010
\037\176\341\125\231\013\041\336\223\236\012\373\346\243\111\275
\066\060\376\347\167\262\240\165\227\265\055\201\210\027\145\040
\367\332\220\000\237\311\122\314\062\312\065\174\365\075\017\330
\053\327\365\046\154\311\006\064\226\026\352\160\131\032\062\171
\171\013\266\210\177\017\122\110\075\277\154\330\242\104\056\321
\116\267\162\130\323\211\023\225\376\104\253\370\327\213\033\156
\234\274\054\240\133\325\152\000\257\137\067\341\325\372\020\013
\230\234\206\347\046\217\316\360\354\156\212\127\013\200\343\116
\262\300\240\143\141\220\272\125\150\067\164\152\266\222\333\237
\241\206\042\266\145\047\016\354\266\237\102\140\344\147\302\265
\332\101\013\304\323\213\141\033\274\372\037\221\053\327\104\007
\136\272\051\254\331\305\351\357\123\110\132\353\200\361\050\130
\041\315\260\006\125\373\047\077\123\220\160\251\004\036\127\047
\271
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority RSA"
Issuer: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:7b:2c:9b:d3:16:80:32:99
Subject: CN=SSL.com Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US

```
# Not Valid Before: Fri Feb 12 17:39:39 2016
# Not Valid After : Tue Feb 12 17:39:39 2041
# Fingerprint (SHA-256):
85:66:6A:56:2E:E0:BE:5C:E9:25:C1:D8:89:0A:6F:76:A8:7E:C1:6D:4D:7D:5F:29:EA:74:19:CF:20:12:3B:69
# Fingerprint (SHA1): B7:AB:33:08:D1:EA:44:77:BA:14:80:12:5A:6F:BD:A9:36:49:0C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority RSA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\267\253\063\010\321\352\104\167\272\024\200\022\132\157\275\251
\066\111\014\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\206\151\022\300\160\361\354\254\254\302\325\274\245\133\241\051
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\122\123\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\173\054\233\323\026\200\062\231
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "SSL.com Root Certification Authority ECC"
#
# Issuer: CN=SSL.com Root Certification
 Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
# Serial Number:75:e6:df:cb:c1:68:5b:a8
# Subject: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
# Not Valid Before: Fri Feb 12 18:14:03 2016
# Not Valid After : Tue Feb 12 18:14:03 2041
# Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
# Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
```

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\215\060\202\002\024\240\003\002\001\002\002\010\165
\346\337\313\301\150\133\250\060\012\006\010\052\206\110\316\075
\004\003\002\060\174\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\061
\060\057\006\003\125\004\003\014\050\123\123\114\056\143\157\155
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103\060\036\027\015\061\066\060\062\061\062\061\070\061\064\060
\063\132\027\015\064\061\060\062\061\062\061\070\061\064\060\063
\132\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114

\040\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057
\006\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\105\103\103\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\105\156\251\120\304\246\043\066\236
\137\050\215\027\313\226\042\144\077\334\172\216\035\314\010\263
\242\161\044\272\216\111\271\004\033\107\226\130\253\055\225\310
\355\236\010\065\310\047\353\211\214\123\130\353\142\212\376\360
\133\017\153\061\122\143\101\073\211\315\354\354\266\215\031\323
\064\007\334\273\306\006\177\302\105\225\354\313\177\250\043\340
\011\351\201\372\363\107\323\243\143\060\141\060\035\006\003\125
\035\016\004\026\004\024\202\321\205\163\060\347\065\004\323\216
\002\222\373\345\244\321\304\041\350\315\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\202\321\205\163\060\347\065\004
\323\216\002\222\373\345\244\321\304\041\350\315\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\206\060\012\006\010
\052\206\110\316\075\004\003\002\003\147\000\060\144\002\060\157
\347\353\131\021\244\140\317\141\260\226\173\355\005\371\057\023
\221\334\355\345\374\120\153\021\106\106\263\034\041\000\142\273
\276\303\347\350\315\007\231\371\015\013\135\162\076\304\252\002
\060\037\274\272\013\342\060\044\373\174\155\200\125\012\231\076
\200\015\063\345\146\243\263\243\273\245\325\213\217\011\054\246
\135\176\342\360\007\010\150\155\322\174\151\156\137\337\345\152
\145
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Root Certification Authority ECC"
Issuer: CN=SSL.com Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:75:e6:df:cb:c1:68:5b:a8
Subject: CN=SSL.com Root Certification Authority ECC,O=SSL
Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:14:03 2016
Not Valid After : Tue Feb 12 18:14:03 2041
Fingerprint (SHA-256):
34:17:BB:06:CC:60:07:DA:1B:96:1C:92:0B:8A:B4:CE:3F:AD:82:0E:4A:A3:0B:9A:CB:C4:A7:4E:BD:CE:BC:65
Fingerprint (SHA1): C3:19:7C:39:24:E6:54:AF:1B:C4:AB:20:95:7A:E2:C3:0E:13:02:6A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\303\031\174\071\044\346\124\257\033\304\253\040\225\172\342\303
\016\023\002\152
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\056\332\344\071\177\234\217\067\321\160\237\046\027\121\072\216
END
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\061\060\057\006
\003\125\004\003\014\050\123\123\114\056\143\157\155\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\105\103\103
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\165\346\337\313\301\150\133\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority RSA R2"
#
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL
Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint
(SHA-256):
2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C
Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164

\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\353\060\202\003\323\240\003\002\001\002\002\010\126
\266\051\315\064\274\170\366\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\202\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014
\005\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014
\007\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004
\012\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151
\157\156\061\067\060\065\006\003\125\004\003\014\056\123\123\114
\056\143\157\155\040\105\126\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\122\123\101\040\122\062\060\036\027\015\061
\067\060\065\063\061\061\070\061\064\063\067\132\027\015\064\062
\060\065\063\060\061\070\061\064\063\067\132\060\201\202\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\016\060\014\006
\003\125\004\010\014\005\124\145\170\141\163\061\020\060\016\006
\003\125\004\007\014\007\110\157\165\163\164\157\156\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\067\060\065\006\003\125\004\003
\014\056\123\123\114\056\143\157\155\040\105\126\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\040\122\123\101\040\122\062
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\217\066\145\100\341\326\115\300\327\264\351\106\332\153\352

\063\107\315\114\371\175\175\276\275\055\075\360\333\170\341\206
\245\331\272\011\127\150\355\127\076\240\320\010\101\203\347\050
\101\044\037\343\162\025\320\001\032\373\136\160\043\262\313\237
\071\343\317\305\116\306\222\155\046\306\173\273\263\332\047\235
\012\206\351\201\067\005\376\360\161\161\354\303\034\351\143\242
\027\024\235\357\033\147\323\205\125\002\002\326\111\311\314\132
\341\261\367\157\062\237\311\324\073\210\101\250\234\275\313\253
\333\155\173\011\037\242\114\162\220\332\053\010\374\317\074\124
\316\147\017\250\317\135\226\031\013\304\343\162\353\255\321\175
\035\047\357\222\353\020\277\133\353\073\257\317\200\335\301\322
\226\004\133\172\176\244\251\074\070\166\244\142\216\240\071\136
\352\167\317\135\000\131\217\146\054\076\007\242\243\005\046\021
\151\227\352\205\267\017\226\013\113\310\100\341\120\272\056\212
\313\367\017\232\042\347\177\232\067\023\315\362\115\023\153\041
\321\300\314\042\362\241\106\366\104\151\234\312\141\065\007\000
\157\326\141\010\021\352\272\270\366\351\263\140\345\115\271\354
\237\024\146\311\127\130\333\315\207\151\370\212\206\022\003\107
\277\146\023\166\254\167\175\064\044\205\203\315\327\252\234\220
\032\237\041\054\177\170\267\144\270\330\350\246\364\170\263\125
\313\204\322\062\304\170\256\243\217\141\335\316\010\123\255\354
\210\374\025\344\232\015\346\237\032\167\316\114\217\270\024\025
\075\142\234\206\070\006\000\146\022\344\131\166\132\123\300\002
\230\242\020\053\150\104\173\216\171\316\063\112\166\252\133\201
\026\033\265\212\330\320\000\173\136\142\264\011\326\206\143\016
\246\005\225\111\272\050\213\210\223\262\064\034\330\244\125\156
\267\034\320\336\231\125\073\043\364\042\340\371\051\146\046\354
\040\120\167\333\112\013\217\276\345\002\140\160\101\136\324\256
\120\071\042\024\046\313\262\073\163\164\125\107\007\171\201\071
\250\060\023\104\345\004\212\256\226\023\045\102\017\271\123\304
\233\374\315\344\034\336\074\372\253\326\006\112\037\147\246\230
\060\034\335\054\333\334\030\225\127\146\306\377\134\213\126\365
\167\002\003\001\000\001\243\143\060\141\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\371\140\273\324\343\325\064\366
\270\365\006\200\045\247\163\333\106\151\250\236\060\035\006\003
\125\035\016\004\026\004\024\371\140\273\324\343\325\064\366\270
\365\006\200\045\247\163\333\106\151\250\236\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\126
\263\216\313\012\235\111\216\277\244\304\221\273\146\027\005\121
\230\165\373\345\120\054\172\236\361\024\372\253\323\212\076\377
\221\051\217\143\213\330\264\251\124\001\015\276\223\206\057\371
\112\155\307\136\365\127\371\312\125\034\022\276\107\017\066\305
\337\152\267\333\165\302\107\045\177\271\361\143\370\150\055\125
\004\321\362\215\260\244\317\274\074\136\037\170\347\245\240\040
\160\260\004\305\267\367\162\247\336\042\015\275\063\045\106\214
\144\222\046\343\076\056\143\226\332\233\214\075\370\030\011\327
\003\314\175\206\202\340\312\004\007\121\120\327\377\222\325\014

\357\332\206\237\231\327\353\267\257\150\342\071\046\224\272\150
\267\277\203\323\352\172\147\075\142\147\256\045\345\162\350\342
\344\354\256\022\366\113\053\074\237\351\260\100\363\070\124\263
\375\267\150\310\332\306\217\121\074\262\373\221\334\034\347\233
\235\341\267\015\162\217\342\244\304\251\170\371\353\024\254\306
\103\005\302\145\071\050\030\002\303\202\262\235\005\276\145\355
\226\137\145\164\074\373\011\065\056\173\234\023\375\033\017\135
\307\155\201\072\126\017\314\073\341\257\002\057\042\254\106\312
\106\074\240\034\114\326\104\264\136\056\134\025\146\011\341\046
\051\376\306\122\141\272\261\163\377\303\014\234\345\154\152\224
\077\024\312\100\026\225\204\363\131\251\254\137\114\141\223\155
\321\073\314\242\225\014\042\246\147\147\104\056\271\331\322\212
\101\263\146\013\132\373\175\043\245\362\032\260\377\336\233\203
\224\056\321\077\337\222\267\221\257\005\073\145\307\240\154\261
\315\142\022\303\220\033\343\045\316\064\274\157\167\166\261\020
\303\367\005\032\300\326\257\164\142\110\027\167\222\151\220\141
\034\336\225\200\164\124\217\030\034\303\363\003\320\277\244\103
\165\206\123\030\172\012\056\011\034\066\237\221\375\202\212\042
\113\321\016\120\045\335\313\003\014\027\311\203\000\010\116\065
\115\212\213\355\360\002\224\146\054\104\177\313\225\047\226\027
\255\011\060\254\266\161\027\156\213\027\366\034\011\324\055\073
\230\245\161\323\124\023\331\140\363\365\113\146\117\372\361\356
\040\022\215\264\254\127\261\105\143\241\254\166\251\302\373
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority RSA R2"
Issuer: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:56:b6:29:cd:34:bc:78:f6
Subject: CN=SSL.com EV Root Certification Authority RSA R2,O=SSL
Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Wed May 31 18:14:37 2017
Not Valid After : Fri May 30 18:14:37 2042
Fingerprint (SHA-256):
2E:7B:F1:6C:C2:24:85:A7:BB:E2:AA:86:96:75:07:61:B0:AE:39:BE:3B:2F:E9:D0:CC:6D:4E:F7:34:91:42:5C
Fingerprint (SHA1): 74:3A:F0:52:9B:D0:32:A0:F4:4A:83:CD:D4:BA:A9:7B:7C:2E:C4:9A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\072\360\122\233\320\062\240\364\112\203\315\324\272\251\173
\174\056\304\232

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\341\036\061\130\032\256\124\123\002\366\027\152\021\173\115\225
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\202\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163
\061\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164
\157\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114
\040\103\157\162\160\157\162\141\164\151\157\156\061\067\060\065
\006\003\125\004\003\014\056\123\123\114\056\143\157\155\040\105
\126\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122
\123\101\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\126\266\051\315\064\274\170\366
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com EV Root Certification Authority ECC"
#
Issuer: CN=SSL.com
EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95
Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006

\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\224\060\202\002\032\240\003\002\001\002\002\010\054
\051\234\133\026\355\005\225\060\012\006\010\052\206\110\316\075
\004\003\002\060\177\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145\170
\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157\165
\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017\123
\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061\064
\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157\155
\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\105\103\103\060\036\027\015\061\066\060\062\061\062\061\070
\061\065\062\063\132\027\015\064\061\060\062\061\062\061\070\061
\065\062\063\132\060\177\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\016\060\014\006\003\125\004\010\014\005\124\145
\170\141\163\061\020\060\016\006\003\125\004\007\014\007\110\157
\165\163\164\157\156\061\030\060\026\006\003\125\004\012\014\017
\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156\061
\064\060\062\006\003\125\004\003\014\053\123\123\114\056\143\157
\155\040\105\126\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\105\103\103\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\252\022\107
\220\230\033\373\357\303\100\007\203\040\116\361\060\202\242\006
\321\362\222\206\141\362\366\041\150\312\000\304\307\352\103\000
\124\206\334\375\037\337\000\270\101\142\134\334\160\026\062\336
\037\231\324\314\305\007\310\010\037\141\026\007\121\075\175\134

\007\123\343\065\070\214\337\315\237\331\056\015\112\266\031\056
\132\160\132\006\355\276\360\241\260\312\320\011\051\243\143\060
\141\060\035\006\003\125\035\016\004\026\004\024\133\312\136\345
\336\322\201\252\315\250\055\144\121\266\331\162\233\227\346\117
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\037\006\003\125\035\043\004\030\060\026\200\024\133\312
\136\345\336\322\201\252\315\250\055\144\121\266\331\162\233\227
\346\117\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\012\006\010\052\206\110\316\075\004\003\002\003\150
\000\060\145\002\061\000\212\346\100\211\067\353\351\325\023\331
\312\324\153\044\363\260\075\207\106\130\032\354\261\337\157\373
\126\272\160\153\307\070\314\350\261\214\117\017\367\361\147\166
\016\203\320\036\121\217\002\060\075\366\043\050\046\114\306\140
\207\223\046\233\262\065\036\272\326\367\074\321\034\316\372\045
\074\246\032\201\025\133\363\022\017\154\356\145\212\311\207\250
\371\007\340\142\232\214\134\112
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com EV Root Certification Authority ECC"
Issuer: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:2c:29:9c:5b:16:ed:05:95
#
Subject: CN=SSL.com EV Root Certification Authority ECC,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 18:15:23 2016
Not Valid After : Tue Feb 12 18:15:23 2041
Fingerprint (SHA-256):
22:A2:C1:F7:BD:ED:70:4C:C1:E7:01:B5:F4:08:C3:10:88:0F:E9:56:B5:DE:2A:4A:44:F9:9C:87:3A:25:A7:C8
Fingerprint (SHA1): 4C:DD:51:A3:D1:F5:20:32:14:B0:C6:C5:32:23:03:91:C7:46:42:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority ECC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\114\335\121\243\321\365\040\062\024\260\306\305\062\043\003\221
\307\106\102\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\131\123\042\145\203\102\001\124\300\316\102\271\132\174\362\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157

\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\105\103
\103
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\054\051\234\133\026\355\005\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root CA - R6"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10
00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156

END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\203\060\202\003\153\240\003\002\001\002\002\016\105
\346\273\003\203\063\303\205\145\110\346\377\105\121\060\015\006
\011\052\206\110\206\367\015\001\001\014\005\000\060\114\061\040
\060\036\006\003\125\004\013\023\027\107\154\157\142\141\154\123
\151\147\156\040\122\157\157\164\040\103\101\040\055\040\122\066
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\064
\061\062\061\060\060\060\060\060\060\060\132\027\015\063\064\061
\062\061\060\060\060\060\060\060\060\132\060\114\061\040\060\036
\006\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147
\156\040\122\157\157\164\040\103\101\040\055\040\122\066\061\023
\060\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123
\151\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154
\157\142\141\154\123\151\147\156\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\225\007\350\163\312\146\371
\354\024\312\173\074\367\015\010\361\264\105\013\054\202\264\110
\306\353\133\074\256\203\270\101\222\063\024\244\157\177\351\052
\314\306\260\210\153\305\266\211\321\306\262\377\024\316\121\024
\041\354\112\335\033\132\306\326\207\356\115\072\025\006\355\144
\146\013\222\200\312\104\336\163\224\116\363\247\211\177\117\170
\143\010\310\022\120\155\102\146\057\115\271\171\050\115\122\032
\212\032\200\267\031\201\016\176\304\212\274\144\114\041\034\103
\150\327\075\074\212\305\262\146\325\220\232\267\061\006\305\276
\342\155\062\006\246\036\371\271\353\252\243\270\277\276\202\143
\120\320\360\030\211\337\344\017\171\365\352\242\037\052\322\160
\056\173\347\274\223\273\155\123\342\110\174\214\020\007\070\377
\146\262\167\141\176\340\352\214\074\252\264\244\366\363\225\112
\022\007\155\375\214\262\211\317\320\240\141\167\310\130\164\260
\324\043\072\367\135\072\312\242\333\235\011\336\135\104\055\220
\361\201\315\127\222\372\176\274\120\004\143\064\337\153\223\030
\276\153\066\262\071\344\254\044\066\267\360\357\266\034\023\127
\223\266\336\262\370\342\205\267\163\242\270\065\252\105\362\340
\235\066\241\157\124\212\361\162\126\156\056\210\305\121\102\104
\025\224\356\243\305\070\226\233\116\116\132\013\107\363\006\066
\111\167\060\274\161\067\345\246\354\041\010\165\374\346\141\026
\077\167\325\331\221\227\204\012\154\324\002\115\164\300\024\355
\375\071\373\203\362\136\024\241\004\260\013\351\376\356\217\341
\156\013\262\010\263\141\146\011\152\261\006\072\145\226\131\300
\360\065\375\311\332\050\215\032\021\207\160\201\012\250\232\165
\035\236\072\206\005\000\236\333\200\326\045\371\334\005\236\047

\131\114\166\071\133\352\371\245\241\330\203\017\321\377\337\060
\021\371\205\317\063\110\365\312\155\144\024\054\172\130\117\323
\113\010\111\305\225\144\032\143\016\171\075\365\263\214\312\130
\255\234\102\105\171\156\016\207\031\134\124\261\145\266\277\214
\233\334\023\351\015\157\270\056\334\147\156\311\213\021\265\204
\024\212\000\031\160\203\171\221\227\221\324\032\047\277\067\036
\062\007\330\024\143\074\050\114\257\002\003\001\000\001\243\143
\060\141\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\256\154
\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310\147
\123\240\060\037\006\003\125\035\043\004\030\060\026\200\024\256
\154\005\243\223\023\342\242\347\342\327\034\326\307\360\177\310
\147\123\240\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\003\202\002\001\000\203\045\355\350\321\375\225\122\315
\236\300\004\240\221\151\346\134\320\204\336\334\255\242\117\350
\107\170\326\145\230\251\133\250\074\207\174\002\212\321\156\267
\026\163\346\137\300\124\230\325\164\276\301\315\342\021\221\255
\043\030\075\335\341\162\104\226\264\225\136\300\173\216\231\170
\026\103\023\126\127\263\242\263\073\265\167\334\100\162\254\243
\353\233\065\076\261\010\041\241\347\304\103\067\171\062\276\265
\347\234\054\114\274\103\051\231\216\060\323\254\041\340\343\035
\372\330\007\063\166\124\000\042\052\271\115\040\056\160\150\332
\345\123\374\203\134\323\235\362\377\104\014\104\146\362\322\343
\275\106\000\032\155\002\272\045\135\215\241\061\121\335\124\106
\034\115\333\231\226\357\032\034\004\134\246\025\357\170\340\171
\376\135\333\076\252\114\125\375\232\025\251\157\341\246\373\337
\160\060\351\303\356\102\106\355\302\223\005\211\372\175\143\173
\077\320\161\201\174\000\350\230\256\016\170\064\303\045\373\257
\012\237\040\153\335\073\023\217\022\214\342\101\032\110\172\163
\240\167\151\307\266\134\177\202\310\036\376\130\033\050\053\250
\154\255\136\155\300\005\322\173\267\353\200\376\045\067\376\002
\233\150\254\102\135\303\356\365\314\334\360\120\165\322\066\151
\234\346\173\004\337\156\006\151\266\336\012\011\110\131\207\353
\173\024\140\172\144\252\151\103\357\221\307\114\354\030\335\154
\357\123\055\214\231\341\136\362\162\076\317\124\310\275\147\354
\244\017\114\105\377\323\271\060\043\007\114\217\020\277\206\226
\331\231\132\264\231\127\034\244\314\273\025\211\123\272\054\005
\017\344\304\236\031\261\030\064\325\114\235\272\355\367\037\257
\044\225\004\170\250\003\273\356\201\345\332\137\174\213\112\241
\220\164\045\247\263\076\113\310\054\126\275\307\310\357\070\342
\134\222\360\171\367\234\204\272\164\055\141\001\040\176\176\321
\362\117\007\131\137\213\055\103\122\353\106\014\224\341\365\146
\107\171\167\325\124\133\037\255\044\067\313\105\132\116\240\104
\110\310\330\260\231\305\025\204\011\366\326\111\111\300\145\270
\346\032\161\156\240\250\361\202\350\105\076\154\326\002\327\012
\147\203\005\132\311\244\020
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root CA - R6"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Serial Number:45:e6:bb:03:83:33:c3:85:65:48:e6:ff:45:51
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R6
Not Valid Before: Wed Dec 10 00:00:00 2014
Not Valid After : Sun Dec 10 00:00:00 2034
Fingerprint (SHA-256):
2C:AB:EA:FE:37:D0:6C:A2:2A:BA:73:91:C0:03:3D:25:98:29:52:C4:53:64:73:49:76:3A:3A:B5:AD:6C:CF:69
Fingerprint (SHA1): 80:94:64:0E:B5:A7:A1:CA:11:9C:1F:DD:D5:9F:81:02:63:A7:FB:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root CA - R6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\224\144\016\265\247\241\312\021\234\037\335\325\237\201\002
\143\247\373\321
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\117\335\007\344\324\042\144\071\036\014\067\102\352\321\306\256
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\066\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\016\105\346\273\003\203\063\303\205\145\110\346\377\105\121
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "OISTE WISeKey Global Root GC CA"
#
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global

Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017
Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):
85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\151\060\202\001\357\240\003\002\001\002\002\020\041
\052\126\014\256\332\014\253\100\105\277\053\242\055\072\352\060
\012\006\010\052\206\110\316\075\004\003\003\060\155\061\013\060
\011\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003
\125\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040
\006\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165
\156\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144
\061\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105
\040\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040
\122\157\157\164\040\107\103\040\103\101\060\036\027\015\061\067
\060\065\060\071\060\071\064\070\063\064\132\027\015\064\062\060

\065\060\071\060\071\065\070\063\063\132\060\155\061\013\060\011
\006\003\125\004\006\023\002\103\110\061\020\060\016\006\003\125
\004\012\023\007\127\111\123\145\113\145\171\061\042\060\040\006
\003\125\004\013\023\031\117\111\123\124\105\040\106\157\165\156
\144\141\164\151\157\156\040\105\156\144\157\162\163\145\144\061
\050\060\046\006\003\125\004\003\023\037\117\111\123\124\105\040
\127\111\123\145\113\145\171\040\107\154\157\142\141\154\040\122
\157\157\164\040\107\103\040\103\101\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\114\351\120\300\306\017\162\030\274\330\361\272\263\211\342
\171\112\243\026\247\153\124\044\333\121\377\352\364\011\044\303
\013\042\237\313\152\047\202\201\015\322\300\257\061\344\164\202
\156\312\045\331\214\165\235\361\333\320\232\242\113\041\176\026
\247\143\220\322\071\324\261\207\170\137\030\226\017\120\033\065
\067\017\152\306\334\331\023\115\244\216\220\067\346\275\133\061
\221\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\110\207\024\254\343\303\236\220\140\072\327\312\211\356\323
\255\214\264\120\146\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\046\307\151\133\334\325
\347\262\347\310\014\214\214\303\335\171\214\033\143\325\311\122
\224\116\115\202\112\163\036\262\200\204\251\045\300\114\132\155
\111\051\140\170\023\342\176\110\353\144\002\061\000\333\064\040
\062\010\377\232\111\002\266\210\336\024\257\135\154\231\161\215
\032\077\213\327\340\242\066\206\034\007\202\072\166\123\375\302
\242\355\357\173\260\200\117\130\017\113\123\071\275
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "OISTE WISeKey Global Root GC CA"
Issuer: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Serial Number:21:2a:56:0c:ae:da:0c:ab:40:45:bf:2b:a2:2d:3a:ea
Subject: CN=OISTE WISeKey Global Root GC CA,OU=OISTE Foundation Endorsed,O=WISeKey,C=CH
Not Valid Before: Tue May 09 09:48:34 2017
Not Valid After : Fri May 09 09:58:33 2042
Fingerprint (SHA-256):
85:60:F9:1C:36:24:DA:BA:95:70:B5:FE:A0:DB:E3:6F:F1:1A:83:23:BE:94:86:85:4F:B3:F3:4A:55:71:19:8D
Fingerprint (SHA1): E0:11:84:5E:34:DE:BE:88:81:B9:9C:F6:16:26:D1:96:1F:C3:B9:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "OISTE WISeKey Global Root GC CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\340\021\204\136\064\336\276\210\201\271\234\366\026\046\321\226
\037\303\271\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\251\326\271\055\057\223\144\370\245\151\312\221\351\150\007\043
END
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\020\060\016\006\003\125\004\012\023\007\127\111\123\145\113\145
\171\061\042\060\040\006\003\125\004\013\023\031\117\111\123\124
\105\040\106\157\165\156\144\141\164\151\157\156\040\105\156\144
\157\162\163\145\144\061\050\060\046\006\003\125\004\003\023\037
\117\111\123\124\105\040\127\111\123\145\113\145\171\040\107\154
\157\142\141\154\040\122\157\157\164\040\107\103\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\052\126\014\256\332\014\253\100\105\277\053\242\055
\072\352
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "UCA Global G2 Root"
#
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101

\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\106\060\202\003\056\240\003\002\001\002\002\020\135
\337\261\332\132\243\355\135\276\132\145\040\145\003\220\357\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\075
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107
\154\157\142\141\154\040\107\062\040\122\157\157\164\060\036\027
\015\061\066\060\063\061\061\060\060\060\060\060\060\132\027\015
\064\060\061\062\063\061\060\060\060\060\060\060\132\060\075\061
\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060\017
\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164\061
\033\060\031\006\003\125\004\003\014\022\125\103\101\040\107\154
\157\142\141\154\040\107\062\040\122\157\157\164\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\305\346\053
\157\174\357\046\005\047\243\201\044\332\157\313\001\371\231\232
\251\062\302\042\207\141\101\221\073\313\303\150\033\006\305\114
\251\053\301\147\027\042\035\053\355\371\051\211\223\242\170\275
\222\153\240\243\015\242\176\312\223\263\246\321\214\065\325\165
\371\027\366\317\105\305\345\172\354\167\223\240\217\043\256\016
\032\003\177\276\324\320\355\056\173\253\106\043\133\377\054\346
\124\172\224\300\052\025\360\311\215\260\172\073\044\341\327\150
\342\061\074\006\063\106\266\124\021\246\245\057\042\124\052\130
\015\001\002\361\372\025\121\147\154\300\372\327\266\033\177\321
\126\210\057\032\072\215\073\273\202\021\340\107\000\320\122\207
\253\373\206\176\017\044\153\100\235\064\147\274\215\307\055\206
\157\171\076\216\251\074\027\113\177\260\231\343\260\161\140\334
\013\365\144\303\316\103\274\155\161\271\322\336\047\133\212\350
\330\306\256\341\131\175\317\050\055\065\270\225\126\032\361\262
\130\113\267\022\067\310\174\263\355\113\200\341\215\372\062\043
\266\157\267\110\225\010\261\104\116\205\214\072\002\124\040\057
\337\277\127\117\073\072\220\041\327\301\046\065\124\040\354\307
\077\107\354\357\132\277\113\172\301\255\073\027\120\134\142\330

\017\113\112\334\053\372\156\274\163\222\315\354\307\120\350\101
\226\327\251\176\155\330\351\035\217\212\265\271\130\222\272\112
\222\053\014\126\375\200\353\010\360\136\051\156\033\034\014\257
\217\223\211\255\333\275\243\236\041\312\211\031\354\337\265\303
\032\353\026\376\170\066\114\326\156\320\076\027\034\220\027\153
\046\272\373\172\057\277\021\034\030\016\055\163\003\217\240\345
\065\240\132\342\114\165\035\161\341\071\070\123\170\100\314\203
\223\327\012\236\235\133\217\212\344\345\340\110\344\110\262\107
\315\116\052\165\052\173\362\042\366\311\276\011\221\226\127\172
\210\210\254\356\160\254\371\334\051\343\014\034\073\022\116\104
\326\247\116\260\046\310\363\331\032\227\221\150\352\357\215\106
\006\322\126\105\130\232\074\014\017\203\270\005\045\303\071\317
\073\244\064\211\267\171\022\057\107\305\347\251\227\151\374\246
\167\147\265\337\173\361\172\145\025\344\141\126\145\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\201\304\214\314\365\344\060\377\245\014\010\137\214\025
\147\041\164\001\337\337\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\023\145\042\365\216\053
\255\104\344\313\377\271\150\346\303\200\110\075\004\173\372\043
\057\172\355\066\332\262\316\155\366\346\236\345\137\130\217\313
\067\062\241\310\145\266\256\070\075\065\033\076\274\073\266\004
\320\274\371\111\365\233\367\205\305\066\266\313\274\370\310\071
\325\344\137\007\275\025\124\227\164\312\312\355\117\272\272\144
\166\237\201\270\204\105\111\114\215\157\242\353\261\314\321\303
\224\332\104\302\346\342\352\030\350\242\037\047\005\272\327\345
\326\251\315\335\357\166\230\215\000\016\315\033\372\003\267\216
\200\130\016\047\077\122\373\224\242\312\136\145\311\326\204\332
\271\065\161\363\046\300\117\167\346\201\047\322\167\073\232\024
\157\171\364\366\320\341\323\224\272\320\127\121\275\047\005\015
\301\375\310\022\060\356\157\215\021\053\010\235\324\324\277\200
\105\024\232\210\104\332\060\352\264\247\343\356\357\133\202\325
\076\326\255\170\222\333\134\074\363\330\255\372\270\153\177\304
\066\050\266\002\025\212\124\054\234\260\027\163\216\320\067\243
\024\074\230\225\000\014\051\005\133\236\111\111\261\137\307\343
\313\317\047\145\216\065\027\267\127\310\060\331\101\133\271\024
\266\350\302\017\224\061\247\224\230\314\152\353\265\341\047\365
\020\250\001\350\216\022\142\350\210\314\265\177\106\227\300\233
\020\146\070\032\066\106\137\042\150\075\337\311\306\023\047\253
\123\006\254\242\074\206\006\145\157\261\176\261\051\104\232\243
\272\111\151\050\151\217\327\345\137\255\004\206\144\157\032\240
\014\305\010\142\316\200\243\320\363\354\150\336\276\063\307\027
\133\177\200\304\114\114\261\246\204\212\303\073\270\011\315\024
\201\272\030\343\124\127\066\376\333\057\174\107\241\072\063\310
\371\130\073\104\117\261\312\002\211\004\226\050\150\305\113\270
\046\211\273\326\063\057\120\325\376\232\211\272\030\062\222\124
\306\133\340\235\371\136\345\015\042\233\366\332\342\310\041\262

\142\041\252\206\100\262\056\144\323\137\310\343\176\021\147\105
\037\005\376\343\242\357\263\250\263\363\175\217\370\014\037\042
\037\055\160\264\270\001\064\166\060\000\345\043\170\247\126\327
\120\037\212\373\006\365\302\031\360\320
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "UCA Global G2 Root"
Issuer: CN=UCA Global G2 Root,O=UniTrust,C=CN
Serial Number:5d:df:b1:da:5a:a3:ed:5d:be:5a:65:20:65:03:90:ef
Subject: CN=UCA Global G2 Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 11 00:00:00 2016
Not Valid After : Mon Dec 31 00:00:00 2040
Fingerprint (SHA-256):
9B:EA:11:C9:76:FE:01:47:64:C1:BE:56:A6:F9:14:B5:A5:60:31:7A:BD:99:88:39:33:82:E5:16:1A:A0:49:3C
Fingerprint (SHA1): 28:F9:78:16:19:7A:FF:18:25:18:AA:44:FE:C1:A0:CE:5C:B6:4C:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global G2 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\371\170\026\031\172\377\030\045\030\252\104\376\301\240\316
\134\266\114\212
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\200\376\360\304\112\360\134\142\062\237\034\272\170\251\120\370
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\033\060\031\006\003\125\004\003\014\022\125\103\101
\040\107\154\157\142\141\154\040\107\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\135\337\261\332\132\243\355\135\276\132\145\040\145\003
\220\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

Certificate "UCA Extended Validation Root"
#
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before:
Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24
Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\132\060\202\003\102\240\003\002\001\002\002\020\117
\322\053\217\365\144\310\063\236\117\064\130\146\043\160\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\107
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021\060
\017\006\003\125\004\012\014\010\125\156\151\124\162\165\163\164
\061\045\060\043\006\003\125\004\003\014\034\125\103\101\040\105
\170\164\145\156\144\145\144\040\126\141\154\151\144\141\164\151
\157\156\040\122\157\157\164\060\036\027\015\061\065\060\063\061
\063\060\060\060\060\060\060\132\027\015\063\070\061\062\063\061
\060\060\060\060\060\060\132\060\107\061\013\060\011\006\003\125

\004\006\023\002\103\116\061\021\060\017\006\003\125\004\012\014
\010\125\156\151\124\162\165\163\164\061\045\060\043\006\003\125
\004\003\014\034\125\103\101\040\105\170\164\145\156\144\145\144
\040\126\141\154\151\144\141\164\151\157\156\040\122\157\157\164
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\251\011\007\050\023\002\260\231\340\144\252\036\103\026\172
\163\261\221\240\165\076\250\372\343\070\000\172\354\211\152\040
\017\213\305\260\233\063\003\132\206\306\130\206\325\301\205\273
\117\306\234\100\115\312\276\356\151\226\270\255\201\060\232\174
\222\005\353\005\053\232\110\320\270\166\076\226\310\040\273\322
\260\361\217\330\254\105\106\377\252\147\140\264\167\176\152\037
\074\032\122\172\004\075\007\074\205\015\204\320\037\166\012\367
\152\024\337\162\343\064\174\127\116\126\001\076\171\361\252\051
\073\154\372\370\217\155\115\310\065\337\256\353\334\044\356\171
\105\247\205\266\005\210\336\210\135\045\174\227\144\147\011\331
\277\132\025\005\206\363\011\036\354\130\062\063\021\363\167\144
\260\166\037\344\020\065\027\033\362\016\261\154\244\052\243\163
\374\011\037\036\062\031\123\021\347\331\263\054\056\166\056\241
\243\336\176\152\210\011\350\362\007\212\370\262\315\020\347\342
\163\100\223\273\010\321\077\341\374\013\224\263\045\357\174\246
\327\321\257\237\377\226\232\365\221\173\230\013\167\324\176\350
\007\322\142\265\225\071\343\363\361\155\017\016\145\204\212\143
\124\305\200\266\340\236\113\175\107\046\247\001\010\135\321\210
\236\327\303\062\104\372\202\112\012\150\124\177\070\123\003\314
\244\000\063\144\121\131\013\243\202\221\172\136\354\026\302\363
\052\346\142\332\052\333\131\142\020\045\112\052\201\013\107\007
\103\006\160\207\322\372\223\021\051\172\110\115\353\224\307\160
\115\257\147\325\121\261\200\040\001\001\264\172\010\246\220\177
\116\340\357\007\101\207\257\152\245\136\213\373\317\120\262\232
\124\257\303\211\272\130\055\365\060\230\261\066\162\071\176\111
\004\375\051\247\114\171\344\005\127\333\224\271\026\123\215\106
\263\035\225\141\127\126\177\257\360\026\133\141\130\157\066\120
\021\013\330\254\053\225\026\032\016\037\010\315\066\064\145\020
\142\146\325\200\137\024\040\137\055\014\240\170\012\150\326\054
\327\351\157\053\322\112\005\223\374\236\157\153\147\377\210\361
\116\245\151\112\122\067\005\352\306\026\215\322\304\231\321\202
\053\073\272\065\165\367\121\121\130\363\310\007\335\344\264\003
\177\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\331\164\072\344\060\075\015\367\022\334\176
\132\005\237\036\064\232\367\341\024\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\066\215
\227\314\102\025\144\051\067\233\046\054\326\373\256\025\151\054
\153\032\032\367\137\266\371\007\114\131\352\363\311\310\271\256
\314\272\056\172\334\300\365\260\055\300\073\257\237\160\005\021
\152\237\045\117\001\051\160\343\345\014\341\352\132\174\334\111

\273\301\036\052\201\365\026\113\162\221\310\242\061\271\252\332
\374\235\037\363\135\100\002\023\374\116\034\006\312\263\024\220
\124\027\031\022\032\361\037\327\014\151\132\366\161\170\364\224
\175\221\013\216\354\220\124\216\274\157\241\114\253\374\164\144
\375\161\232\370\101\007\241\315\221\344\074\232\340\233\062\071
\163\253\052\325\151\310\170\221\046\061\175\342\307\060\361\374
\024\170\167\022\016\023\364\335\026\224\277\113\147\173\160\123
\205\312\260\273\363\070\115\054\220\071\300\015\302\135\153\351
\342\345\325\210\215\326\054\277\253\033\276\265\050\207\022\027
\164\156\374\175\374\217\320\207\046\260\033\373\271\154\253\342
\236\075\025\301\073\056\147\002\130\221\237\357\370\102\037\054
\267\150\365\165\255\317\265\366\377\021\175\302\360\044\245\255
\323\372\240\074\251\372\135\334\245\240\357\104\244\276\326\350
\345\344\023\226\027\173\006\076\062\355\307\267\102\274\166\243
\330\145\070\053\070\065\121\041\016\016\157\056\064\023\100\341
\053\147\014\155\112\101\060\030\043\132\062\125\231\311\027\340
\074\336\366\354\171\255\053\130\031\242\255\054\042\032\225\216
\276\226\220\135\102\127\304\371\024\003\065\053\034\055\121\127
\010\247\072\336\077\344\310\264\003\163\302\301\046\200\273\013
\102\037\255\015\257\046\162\332\314\276\263\243\203\130\015\202
\305\037\106\121\343\234\030\314\215\233\215\354\111\353\165\120
\325\214\050\131\312\164\064\332\214\013\041\253\036\352\033\345
\307\375\025\076\300\027\252\373\043\156\046\106\313\372\371\261
\162\153\151\317\042\204\013\142\017\254\331\031\000\224\242\166
\074\324\055\232\355\004\236\055\006\142\020\067\122\034\205\162
\033\047\345\314\306\061\354\067\354\143\131\233\013\035\166\314
\176\062\232\210\225\010\066\122\273\336\166\137\166\111\111\255
\177\275\145\040\262\311\301\053\166\030\166\237\126\261
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Trust for "UCA Extended Validation Root"
Issuer: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Serial Number:4f:d2:2b:8f:f5:64:c8:33:9e:4f:34:58:66:23:70:60
Subject: CN=UCA Extended Validation Root,O=UniTrust,C=CN
Not Valid Before: Fri Mar 13 00:00:00 2015
Not Valid After : Fri Dec 31 00:00:00 2038
Fingerprint (SHA-256):
D4:3A:F9:B3:54:73:75:5C:96:84:FC:06:D7:D8:CB:70:EE:5C:28:E7:73:FB:29:4E:B4:1E:E7:17:22:92:4D:24
Fingerprint (SHA1): A3:A1:B0:6F:24:61:23:4A:E3:36:A5:C2:37:FC:A6:FF:DD:F0:D7:3A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "UCA Extended Validation Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\243\241\260\157\044\141\043\112\343\066\245\302\067\374\246\377
\335\360\327\072
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\363\137\103\306\064\233\332\277\214\176\005\123\255\226\342
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\014\010\125\156\151\124\162\165
\163\164\061\045\060\043\006\003\125\004\003\014\034\125\103\101
\040\105\170\164\145\156\144\145\144\040\126\141\154\151\144\141
\164\151\157\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\117\322\053\217\365\144\310\063\236\117\064\130\146\043
\160\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certigna Root CA"
#
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
#
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063

\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\133\060\202\004\103\240\003\002\001\002\002\021\000
\312\351\033\211\361\125\003\015\243\346\101\155\304\343\246\341
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061\022
\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157\164
\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060\060
\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063\066
\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164\151
\147\156\141\040\122\157\157\164\040\103\101\060\036\027\015\061
\063\061\060\060\061\060\070\063\062\062\067\132\027\015\063\063
\061\060\060\061\060\070\063\062\062\067\132\060\132\061\013\060
\011\006\003\125\004\006\023\002\106\122\061\022\060\020\006\003
\125\004\012\014\011\104\150\151\155\171\157\164\151\163\061\034
\060\032\006\003\125\004\013\014\023\060\060\060\062\040\064\070
\061\064\066\063\060\070\061\060\060\060\063\066\061\031\060\027
\006\003\125\004\003\014\020\103\145\162\164\151\147\156\141\040
\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\315\030\071\145\032\131\261\352
\144\026\016\214\224\044\225\174\203\323\305\071\046\334\014\357
\026\127\215\327\330\254\243\102\177\202\312\355\315\133\333\016
\267\055\355\105\010\027\262\331\263\313\326\027\122\162\050\333
\216\116\236\212\266\013\371\236\204\232\115\166\336\042\051\134
\322\263\322\006\076\060\071\251\164\243\222\126\034\241\157\114
\012\040\155\237\043\172\264\306\332\054\344\035\054\334\263\050
\320\023\362\114\116\002\111\241\124\100\236\346\345\005\240\055
\204\310\377\230\154\320\353\212\032\204\010\036\267\150\043\356
\043\325\160\316\155\121\151\020\356\241\172\302\321\042\061\302
\202\205\322\362\125\166\120\174\045\172\311\204\134\013\254\335
\102\116\053\347\202\242\044\211\313\220\262\320\356\043\272\146

\114\273\142\244\371\123\132\144\173\174\230\372\243\110\236\017
\225\256\247\030\364\152\354\056\003\105\257\360\164\370\052\315
\172\135\321\276\104\046\062\051\361\361\365\154\314\176\002\041
\013\237\157\244\077\276\235\123\342\317\175\251\054\174\130\032
\227\341\075\067\067\030\146\050\322\100\305\121\212\214\303\055
\316\123\210\044\130\144\060\026\305\252\340\326\012\246\100\337
\170\366\365\004\174\151\023\204\274\321\321\247\006\317\001\367
\150\300\250\127\273\072\141\255\004\214\223\343\255\374\360\333
\104\155\131\334\111\131\256\254\232\231\066\060\101\173\166\063
\042\207\243\302\222\206\156\371\160\356\256\207\207\225\033\304
\172\275\061\363\324\322\345\231\377\276\110\354\165\365\170\026
\035\246\160\301\177\074\033\241\222\373\317\310\074\326\305\223
\012\217\365\125\072\166\225\316\131\230\212\011\225\167\062\232
\203\272\054\004\072\227\275\324\057\276\327\154\233\242\312\175
\155\046\311\125\325\317\303\171\122\010\011\231\007\044\055\144
\045\153\246\041\151\233\152\335\164\115\153\227\172\101\275\253
\027\371\220\027\110\217\066\371\055\325\305\333\356\252\205\105
\101\372\315\072\105\261\150\346\066\114\233\220\127\354\043\271
\207\010\302\304\011\361\227\206\052\050\115\342\164\300\332\304
\214\333\337\342\241\027\131\316\044\131\164\061\332\177\375\060
\155\331\334\341\152\341\374\137\002\003\001\000\001\243\202\001
\032\060\202\001\026\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037\326
\341\342\171\176\053\060\037\006\003\125\035\043\004\030\060\026
\200\024\030\207\126\340\156\167\356\044\065\074\116\163\232\037
\326\341\342\171\176\053\060\104\006\003\125\035\040\004\075\060
\073\060\071\006\004\125\035\040\000\060\061\060\057\006\010\053
\006\001\005\005\007\002\001\026\043\150\164\164\160\163\072\057
\057\167\167\167\167\056\143\145\162\164\151\147\156\141\056\146
\162\057\141\165\164\157\162\151\164\145\163\057\060\155\006\003
\125\035\037\004\146\060\144\060\057\240\055\240\053\206\051\150
\164\164\160\072\057\057\143\162\154\056\143\145\162\164\151\147
\156\141\056\146\162\057\143\145\162\164\151\147\156\141\162\157
\157\164\143\141\056\143\162\154\060\061\240\057\240\055\206\053
\150\164\164\160\072\057\057\143\162\154\056\144\150\151\155\171
\157\164\151\163\056\143\157\155\057\143\145\162\164\151\147\156
\141\162\157\157\164\143\141\056\143\162\154\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\224
\270\236\117\360\343\225\010\042\347\315\150\101\367\034\125\325
\174\000\342\055\072\211\135\150\070\057\121\042\013\112\215\313
\351\273\135\076\273\134\075\261\050\376\344\123\125\023\317\241
\220\033\002\035\137\146\106\011\063\050\341\015\044\227\160\323
\020\037\352\144\127\226\273\135\332\347\304\214\117\114\144\106
\035\134\207\343\131\336\102\321\233\250\176\246\211\335\217\034
\311\060\202\355\073\234\315\300\351\031\340\152\330\002\165\067
\253\367\064\050\050\221\362\004\012\117\065\343\140\046\001\372

\320\021\214\371\021\152\356\257\075\303\120\323\217\137\063\171
\074\206\250\163\105\220\214\040\266\162\163\027\043\276\007\145
\345\170\222\015\272\001\300\353\214\034\146\277\254\206\167\001
\224\015\234\346\351\071\215\037\246\121\214\231\014\071\167\341
\264\233\372\034\147\127\157\152\152\216\251\053\114\127\171\172
\127\042\317\315\137\143\106\215\134\131\072\206\370\062\107\142
\243\147\015\030\221\334\373\246\153\365\110\141\163\043\131\216
\002\247\274\104\352\364\111\235\361\124\130\371\140\257\332\030
\244\057\050\105\334\172\240\210\206\135\363\073\347\377\051\065
\200\374\144\103\224\346\343\034\157\276\255\016\052\143\231\053
\311\176\205\366\161\350\006\003\225\376\336\217\110\034\132\324
\222\350\053\356\347\061\333\272\004\152\207\230\347\305\137\357
\175\247\042\367\001\330\115\371\211\320\016\232\005\131\244\236
\230\331\157\053\312\160\276\144\302\125\243\364\351\257\303\222
\051\334\210\026\044\231\074\215\046\230\266\133\267\314\316\267
\067\007\375\046\331\230\205\044\377\131\043\003\232\355\235\235
\250\344\136\070\316\327\122\015\157\322\077\155\261\005\153\111
\316\212\221\106\163\364\366\057\360\250\163\167\016\145\254\241
\215\146\122\151\176\113\150\014\307\036\067\047\203\245\214\307
\002\344\024\315\111\001\260\163\263\375\306\220\072\157\322\154
\355\073\356\354\221\276\242\103\135\213\000\112\146\045\104\160
\336\100\017\370\174\025\367\242\316\074\327\136\023\214\201\027
\030\027\321\275\361\167\020\072\324\145\071\301\047\254\127\054
\045\124\377\242\332\117\212\141\071\136\256\075\112\214\275
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certigna Root CA"
Issuer: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Serial Number:00:ca:e9:1b:89:f1:55:03:0d:a3:e6:41:6d:c4:e3:a6:e1
Subject: CN=Certigna Root CA,OU=0002 48146308100036,O=Dhimyotis,C=FR
Not Valid Before: Tue Oct 01 08:32:27 2013
Not Valid After : Sat Oct 01 08:32:27 2033
Fingerprint (SHA-256):
D4:8D:3D:23:EE:DB:50:A4:59:E5:51:97:60:1C:27:77:4B:9D:7B:18:C9:4D:5A:05:95:11:A1:02:50:B9:31:68
Fingerprint (SHA1): 2D:0D:52:14:FF:9E:AD:99:24:01:74:20:47:6E:6C:85:27:27:F5:43
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certigna Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\055\015\122\024\377\236\255\231\044\001\164\040\107\156\154\205
\047\047\365\103
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\134\060\142\047\353\133\274\327\256\142\272\351\325\337\167
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\104\150\151\155\171\157
\164\151\163\061\034\060\032\006\003\125\004\013\014\023\060\060
\060\062\040\064\070\061\064\066\063\060\070\061\060\060\060\063
\066\061\031\060\027\006\003\125\004\003\014\020\103\145\162\164
\151\147\156\141\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\312\351\033\211\361\125\003\015\243\346\101\155\304
\343\246\341
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - G1"
#
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies
 Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END

CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\224\060\202\002\174\240\003\002\001\002\002\012\061
\365\344\142\014\154\130\355\326\330\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\060\147\061\013\060\011\006\003
\125\004\006\023\002\111\116\061\023\060\021\006\003\125\004\013
\023\012\145\155\123\151\147\156\040\120\113\111\061\045\060\043
\006\003\125\004\012\023\034\145\115\165\144\150\162\141\040\124
\145\143\150\156\157\154\157\147\151\145\163\040\114\151\155\151
\164\145\144\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\107
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034
\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157
\147\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032
\006\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157
\157\164\040\103\101\040\055\040\107\061\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\223\113\273\351\146
\212\356\235\133\325\064\223\320\033\036\303\347\236\270\144\063
\177\143\170\150\264\315\056\161\165\327\233\040\306\115\051\274
\266\150\140\212\367\041\232\126\065\132\363\166\275\330\315\232
\377\223\126\113\245\131\006\241\223\064\051\335\026\064\165\116
\362\201\264\307\226\116\255\031\025\122\112\376\074\160\165\160
\315\257\053\253\025\232\063\074\252\263\213\252\315\103\375\365
\352\160\377\355\317\021\073\224\316\116\062\026\323\043\100\052
\167\263\257\074\001\054\154\355\231\054\213\331\116\151\230\262
\367\217\101\260\062\170\141\326\015\137\303\372\242\100\222\035
\134\027\346\160\076\065\347\242\267\302\142\342\253\244\070\114
\265\071\065\157\352\003\151\372\072\124\150\205\155\326\362\057
\103\125\036\221\015\016\330\325\152\244\226\321\023\074\054\170
\120\350\072\222\322\027\126\345\065\032\100\034\076\215\054\355

\071\337\102\340\203\101\164\337\243\315\302\206\140\110\150\343
\151\013\124\000\213\344\166\151\041\015\171\116\064\010\136\024
\302\314\261\267\255\327\174\160\212\307\205\002\003\001\000\001
\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024\373
\357\015\206\236\260\343\335\251\271\361\041\027\177\076\374\360
\167\053\032\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\001\001\000\131\377\362\214\365\207\175\161
\075\243\237\033\133\321\332\370\323\234\153\066\275\233\251\141
\353\336\026\054\164\075\236\346\165\332\327\272\247\274\102\027
\347\075\221\353\345\175\335\076\234\361\317\222\254\154\110\314
\302\042\077\151\073\305\266\025\057\243\065\306\150\052\034\127
\257\071\357\215\320\065\303\030\014\173\000\126\034\315\213\031
\164\336\276\017\022\340\320\252\241\077\002\064\261\160\316\235
\030\326\010\003\011\106\356\140\340\176\266\304\111\004\121\175
\160\140\274\252\262\377\171\162\172\246\035\075\137\052\370\312
\342\375\071\267\107\271\353\176\337\004\043\257\372\234\006\007
\351\373\143\223\200\100\265\306\154\012\061\050\316\014\237\317
\263\043\065\200\101\215\154\304\067\173\201\057\200\241\100\102
\205\351\331\070\215\350\241\123\315\001\277\151\350\132\006\362
\105\013\220\372\256\341\277\235\362\256\127\074\245\256\262\126
\364\213\145\100\351\375\061\201\054\364\071\011\330\356\153\247
\264\246\035\025\245\230\367\001\201\330\205\175\363\121\134\161
\210\336\272\314\037\200\176\112
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - G1"
Issuer: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:31:f5:e4:62:0c:6c:58:ed:d6:d8
Subject: CN=emSign Root CA - G1,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
40:F6:AF:03:46:A9:9A:A1:CD:1D:55:5A:4E:9C:CE:62:C7:F9:63:46:03:EE:40:66:15:83:3D:C8:C8:D0:03:67
Fingerprint (SHA1): 8A:C7:AD:8F:73:AC:4E:C1:B5:75:4D:A5:40:F4:FC:CF:7C:B5:8E:8C
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\307\255\217\163\254\116\301\265\165\115\245\100\364\374\317

\174\265\216\214
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\234\102\204\127\335\313\013\247\056\225\255\266\363\332\274\254
END
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\061\365\344\142\014\154\130\355\326\330
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign ECC Root CA - G3"
#
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\074\366\007\251\150\160\016\332\213\204
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\002\116\060\202\001\323\240\003\002\001\002\002\012\074
\366\007\251\150\160\016\332\213\204\060\012\006\010\052\206\110
\316\075\004\003\003\060\153\061\013\060\011\006\003\125\004\006
\023\002\111\116\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\045\060\043\006\003\125
\004\012\023\034\145\115\165\144\150\162\141\040\124\145\143\150
\156\157\154\157\147\151\145\163\040\114\151\155\151\164\145\144
\061\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147
\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\107\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060
\060\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060
\060\132\060\153\061\013\060\011\006\003\125\004\006\023\002\111
\116\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151
\147\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023
\034\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154
\157\147\151\145\163\040\114\151\155\151\164\145\144\061\040\060
\036\006\003\125\004\003\023\027\145\155\123\151\147\156\040\105
\103\103\040\122\157\157\164\040\103\101\040\055\040\107\063\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\043\245\014\270\055\022\365\050\363
\261\262\335\342\002\022\200\236\071\137\111\115\237\311\045\064
\131\164\354\273\006\034\347\300\162\257\350\256\057\341\101\124
\207\024\250\112\262\350\174\202\346\133\152\265\334\263\165\316
\213\006\320\206\043\277\106\325\216\017\077\004\364\327\034\222
\176\366\245\143\302\365\137\216\056\117\241\030\031\002\053\062
\012\202\144\175\026\223\321\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\174\135\002\204\023\324\314\212\233\201
\316\027\034\056\051\036\234\110\143\102\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\276

\363\141\317\002\020\035\144\225\007\270\030\156\210\205\005\057
\203\010\027\220\312\037\212\114\350\015\033\172\261\255\325\201
\011\107\357\073\254\010\004\174\134\231\261\355\107\007\322\002
\061\000\235\272\125\374\251\112\350\355\355\346\166\001\102\173
\310\370\140\331\215\121\213\125\073\373\214\173\353\145\011\303
\370\226\315\107\250\202\362\026\125\167\044\176\022\020\225\004
\054\243
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - G3"
Issuer: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:3c:f6:07:a9:68:70:0e:da:8b:84
Subject: CN=emSign ECC Root CA - G3,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
86:A1:EC:BA:08:9C:4A:8D:3B:BE:27:34:C6:12:BA:34:1D:81:3E:04:3C:F9:E8:A8:62:CD:5C:57:A3:6B:BE:6B
#
Fingerprint (SHA1): 30:43:FA:4F:F2:57:DC:A0:C3:80:EE:2E:58:EA:78:B2:3F:E6:BB:C1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\060\103\372\117\362\127\334\240\303\200\356\056\130\352\170\262
\077\346\273\301
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\316\013\162\321\237\210\216\320\120\003\350\343\270\213\147\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\153\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\012\074\366\007\251\150\160\016\332\213\204
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "emSign Root CA - C1"
#
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA -
C1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\163\060\202\002\133\240\003\002\001\002\002\013\000
\256\317\000\272\304\317\062\370\103\262\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\126\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125\004

\013\023\012\145\155\123\151\147\156\040\120\113\111\061\024\060
\022\006\003\125\004\012\023\013\145\115\165\144\150\162\141\040
\111\156\143\061\034\060\032\006\003\125\004\003\023\023\145\155
\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040\103
\061\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\103\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\317\353\251\271\361\231
\005\314\330\050\041\112\363\163\064\121\204\126\020\365\240\117
\054\022\343\372\023\232\047\320\317\371\171\032\164\137\035\171
\071\374\133\370\160\216\340\222\122\367\344\045\371\124\203\331
\035\323\310\132\205\077\136\307\266\007\356\076\300\316\232\257
\254\126\102\052\071\045\160\326\277\265\173\066\255\254\366\163
\334\315\327\035\212\203\245\373\053\220\025\067\153\034\046\107
\334\073\051\126\223\152\263\301\152\072\235\075\365\301\227\070
\130\005\213\034\021\343\344\264\270\135\205\035\203\376\170\137
\013\105\150\030\110\245\106\163\064\073\376\017\310\166\273\307
\030\363\005\321\206\363\205\355\347\271\331\062\255\125\210\316
\246\266\221\260\117\254\176\025\043\226\366\077\360\040\064\026
\336\012\306\304\004\105\171\177\247\375\276\322\251\245\257\234
\305\043\052\367\074\041\154\275\257\217\116\305\072\262\363\064
\022\374\337\200\032\111\244\324\251\225\367\236\211\136\242\211
\254\224\313\250\150\233\257\212\145\047\315\211\356\335\214\265
\153\051\160\103\240\151\013\344\271\017\002\003\001\000\001\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\376\241
\340\160\036\052\003\071\122\132\102\276\134\221\205\172\030\252
\115\265\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\302\112\126\372\025\041\173\050\242
\351\345\035\373\370\055\304\071\226\101\114\073\047\054\304\154
\030\025\200\306\254\257\107\131\057\046\013\343\066\260\357\073
\376\103\227\111\062\231\022\025\133\337\021\051\377\253\123\370
\273\301\170\017\254\234\123\257\127\275\150\214\075\151\063\360
\243\240\043\143\073\144\147\042\104\255\325\161\313\126\052\170
\222\243\117\022\061\066\066\342\336\376\000\304\243\140\017\047
\255\240\260\212\265\066\172\122\241\275\047\364\040\047\142\350
\115\224\044\023\344\012\004\351\074\253\056\310\103\011\112\306
\141\004\345\111\064\176\323\304\310\365\017\300\252\351\272\124
\136\363\143\053\117\117\120\324\376\271\173\231\214\075\300\056
\274\002\053\323\304\100\344\212\007\061\036\233\316\046\231\023
\373\021\352\232\042\014\021\031\307\136\033\201\120\060\310\226

\022\156\347\313\101\177\221\073\242\107\267\124\200\033\334\000
\314\232\220\352\303\303\120\006\142\014\060\300\025\110\247\250
\131\174\341\256\042\242\342\012\172\017\372\142\253\122\114\341
\361\337\312\276\203\015\102
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign Root CA - C1"
Issuer: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:00:ae:cf:00:ba:c4:cf:32:f8:43:b2
Subject: CN=emSign Root CA - C1,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb
18 18:30:00 2043
Fingerprint (SHA-256):
12:56:09:AA:30:1D:A0:A2:49:B9:7A:82:39:CB:6A:34:21:6F:44:DC:AC:9F:39:54:B1:42:92:F2:E8:C8:60:8F
Fingerprint (SHA1): E7:2E:F1:DF:FC:B2:09:28:CF:5D:D4:D5:67:37:B1:51:CB:86:4F:01
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\056\361\337\374\262\011\050\317\135\324\325\147\067\261\121
\313\206\117\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\330\343\135\001\041\372\170\132\260\337\272\322\356\052\137\150
END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\013\000\256\317\000\272\304\317\062\370\103\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "emSign ECC Root CA - C3"
#
# Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
# Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
# Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
# Not Valid Before: Sun Feb 18 18:30:00 2018
# Not Valid After : Wed Feb 18 18:30:00 2043
# Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
# Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC
 Root CA - C3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\053\060\202\001\261\240\003\002\001\002\002\012\173
\161\266\202\126\270\022\174\234\250\060\012\006\010\052\206\110
\316\075\004\003\003\060\132\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\023\060\021\006\003\125\004\013\023\012\145
\155\123\151\147\156\040\120\113\111\061\024\060\022\006\003\125
\004\012\023\013\145\115\165\144\150\162\141\040\111\156\143\061
\040\060\036\006\003\125\004\003\023\027\145\155\123\151\147\156
\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040\103
```

\063\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060
\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060
\132\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147
\156\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013
\145\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006
\003\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103
\040\122\157\157\164\040\103\101\040\055\040\103\063\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\375\245\141\256\173\046\020\035\351\267\042
\060\256\006\364\201\263\261\102\161\225\071\274\323\122\343\257
\257\371\362\227\065\222\066\106\016\207\225\215\271\071\132\351
\273\337\320\376\310\007\101\074\273\125\157\203\243\152\373\142
\260\201\211\002\160\175\110\305\112\343\351\042\124\042\115\223
\273\102\014\257\167\234\043\246\175\327\141\021\316\145\307\370
\177\376\365\362\251\243\102\060\100\060\035\006\003\125\035\016
\004\026\004\024\373\132\110\320\200\040\100\362\250\351\000\007
\151\031\167\247\346\303\364\317\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\264\330\057
\002\211\375\266\114\142\272\103\116\023\204\162\265\256\335\034
\336\326\265\334\126\217\130\100\132\055\336\040\114\042\203\312
\223\250\176\356\022\100\307\326\207\117\370\337\205\002\060\034
\024\144\344\174\226\203\021\234\260\321\132\141\113\246\017\111
\323\000\374\241\374\344\245\377\177\255\327\060\320\307\167\177
\276\201\007\125\060\120\040\024\365\127\070\012\250\061\121
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "emSign ECC Root CA - C3"
Issuer: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:7b:71:b6:82:56:b8:12:7c:9c:a8
Subject: CN=emSign ECC Root CA - C3,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After : Wed Feb 18 18:30:00 2043
Fingerprint (SHA-256):
BC:4D:80:9B:15:18:9D:78:DB:3E:1D:8C:F4:F9:72:6A:79:5D:A1:64:3C:A5:F1:35:8E:1D:DB:0E:DC:0D:7E:B3
Fingerprint (SHA1): B6:AF:43:C2:9B:81:53:7D:F6:EF:6B:C3:1F:1F:60:15:0C:EE:48:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign ECC Root CA - C3"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\266\257\103\302\233\201\123\175\366\357\153\303\037\037\140\025
\014\356\110\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\123\263\243\201\356\327\020\370\323\260\035\027\222\365\325
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\040\060\036\006\003
\125\004\003\023\027\145\155\123\151\147\156\040\105\103\103\040
\122\157\157\164\040\103\101\040\055\040\103\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\173\161\266\202\126\270\022\174\234\250
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

#
Certificate "Hongkong Post Root CA 3"
#
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4
Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157

\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061
\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\317\060\202\003\267\240\003\002\001\002\002\024\010
\026\137\212\114\245\354\000\311\223\100\337\304\306\256\043\270
\034\132\244\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\157\061\013\060\011\006\003\125\004\006\023\002\110
\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156\147
\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023\011
\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003\125
\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157\163
\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156\147
\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040\103
\101\040\063\060\036\027\015\061\067\060\066\060\063\060\062\062
\071\064\066\132\027\015\064\062\060\066\060\063\060\062\062\071
\064\066\132\060\157\061\013\060\011\006\003\125\004\006\023\002
\110\113\061\022\060\020\006\003\125\004\010\023\011\110\157\156
\147\040\113\157\156\147\061\022\060\020\006\003\125\004\007\023
\011\110\157\156\147\040\113\157\156\147\061\026\060\024\006\003
\125\004\012\023\015\110\157\156\147\153\157\156\147\040\120\157
\163\164\061\040\060\036\006\003\125\004\003\023\027\110\157\156
\147\153\157\156\147\040\120\157\163\164\040\122\157\157\164\040
\103\101\040\063\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\263\210\327\352\316\017\040\116\276\346\326
\003\155\356\131\374\302\127\337\051\150\241\203\016\076\150\307
\150\130\234\034\140\113\211\103\014\271\324\025\262\356\301\116
\165\351\265\247\357\345\351\065\231\344\314\034\347\113\137\215
\063\060\040\063\123\331\246\273\325\076\023\216\351\037\207\111
\255\120\055\120\312\030\276\001\130\242\023\160\226\273\211\210
\126\200\134\370\275\054\074\341\114\127\210\273\323\271\225\357

\313\307\366\332\061\164\050\246\346\124\211\365\101\061\312\345
\046\032\315\202\340\160\332\073\051\273\325\003\365\231\272\125
\365\144\321\140\016\263\211\111\270\212\057\005\322\204\105\050
\174\217\150\120\022\170\374\013\265\123\313\302\230\034\204\243
\236\260\276\043\244\332\334\310\053\036\332\156\105\036\211\230
\332\371\000\056\006\351\014\073\160\325\120\045\210\231\313\315
\163\140\367\325\377\065\147\305\241\274\136\253\315\112\270\105
\353\310\150\036\015\015\024\106\022\343\322\144\142\212\102\230
\274\264\306\010\010\370\375\250\114\144\234\166\001\275\057\251
\154\063\017\330\077\050\270\074\151\001\102\206\176\151\301\311
\006\312\345\172\106\145\351\302\326\120\101\056\077\267\344\355
\154\327\277\046\001\021\242\026\051\112\153\064\006\220\354\023
\322\266\373\152\166\322\074\355\360\326\055\335\341\025\354\243
\233\057\054\311\076\053\344\151\073\377\162\045\261\066\206\133
\307\177\153\213\125\033\112\305\040\141\075\256\313\120\341\010
\072\276\260\217\143\101\123\060\010\131\074\230\035\167\272\143
\221\172\312\020\120\140\277\360\327\274\225\207\217\227\305\376
\227\152\001\224\243\174\133\205\035\052\071\072\320\124\241\321
\071\161\235\375\041\371\265\173\360\342\340\002\217\156\226\044
\045\054\240\036\054\250\304\211\247\357\355\231\006\057\266\012
\114\117\333\242\314\067\032\257\107\205\055\212\137\304\064\064
\114\000\375\030\223\147\023\321\067\346\110\264\213\006\305\127
\173\031\206\012\171\313\000\311\122\257\102\377\067\217\341\243
\036\172\075\120\253\143\006\347\025\265\077\266\105\067\224\067
\261\176\362\110\303\177\305\165\376\227\215\105\217\032\247\032
\162\050\032\100\017\002\003\001\000\001\243\143\060\141\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\037\006\003\125\035\043\004\030\060\026\200\024\027\235\315\036
\213\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141
\060\035\006\003\125\035\016\004\026\004\024\027\235\315\036\213
\326\071\053\160\323\134\324\240\270\037\260\000\374\305\141\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\126\325\173\156\346\042\001\322\102\233\030\325\016
\327\146\043\134\343\376\240\307\222\322\351\224\255\113\242\306
\354\022\174\164\325\110\322\131\024\231\300\353\271\321\353\364
\110\060\133\255\247\127\163\231\251\323\345\267\321\056\131\044
\130\334\150\056\056\142\330\152\344\160\013\055\040\120\040\244
\062\225\321\000\230\273\323\375\367\062\362\111\256\306\172\340
\107\276\156\316\313\243\162\072\055\151\135\313\310\350\105\071
\324\372\102\301\021\114\167\135\222\373\152\377\130\104\345\353
\201\236\257\240\231\255\276\251\001\146\313\070\035\074\337\103
\037\364\115\156\264\272\027\106\374\175\375\207\201\171\152\015
\063\017\372\057\370\024\271\200\263\135\115\252\227\341\371\344
\030\305\370\325\070\214\046\074\375\362\050\342\356\132\111\210
\054\337\171\075\216\236\220\074\275\101\112\072\335\133\366\232
\264\316\077\045\060\177\062\175\242\003\224\320\334\172\241\122
\336\156\223\215\030\046\375\125\254\275\217\233\322\317\257\347

\206\054\313\037\011\157\243\157\251\204\324\163\277\115\241\164
\033\116\043\140\362\314\016\252\177\244\234\114\045\250\262\146
\073\070\377\331\224\060\366\162\204\276\150\125\020\017\306\163
\054\026\151\223\007\376\261\105\355\273\242\125\152\260\332\265
\112\002\045\047\205\327\267\267\206\104\026\211\154\200\053\076
\227\251\234\325\176\125\114\306\336\105\020\034\352\351\073\237
\003\123\356\356\172\001\002\026\170\324\350\302\276\106\166\210
\023\077\042\273\110\022\035\122\000\264\002\176\041\032\036\234
\045\364\363\075\136\036\322\034\371\263\055\266\367\067\134\306
\313\041\116\260\367\231\107\030\205\301\053\272\125\256\006\352
\320\007\262\334\253\320\202\226\165\316\322\120\376\231\347\317
\057\237\347\166\321\141\052\373\041\273\061\320\252\237\107\244
\262\042\312\026\072\120\127\304\133\103\147\305\145\142\003\111
\001\353\103\331\330\370\236\255\317\261\143\016\105\364\240\132
\054\233\055\305\246\300\255\250\107\364\047\114\070\015\056\033
\111\073\122\364\350\210\203\053\124\050\324\362\065\122\264\062
\203\142\151\144\014\221\234\237\227\352\164\026\375\037\021\006
\232\233\364
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Hongkong Post Root CA 3"
Issuer: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Serial Number:08:16:5f:8a:4c:a5:ec:00:c9:93:40:df:c4:c6:ae:23:b8:1c:5a:a4
Subject: CN=Hongkong Post Root CA 3,O=Hongkong Post,L=Hong Kong,ST=Hong Kong,C=HK
Not Valid Before: Sat Jun 03 02:29:46 2017
Not Valid After : Tue Jun 03 02:29:46 2042
Fingerprint (SHA-256):
5A:2F:C0:3F:0C:83:B0:90:BB:FA:40:60:4B:09:88:44:6C:76:36:18:3D:F9:84:6E:17:10:1A:44:7F:B8:EF:D6
Fingerprint (SHA1): 58:A2:D0:EC:20:52:81:5B:C1:F3:F8:64:02:24:4E:C2:8E:02:4B:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hongkong Post Root CA 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\242\320\354\040\122\201\133\301\363\370\144\002\044\116\302
\216\002\113\002
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\021\374\237\275\163\060\002\212\375\077\363\130\271\313\040\360
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\110\113\061

\022\060\020\006\003\125\004\010\023\011\110\157\156\147\040\113
\157\156\147\061\022\060\020\006\003\125\004\007\023\011\110\157
\156\147\040\113\157\156\147\061\026\060\024\006\003\125\004\012
\023\015\110\157\156\147\153\157\156\147\040\120\157\163\164\061
\040\060\036\006\003\125\004\003\023\027\110\157\156\147\153\157
\156\147\040\120\157\163\164\040\122\157\157\164\040\103\101\040
\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\010\026\137\212\114\245\354\000\311\223\100\337\304\306
\256\043\270\034\132\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
 CK_FALSE

#
Certificate "Entrust Root Certification Authority - G4"
#
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use
only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use
only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015
Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):
DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE
 CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060

\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\021\000
\331\265\103\177\257\251\071\017\000\000\000\000\125\145\255\130
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165\163
\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162\155
\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051\040
\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111\156
\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060\060
\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107\064
\060\036\027\015\061\065\060\065\062\067\061\061\061\061\061\066
\132\027\015\063\067\061\062\062\067\061\061\064\061\061\066\132
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165

\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\261\354\054\102\356\342\321\060\377\245\222\107\342\055
\303\272\144\227\155\312\367\015\265\131\301\263\313\250\150\031
\330\257\204\155\060\160\135\176\363\056\322\123\231\341\376\037
\136\331\110\257\135\023\215\333\377\143\063\115\323\000\002\274
\304\370\321\006\010\224\171\130\212\025\336\051\263\375\375\304
\117\350\252\342\240\073\171\315\277\153\103\062\335\331\164\020
\271\367\364\150\324\273\320\207\325\252\113\212\052\157\052\004
\265\262\246\307\240\172\346\110\253\322\321\131\314\326\176\043
\346\227\154\360\102\345\334\121\113\025\101\355\111\112\311\336
\020\227\326\166\301\357\245\265\066\024\227\065\330\170\042\065
\122\357\103\275\333\047\333\141\126\202\064\334\313\210\140\014
\013\132\345\054\001\306\124\257\327\252\301\020\173\322\005\132
\270\100\236\206\247\303\220\206\002\126\122\011\172\234\322\047
\202\123\112\145\122\152\365\074\347\250\362\234\257\213\275\323
\016\324\324\136\156\207\236\152\075\105\035\321\135\033\364\351
\012\254\140\231\373\211\264\377\230\054\317\174\035\351\002\252
\004\232\036\270\334\210\156\045\263\154\146\367\074\220\363\127
\301\263\057\365\155\362\373\312\241\370\051\235\106\213\263\152
\366\346\147\007\276\054\147\012\052\037\132\262\076\127\304\323
\041\041\143\145\122\221\033\261\231\216\171\176\346\353\215\000
\331\132\252\352\163\350\244\202\002\107\226\376\133\216\124\141
\243\353\057\113\060\260\213\043\165\162\174\041\074\310\366\361
\164\324\034\173\243\005\125\356\273\115\073\062\276\232\167\146
\236\254\151\220\042\007\037\141\072\226\276\345\232\117\314\005
\074\050\131\323\301\014\124\250\131\141\275\310\162\114\350\334
\237\207\177\275\234\110\066\136\225\243\016\271\070\044\125\374
\165\146\353\002\343\010\064\051\112\306\343\053\057\063\240\332
\243\206\245\022\227\375\200\053\332\024\102\343\222\275\076\362
\135\136\147\164\056\034\210\107\051\064\137\342\062\250\234\045
\067\214\272\230\000\227\213\111\226\036\375\045\212\254\334\332
\330\135\164\156\146\260\377\104\337\241\030\306\276\110\057\067
\224\170\370\225\112\077\177\023\136\135\131\375\164\206\103\143
\163\111\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\237\070\304\126\043\303\071\350\240
\161\154\350\124\114\344\350\072\261\277\147\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\022

\345\102\246\173\213\017\014\344\106\245\266\140\100\207\214\045
\176\255\270\150\056\133\306\100\166\074\003\370\311\131\364\363
\253\142\316\020\215\264\132\144\214\150\300\260\162\103\064\322
\033\013\366\054\123\322\312\220\113\206\146\374\252\203\042\364
\213\032\157\046\110\254\166\167\010\277\305\230\134\364\046\211
\236\173\303\271\144\062\001\177\323\303\335\130\155\354\261\253
\204\125\164\167\204\004\047\122\153\206\114\316\335\271\145\377
\326\306\136\237\232\020\231\113\165\152\376\152\351\227\040\344
\344\166\172\306\320\044\252\220\315\040\220\272\107\144\373\177
\007\263\123\170\265\012\142\362\163\103\316\101\053\201\152\056
\205\026\224\123\324\153\137\162\042\253\121\055\102\325\000\234
\231\277\336\273\224\073\127\375\232\365\206\313\126\073\133\210
\001\345\174\050\113\003\371\111\203\174\262\177\174\343\355\216
\241\177\140\123\216\125\235\120\064\022\017\267\227\173\154\207
\112\104\347\365\155\354\200\067\360\130\031\156\112\150\166\360
\037\222\344\352\265\222\323\141\121\020\013\255\247\331\137\307
\137\334\037\243\134\214\241\176\233\267\236\323\126\157\146\136
\007\226\040\355\013\164\373\146\116\213\021\025\351\201\111\176
\157\260\324\120\177\042\327\137\145\002\015\246\364\205\036\330
\256\006\113\112\247\322\061\146\302\370\316\345\010\246\244\002
\226\104\150\127\304\325\063\317\031\057\024\304\224\034\173\244
\331\360\237\016\261\200\342\321\236\021\144\251\210\021\072\166
\202\345\142\302\200\330\244\203\355\223\357\174\057\220\260\062
\114\226\025\150\110\122\324\231\010\300\044\350\034\343\263\245
\041\016\222\300\220\037\317\040\137\312\073\070\307\267\155\072
\363\346\104\270\016\061\153\210\216\160\353\234\027\122\250\101
\224\056\207\266\347\246\022\305\165\337\133\300\012\156\173\244
\344\136\206\371\066\224\337\167\303\351\015\300\071\361\171\273
\106\216\253\103\131\047\267\040\273\043\351\126\100\041\354\061
\075\145\252\103\362\075\337\160\104\341\272\115\046\020\073\230
\237\363\310\216\033\070\126\041\152\121\223\323\221\312\106\332
\211\267\075\123\203\054\010\037\213\217\123\335\377\254\037
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE

Trust for "Entrust Root Certification Authority - G4"
Issuer: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Serial Number:00:d9:b5:43:7f:af:a9:39:0f:00:00:00:00:55:65:ad:58
Subject: CN=Entrust Root Certification Authority - G4,OU="(c) 2015 Entrust, Inc. - for authorized use only",OU=See www.entrust.net/legal-terms,O="Entrust, Inc.",C=US
Not Valid Before: Wed May 27 11:11:16 2015
Not Valid After : Sun Dec 27 11:41:16 2037
Fingerprint (SHA-256):
DB:35:17:D1:F6:73:2A:2D:5A:B9:7C:53:3E:C7:07:79:EE:32:70:A6:2F:B4:AC:42:38:37:24:60:E6:F0:1E:88
#

Fingerprint (SHA1): 14:88:4E:86:26:37:B0:26:AF:59:62:5C:40:77:EC:35:29:BA:96:01
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Root Certification Authority - G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\024\210\116\206\046\067\260\046\257\131\142\134\100\167\354\065
\051\272\226\001
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\211\123\361\203\043\267\174\216\005\361\214\161\070\116\037\210
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\276\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\105\156\164\162\165
\163\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\013\023\037\123\145\145\040\167\167\167\056\145\156\164\162\165
\163\164\056\156\145\164\057\154\145\147\141\154\055\164\145\162
\155\163\061\071\060\067\006\003\125\004\013\023\060\050\143\051
\040\062\060\061\065\040\105\156\164\162\165\163\164\054\040\111
\156\143\056\040\055\040\146\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\062\060
\060\006\003\125\004\003\023\051\105\156\164\162\165\163\164\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\064
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\331\265\103\177\257\251\071\017\000\000\000\000\125
\145\255\130
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Microsoft ECC Root Certificate Authority 2017"
#
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority
2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042
Fingerprint (SHA-256):

35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\131\060\202\001\337\240\003\002\001\002\002\020\146
\362\075\257\207\336\213\261\112\352\014\127\061\001\302\354\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\036\060\034\006\003
\125\004\012\023\025\115\151\143\162\157\163\157\146\164\040\103
\157\162\160\157\162\141\164\151\157\156\061\066\060\064\006\003
\125\004\003\023\055\115\151\143\162\157\163\157\146\164\040\105
\103\103\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\067\060\036\027\015\061\071\061\062\061\070\062\063\060\066
\064\065\132\027\015\064\062\060\067\061\070\062\063\061\066\060
\064\132\060\145\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\036\060\034\006\003\125\004\012\023\025\115\151\143\162
\157\163\157\146\164\040\103\157\162\160\157\162\141\164\151\157
\156\061\066\060\064\006\003\125\004\003\023\055\115\151\143\162

\157\163\157\146\164\040\105\103\103\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\067\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\324\274\075\002\102\165\101\023\043\315\200\004\206\002\121
\057\152\250\201\142\013\145\314\366\312\235\036\157\112\146\121
\242\003\331\235\221\372\266\026\261\214\156\336\174\315\333\171
\246\057\316\273\316\161\057\345\245\253\050\354\143\004\146\231
\370\372\362\223\020\005\341\201\050\102\343\306\150\364\346\033
\204\140\112\211\257\355\171\017\073\316\361\366\104\365\001\170
\300\243\124\060\122\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\310\313\231\162\160\122\014\370\346\276\262\004\127\051\052
\317\102\020\355\065\060\020\006\011\053\006\001\004\001\202\067
\025\001\004\003\002\001\000\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\060\130\362\115\352\014\371
\137\136\356\140\051\313\072\362\333\326\062\204\031\077\174\325
\057\302\261\314\223\256\120\273\011\062\306\306\355\176\311\066
\224\022\344\150\205\006\242\033\320\057\002\061\000\231\351\026
\264\016\372\126\110\324\244\060\026\221\170\333\124\214\145\001
\212\347\120\146\302\061\267\071\272\270\032\042\007\116\374\153
\124\026\040\377\053\265\347\114\014\115\246\117\163
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft ECC Root Certificate Authority 2017"
Issuer: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:66:f2:3d:af:87:de:8b:b1:4a:ea:0c:57:31:01:c2:ec
Subject: CN=Microsoft ECC Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 23:06:45 2019
Not Valid After : Fri Jul 18 23:16:04 2042
Fingerprint (SHA-256):
35:8D:F3:9D:76:4A:F9:E1:B7:66:E9:C9:72:DF:35:2E:E1:5C:FA:C2:27:AF:6A:D1:D7:0E:8E:4A:6E:DC:BA:02
Fingerprint (SHA1): 99:9A:64:C3:7F:F4:7D:9F:AB:95:F1:47:69:89:14:60:EE:C4:C3:C5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Root Certificate
Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\231\232\144\303\177\364\175\237\253\225\361\107\151\211\024\140
\356\304\303\305
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\335\241\003\346\112\223\020\321\277\360\031\102\313\376\355\147
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\105\103\103\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\146\362\075\257\207\336\213\261\112\352\014\127\061\001
\302\354
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

#
Certificate "Microsoft RSA Root Certificate Authority 2017"
#
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END

CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\250\060\202\003\220\240\003\002\001\002\002\020\036
\323\227\011\137\330\264\263\107\160\036\252\276\177\105\263\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036\060
\034\006\003\125\004\012\023\025\115\151\143\162\157\163\157\146
\164\040\103\157\162\160\157\162\141\164\151\157\156\061\066\060
\064\006\003\125\004\003\023\055\115\151\143\162\157\163\157\146
\164\040\122\123\101\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\040\062\060\061\067\060\036\027\015\061\071\061\062\061\070\062
\062\065\061\062\062\132\027\015\064\062\060\067\061\070\062\063
\060\060\062\063\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\036\060\034\006\003\125\004\012\023\025\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162\141
\164\151\157\156\061\066\060\064\006\003\125\004\003\023\055\115
\151\143\162\157\163\157\146\164\040\122\123\101\040\122\157\157
\164\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165
\164\150\157\162\151\164\171\040\062\060\061\067\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\133\276
\224\063\214\051\225\221\026\012\225\275\107\142\301\211\363\231
\066\337\106\220\311\245\355\170\152\157\107\221\150\370\047\147
\120\063\035\241\246\373\340\345\103\243\204\002\127\001\135\234
\110\100\202\123\020\274\277\307\073\150\220\266\202\055\345\364
\145\320\314\155\031\314\225\371\173\254\112\224\255\016\336\113
\103\035\207\007\222\023\220\200\203\144\065\071\004\374\345\351
\154\263\266\037\120\224\070\145\120\134\027\106\271\266\205\265
\034\265\027\350\326\105\235\330\262\046\260\312\304\160\112\256
\140\244\335\263\331\354\374\073\325\127\162\274\077\310\311\262
\336\113\153\370\043\154\003\300\005\275\225\307\315\163\073\146
\200\144\343\032\254\056\371\107\005\362\006\266\233\163\365\170
\063\133\307\241\373\047\052\241\264\232\221\214\221\323\072\202

\076\166\100\264\315\122\141\121\160\050\077\305\305\132\362\311
\214\111\273\024\133\115\310\377\147\115\114\022\226\255\365\376
\170\250\227\207\327\375\136\040\200\334\241\113\042\373\324\211
\255\272\316\107\227\107\125\173\217\105\310\147\050\204\225\034
\150\060\357\357\111\340\065\173\144\347\230\260\224\332\115\205
\073\076\125\304\050\257\127\363\236\023\333\106\047\237\036\242
\136\104\203\244\245\312\325\023\263\113\077\304\343\302\346\206
\141\244\122\060\271\172\040\117\157\017\070\123\313\063\014\023
\053\217\326\232\275\052\310\055\261\034\175\113\121\312\107\321
\110\047\162\135\207\353\325\105\346\110\145\235\257\122\220\272
\133\242\030\145\127\022\237\150\271\324\025\153\224\304\151\042
\230\364\063\340\355\371\121\216\101\120\311\064\117\166\220\254
\374\070\301\330\341\173\271\343\343\224\341\106\151\313\016\012
\120\153\023\272\254\017\067\132\267\022\265\220\201\036\126\256
\127\042\206\331\311\322\321\327\121\343\253\073\306\125\375\036
\016\323\164\012\321\332\252\352\151\270\227\050\217\110\304\007
\370\122\103\072\364\312\125\065\054\260\246\152\300\234\371\362
\201\341\022\152\300\105\331\147\263\316\377\043\242\211\012\124
\324\024\271\052\250\327\354\371\253\315\045\130\062\171\217\220
\133\230\071\304\010\006\301\254\177\016\075\000\245\002\003\001
\000\001\243\124\060\122\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\011\313\131\177\206\262\160\217\032\303\071\343\300\331
\351\277\273\115\262\043\060\020\006\011\053\006\001\004\001\202
\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\003\202\002\001\000\254\257\076\135
\302\021\226\211\216\243\347\222\326\227\025\270\023\242\246\102
\056\002\315\026\005\131\047\312\040\350\272\270\350\032\354\115
\250\227\126\256\145\103\261\217\000\233\122\315\125\315\123\071
\155\142\114\213\015\133\174\056\104\277\203\020\217\363\123\202
\200\303\117\072\307\156\021\077\346\343\026\221\204\373\155\204
\177\064\164\255\211\247\316\271\327\327\237\204\144\222\276\225
\241\255\011\123\063\335\356\012\352\112\121\216\157\125\253\272
\265\224\106\256\214\177\330\242\120\045\145\140\200\106\333\063
\004\256\154\265\230\164\124\045\334\223\344\370\343\125\025\075
\270\155\303\012\244\022\301\151\205\156\337\144\361\123\231\341
\112\165\040\235\225\017\344\326\334\003\361\131\030\350\107\211
\262\127\132\224\266\251\330\027\053\027\111\345\166\313\301\126
\231\072\067\261\377\151\054\221\221\223\341\337\114\243\067\166
\115\241\237\370\155\036\035\323\372\354\373\364\105\035\023\155
\317\367\131\345\042\047\162\053\206\363\127\273\060\355\044\115
\334\175\126\273\243\263\370\064\171\211\301\340\362\002\141\367
\246\374\017\273\034\027\013\256\101\331\174\275\047\243\375\056
\072\321\223\224\261\163\035\044\213\257\133\040\211\255\267\147
\146\171\365\072\306\246\226\063\376\123\222\310\106\261\021\221
\306\231\177\217\311\326\146\061\040\101\020\207\055\014\326\301
\257\064\230\312\144\203\373\023\127\321\301\360\074\172\214\245

\301\375\225\041\240\161\301\223\147\161\022\352\217\210\012\151
\031\144\231\043\126\373\254\052\056\160\276\146\304\014\204\357
\345\213\363\223\001\370\152\220\223\147\113\262\150\243\265\142
\217\351\077\214\172\073\136\017\347\214\270\306\174\357\067\375
\164\342\310\117\063\162\341\224\071\155\275\022\257\276\014\116
\160\174\033\157\215\263\062\223\163\104\026\155\350\364\367\340
\225\200\217\226\135\070\244\364\253\336\012\060\207\223\330\115
\000\161\142\105\047\113\072\102\204\133\177\145\267\147\064\122
\055\234\026\153\252\250\330\173\243\102\114\161\307\014\312\076
\203\344\246\357\267\001\060\136\121\243\171\365\160\151\246\101
\104\017\206\260\054\221\306\075\352\256\017\204
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Microsoft RSA
Root Certificate Authority 2017"
Issuer: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Serial Number:1e:d3:97:09:5f:d8:b4:b3:47:70:1e:aa:be:7f:45:b3
Subject: CN=Microsoft RSA Root Certificate Authority 2017,O=Microsoft Corporation,C=US
Not Valid Before: Wed Dec 18 22:51:22 2019
Not Valid After : Fri Jul 18 23:00:23 2042
Fingerprint (SHA-256):
C7:41:F7:0F:4B:2A:8D:88:BF:2E:71:C1:41:22:EF:53:EF:10:EB:A0:CF:A5:E6:4C:FA:20:F4:18:85:30:73:E0
Fingerprint (SHA1): 73:A5:E6:4A:3B:FF:83:16:FF:0E:DC:CC:61:8A:90:6E:4E:AE:4D:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft RSA Root Certificate Authority 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\163\245\346\112\073\377\203\026\377\016\334\314\141\212\220\156
\116\256\115\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\020\377\000\377\317\311\370\307\172\300\356\065\216\311\017\107
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\066\060\064\006\003\125\004\003\023\055\115\151\143\162\157\163
\157\146\164\040\122\123\101\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\067
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\036\323\227\011\137\330\264\263\107\160\036\252\276\177
\105\263
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "e-Szigno Root CA 2017"
#
Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec
Ltd.,L=Budapest,C=HU
Not Valid Before: Tue Aug 22 12:07:06 2017
Not Valid After : Fri Aug 22 12:07:06 2042
Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062

\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\100\060\202\001\345\240\003\002\001\002\002\014\001
\124\110\357\041\375\227\131\015\365\004\012\060\012\006\010\052
\206\110\316\075\004\003\002\060\161\061\013\060\011\006\003\125
\004\006\023\002\110\125\061\021\060\017\006\003\125\004\007\014
\010\102\165\144\141\160\145\163\164\061\026\060\024\006\003\125
\004\012\014\015\115\151\143\162\157\163\145\143\040\114\164\144
\056\061\027\060\025\006\003\125\004\141\014\016\126\101\124\110
\125\055\062\063\065\070\064\064\071\067\061\036\060\034\006\003
\125\004\003\014\025\145\055\123\172\151\147\156\157\040\122\157
\157\164\040\103\101\040\062\060\061\067\060\036\027\015\061\067
\060\070\062\062\061\062\060\067\060\066\132\027\015\064\062\060
\070\062\062\061\062\060\067\060\066\132\060\161\061\013\060\011
\006\003\125\004\006\023\002\110\125\061\021\060\017\006\003\125
\004\007\014\010\102\165\144\141\160\145\163\164\061\026\060\024
\006\003\125\004\012\014\015\115\151\143\162\157\163\145\143\040
\114\164\144\056\061\027\060\025\006\003\125\004\141\014\016\126
\101\124\110\125\055\062\063\065\070\064\064\071\067\061\036\060
\034\006\003\125\004\003\014\025\145\055\123\172\151\147\156\157
\040\122\157\157\164\040\103\101\040\062\060\061\067\060\131\060
\023\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316
\075\003\001\007\003\102\000\004\226\334\075\212\330\260\173\157
\306\047\276\104\220\261\263\126\025\173\216\103\044\175\032\204
\131\356\143\150\262\306\136\207\320\025\110\036\250\220\255\275
\123\242\332\336\072\220\246\140\137\150\062\265\206\101\337\207
\133\054\173\305\376\174\172\332\243\143\060\141\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\207\021\025\010\321\252\301\170
\014\261\257\316\306\311\220\357\277\060\004\300\060\037\006\003
\125\035\043\004\030\060\026\200\024\207\021\025\010\321\252\301
\170\014\261\257\316\306\311\220\357\277\060\004\300\060\012\006
\010\052\206\110\316\075\004\003\002\003\111\000\060\106\002\041
\000\265\127\335\327\212\125\013\066\341\206\104\372\324\331\150
\215\270\334\043\212\212\015\324\057\175\352\163\354\277\115\154
\250\002\041\000\313\245\264\022\372\347\265\350\317\176\223\374
\363\065\217\157\116\132\174\264\274\116\262\374\162\252\133\131
\371\347\334\061
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Trust for "e-Szigno Root CA 2017"
# Issuer: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
# Serial Number:01:54:48:ef:21:fd:97:59:0d:f5:04:0a
# Subject: CN=e-Szigno Root CA 2017,OID.2.5.4.97=VATHU-23584497,O=Microsec Ltd.,L=Budapest,C=HU
# Not Valid Before: Tue Aug 22 12:07:06 2017
# Not Valid After : Fri Aug 22 12:07:06 2042
# Fingerprint (SHA-256):
BE:B0:0B:30:83:9B:9B:C3:2C:32:E4:44:79:05:95:06:41:F2:64:21:B1:5E:D0:89:19:8B:51:8A:E2:EA:1B:99
# Fingerprint (SHA1): 89:D4:83:03:4F:9E:9A:48:80:5F:72:37:D4:A9:A6:EF:CB:7C:1F:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Szigno Root CA 2017"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\324\203\003\117\236\232\110\200\137\162\067\324\251\246\357
\313\174\037\321
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\336\037\366\236\204\256\247\264\041\316\036\130\175\321\204\230
END
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\014\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\027\060\025\006\003
\125\004\141\014\016\126\101\124\110\125\055\062\063\065\070\064
\064\071\067\061\036\060\034\006\003\125\004\003\014\025\145\055
\123\172\151\147\156\157\040\122\157\157\164\040\103\101\040\062
\060\061\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\001\124\110\357\041\375\227\131\015\365\004\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate
 "certSIGN Root CA G2"
#
# Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
# Serial Number:11:00:34:b6:4e:c6:36:2d:36
# Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
```

```
# Not Valid Before: Mon Feb 06 09:27:35 2017
# Not Valid After : Thu Feb 06 09:27:35 2042
# Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
# Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\107\060\202\003\057\240\003\002\001\002\002\011\021
\000\064\266\116\306\066\055\066\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\101\061\013\060\011\006\003\125
\004\006\023\002\122\117\061\024\060\022\006\003\125\004\012\023
\013\103\105\122\124\123\111\107\116\040\123\101\061\034\060\032
\006\003\125\004\013\023\023\143\145\162\164\123\111\107\116\040
\122\117\117\124\040\103\101\040\107\062\060\036\027\015\061\067
\060\062\060\066\060\071\062\067\063\065\132\027\015\064\062\060
\062\060\066\060\071\062\067\063\065\132\060\101\061\013\060\011
\006\003\125\004\006\023\002\122\117\061\024\060\022\006\003\125
\004\012\023\013\103\105\122\124\123\111\107\116\040\123\101\061
\034\060\032\006\003\125\004\013\023\023\143\145\162\164\123\111
\107\116\040\122\117\117\124\040\103\101\040\107\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\300\305
\165\031\221\175\104\164\164\207\376\016\073\226\334\330\001\026
\314\356\143\221\347\013\157\316\073\012\151\032\174\302\343\257
```

\202\216\206\327\136\217\127\353\323\041\131\375\071\067\102\060
\276\120\352\266\017\251\210\330\056\055\151\041\347\321\067\030
\116\175\221\325\026\137\153\133\000\302\071\103\015\066\205\122
\271\123\145\017\035\102\345\217\317\005\323\356\334\014\032\331
\270\213\170\042\147\344\151\260\150\305\074\344\154\132\106\347
\315\307\372\357\304\354\113\275\152\244\254\375\314\050\121\357
\222\264\051\253\253\065\232\114\344\304\010\306\046\314\370\151
\237\344\234\360\051\323\134\371\306\026\045\236\043\303\040\301
\075\017\077\070\100\260\376\202\104\070\252\132\032\212\153\143
\130\070\264\025\323\266\021\151\173\036\124\356\214\032\042\254
\162\227\077\043\131\233\311\042\204\301\007\117\314\177\342\127
\312\022\160\273\246\145\363\151\165\143\275\225\373\033\227\315
\344\250\257\366\321\116\250\331\212\161\044\315\066\075\274\226
\304\361\154\251\256\345\317\015\156\050\015\260\016\265\312\121
\173\170\024\303\040\057\177\373\024\125\341\021\231\375\325\012
\241\236\002\343\142\137\353\065\113\054\270\162\350\076\075\117
\254\054\273\056\206\342\243\166\217\345\223\052\317\245\253\310
\134\215\113\006\377\022\106\254\170\313\024\007\065\340\251\337
\213\351\257\025\117\026\211\133\275\366\215\306\131\256\210\205
\016\301\211\353\037\147\305\105\216\377\155\067\066\053\170\146
\203\221\121\053\075\377\121\167\166\142\241\354\147\076\076\201
\203\340\126\251\120\037\037\172\231\253\143\277\204\027\167\361
\015\073\337\367\234\141\263\065\230\212\072\262\354\074\032\067
\077\176\217\222\317\331\022\024\144\332\020\002\025\101\377\117
\304\353\034\243\311\372\231\367\106\351\341\030\331\261\270\062
\055\313\024\014\120\330\203\145\203\356\271\134\317\313\005\132
\114\372\031\227\153\326\135\023\323\302\134\124\274\062\163\240
\170\365\361\155\036\313\237\245\246\237\042\334\321\121\236\202
\171\144\140\051\023\076\243\375\117\162\152\253\342\324\345\270
\044\125\054\104\113\212\210\104\234\312\204\323\052\073\002\003
\001\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\202\041\055\146\306\327\240\340\025\353\316\114\011
\167\304\140\236\124\156\003\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\140\336\032\270\347
\362\140\202\325\003\063\201\313\006\212\361\042\111\351\350\352
\221\177\306\063\136\150\031\003\206\073\103\001\317\007\160\344
\010\036\145\205\221\346\021\042\267\365\002\043\216\256\271\036
\175\037\176\154\346\275\045\325\225\032\362\005\246\257\205\002
\157\256\370\326\061\377\045\311\112\310\307\212\251\331\237\113
\111\233\021\127\231\222\103\021\336\266\063\244\314\327\215\144
\175\324\315\074\050\054\264\232\226\352\115\365\304\104\304\045
\252\040\200\330\051\125\367\340\101\374\006\046\377\271\066\365
\103\024\003\146\170\341\021\261\332\040\137\106\000\170\000\041
\245\036\000\050\141\170\157\250\001\001\217\235\064\232\377\364
\070\220\373\270\321\263\162\006\311\161\346\201\305\171\355\013
\246\171\362\023\013\234\367\135\016\173\044\223\264\110\333\206

\137\336\120\206\170\347\100\346\061\250\220\166\160\141\257\234
\067\054\021\265\202\267\252\256\044\064\133\162\014\151\015\315
\131\237\366\161\257\234\013\321\012\070\371\006\042\203\123\045
\014\374\121\304\346\276\342\071\225\013\044\255\257\321\225\344
\226\327\164\144\153\161\116\002\074\252\205\363\040\243\103\071
\166\133\154\120\376\232\234\024\036\145\024\212\025\275\243\202
\105\132\111\126\152\322\234\261\143\062\345\141\340\123\042\016
\247\012\111\352\313\176\037\250\342\142\200\366\020\105\122\230
\006\030\336\245\315\057\177\252\324\351\076\010\162\354\043\003
\002\074\246\252\330\274\147\164\075\024\027\373\124\113\027\343
\323\171\075\155\153\111\311\050\016\056\164\120\277\014\331\106
\072\020\206\311\247\077\351\240\354\177\353\245\167\130\151\161
\346\203\012\067\362\206\111\152\276\171\010\220\366\002\026\144
\076\345\332\114\176\014\064\311\371\137\266\263\050\121\247\247
\053\252\111\372\215\145\051\116\343\153\023\247\224\243\055\121
\155\170\014\104\313\337\336\010\157\316\243\144\253\323\225\204
\324\271\122\124\162\173\226\045\314\274\151\343\110\156\015\320
\307\235\047\232\252\370\023\222\335\036\337\143\237\065\251\026
\066\354\214\270\203\364\075\211\217\315\264\027\136\327\263\027
\101\020\135\047\163\140\205\127\111\042\007
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "certSIGN Root CA G2"
Issuer: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Serial Number:11:00:34:b6:4e:c6:36:2d:36
Subject: OU=certSIGN ROOT CA G2,O=CERTSIGN SA,C=RO
Not Valid Before: Mon Feb 06 09:27:35 2017
Not Valid After : Thu Feb 06 09:27:35 2042
Fingerprint (SHA-256):
65:7C:FE:2F:A7:3F:AA:38:46:25:71:F3:32:A2:36:3A:46:FC:E7:02:09:51:71:07:02:CD:FB:B6:EE:DA:33:05
Fingerprint (SHA1): 26:F9:93:B4:ED:3D:28:27:B0:B9:4B:A7:E9:15:1D:A3:8D:92:E5:32
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "certSIGN Root CA G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\046\371\223\264\355\075\050\047\260\271\113\247\351\025\035\243
\215\222\345\062
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\361\165\212\306\031\317\224\267\367\145\040\207\303\227\307
END

CKA_ISSUER MULTILINE_OCTAL
\060\101\061\013\060\011\006\003\125\004\006\023\002\122\117\061
\024\060\022\006\003\125\004\012\023\013\103\105\122\124\123\111
\107\116\040\123\101\061\034\060\032\006\003\125\004\013\023\023
\143\145\162\164\123\111\107\116\040\122\117\117\124\040\103\101
\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\021\000\064\266\116\306\066\055\066
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global Certification Authority"
#
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256):
97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
#
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID

UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\005\367\016\206\332\111\363\106\065\056\272\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\332\060\202\003\302\240\003\002\001\002\002\014\005
\367\016\206\332\111\363\106\065\056\272\262\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\060\201\210\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006\003
\125\004\010\014\010\111\154\154\151\156\157\151\163\061\020\060
\016\006\003\125\004\007\014\007\103\150\151\143\141\147\157\061
\041\060\037\006\003\125\004\012\014\030\124\162\165\163\164\167
\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111\156
\143\056\061\061\060\057\006\003\125\004\003\014\050\124\162\165
\163\164\167\141\166\145\040\107\154\157\142\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\060\036\027\015\061\067\060\070\062\063\061
\071\063\064\061\062\132\027\015\064\062\060\070\062\063\061\071
\063\064\061\062\132\060\201\210\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\021\060\017\006\003\125\004\010\014\010
\111\154\154\151\156\157\151\163\061\020\060\016\006\003\125\004
\007\014\007\103\150\151\143\141\147\157\061\041\060\037\006\003
\125\004\012\014\030\124\162\165\163\164\167\141\166\145\040\110
\157\154\144\151\156\147\163\054\040\111\156\143\056\061\061\060
\057\006\003\125\004\003\014\050\124\162\165\163\164\167\141\166
\145\040\107\154\157\142\141\154\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\271\135\121\050\113\074\067\222\321\202\316\275\035\275\315
\335\270\253\317\012\076\341\135\345\334\252\011\271\127\002\076
\346\143\141\337\362\017\202\143\256\243\367\254\163\321\174\347
\263\013\257\010\000\011\131\177\315\051\052\210\223\207\027\030
\200\355\210\262\264\266\020\037\055\326\137\125\242\023\135\321
\306\353\006\126\211\210\376\254\062\235\375\134\303\005\307\156
\356\206\211\272\210\003\235\162\041\206\220\256\217\003\245\334
\237\210\050\313\243\222\111\017\354\320\017\342\155\104\117\200

\152\262\324\347\240\012\123\001\272\216\227\221\166\156\274\374
\325\153\066\346\100\210\326\173\057\137\005\350\054\155\021\363
\347\262\276\222\104\114\322\227\244\376\322\162\201\103\007\234
\351\021\076\365\213\032\131\175\037\150\130\335\004\000\054\226
\363\103\263\176\230\031\164\331\234\163\331\030\276\101\307\064
\171\331\364\142\302\103\271\263\047\260\042\313\371\075\122\307
\060\107\263\311\076\270\152\342\347\350\201\160\136\102\213\117
\046\245\376\072\302\040\156\273\370\026\216\315\014\251\264\033
\154\166\020\341\130\171\106\076\124\316\200\250\127\011\067\051
\033\231\023\217\014\310\326\054\034\373\005\350\010\225\075\145
\106\334\356\315\151\342\115\217\207\050\116\064\013\076\317\024
\331\273\335\266\120\232\255\167\324\031\326\332\032\210\310\116
\033\047\165\330\262\010\361\256\203\060\271\021\016\315\207\360
\204\215\025\162\174\241\357\314\362\210\141\272\364\151\273\014
\214\013\165\127\004\270\116\052\024\056\075\017\034\036\062\246
\142\066\356\146\342\042\270\005\100\143\020\042\363\063\035\164
\162\212\054\365\071\051\240\323\347\033\200\204\055\305\075\343
\115\261\375\032\157\272\145\007\073\130\354\102\105\046\373\330
\332\045\162\304\366\000\261\042\171\275\343\174\131\142\112\234
\005\157\075\316\346\326\107\143\231\306\044\157\162\022\310\254
\177\220\264\013\221\160\350\267\346\026\020\161\027\316\336\006
\117\110\101\175\065\112\243\211\362\311\113\173\101\021\155\147
\267\010\230\114\345\021\031\256\102\200\334\373\220\005\324\370
\120\312\276\344\255\307\302\224\327\026\235\346\027\217\257\066
\373\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\231\340\031\147\015\142\333\166\263\332
\075\270\133\350\375\102\322\061\016\207\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\230\163
\160\342\260\323\355\071\354\114\140\331\251\022\206\027\036\226
\320\350\124\050\073\144\055\041\246\370\235\126\023\152\110\075
\117\307\076\051\333\155\130\203\124\075\207\175\043\005\324\344
\034\334\350\070\145\206\305\165\247\132\333\065\005\275\167\336
\273\051\067\100\005\007\303\224\122\237\312\144\335\361\033\053
\334\106\012\020\002\061\375\112\150\015\007\144\220\346\036\365
\052\241\250\273\074\135\371\243\010\013\021\014\361\077\055\020
\224\157\376\342\064\207\203\326\317\345\033\065\155\322\003\341
\260\015\250\240\252\106\047\202\066\247\025\266\010\246\102\124
\127\266\231\132\342\013\171\220\327\127\022\121\065\031\210\101
\150\045\324\067\027\204\025\373\001\162\334\225\336\122\046\040
\230\046\342\166\365\047\157\372\000\073\112\141\331\015\313\121
\223\052\375\026\006\226\247\043\232\043\110\376\121\275\266\304
\260\261\124\316\336\154\101\255\026\147\176\333\375\070\315\271
\070\116\262\301\140\313\235\027\337\130\236\172\142\262\046\217
\164\225\233\344\133\035\322\017\335\230\034\233\131\271\043\323
\061\240\246\377\070\335\317\040\117\351\130\126\072\147\303\321
\366\231\231\235\272\066\266\200\057\210\107\117\206\277\104\072

\200\344\067\034\246\272\352\227\230\021\320\204\142\107\144\036
\252\356\100\277\064\261\234\217\116\341\362\222\117\037\216\363
\236\227\336\363\246\171\152\211\161\117\113\047\027\110\376\354
\364\120\017\117\111\175\314\105\343\275\172\100\305\101\334\141
\126\047\006\151\345\162\101\201\323\266\001\211\240\057\072\162
\171\376\072\060\277\101\354\307\142\076\221\113\307\331\061\166
\102\371\367\074\143\354\046\214\163\014\175\032\035\352\250\174
\207\250\302\047\174\341\063\101\017\317\317\374\000\240\042\200
\236\112\247\157\000\260\101\105\267\042\312\150\110\305\102\242
\256\335\035\362\340\156\116\005\130\261\300\220\026\052\244\075
\020\100\276\217\142\143\203\251\234\202\175\055\002\351\203\060
\174\313\047\311\375\036\146\000\260\056\323\041\057\216\063\026
\154\230\355\020\250\007\326\314\223\317\333\321\151\034\344\312
\311\340\266\234\351\316\161\161\336\154\077\026\244\171
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for
"Trustwave Global Certification Authority"
Issuer: CN=Trustwave Global Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:05:f7:0e:86:da:49:f3:46:35:2e:ba:b2
Subject: CN=Trustwave Global Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:34:12 2017
Not Valid After : Sat Aug 23 19:34:12 2042
Fingerprint (SHA-256):
97:55:20:15:F5:DD:FC:3C:87:88:C0:06:94:45:55:40:88:94:45:00:84:F1:00:86:70:86:BC:1A:2B:B5:8D:C8
Fingerprint (SHA1): 2F:8F:36:4F:E1:58:97:44:21:59:87:A5:2A:9A:D0:69:95:26:7F:B5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\057\217\066\117\341\130\227\104\041\131\207\245\052\232\320\151
\225\046\177\265
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\034\030\055\057\272\137\155\241\154\274\307\253\221\307\016
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\014\010\111\154\154\151\156

\157\151\163\061\020\060\016\006\003\125\004\007\014\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\014\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\061\060\057\006\003\125\004
\003\014\050\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\005\367\016\206\332\111\363\106\065\056\272\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P256 Certification Authority"
#
#
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256):
94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END

CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\014\015\152\137\010\077\050\134\076\121\225\337\135
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\140\060\202\002\007\240\003\002\001\002\002\014\015
\152\137\010\077\050\134\076\121\225\337\135\060\012\006\010\052
\206\110\316\075\004\003\002\060\201\221\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003
\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\062\065\066\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\065\061\060\132\027\015\064\062
\060\070\062\063\061\071\063\065\061\060\132\060\201\221\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\062\065\066\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\131\060\023\006\007\052\206\110\316\075\002\001\006\010\052\206
\110\316\075\003\001\007\003\102\000\004\176\373\154\346\043\343
\163\062\010\312\140\346\123\234\272\164\215\030\260\170\220\122
\200\335\070\300\112\035\321\250\314\223\244\227\006\070\312\015
\025\142\306\216\001\052\145\235\252\337\064\221\056\201\301\344
\063\222\061\304\375\011\072\246\077\255\243\103\060\101\060\017

\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\017\006\003\125\035\017\001\001\377\004\005\003\003\007\006\000
\060\035\006\003\125\035\016\004\026\004\024\243\101\006\254\220
\155\321\112\353\165\245\112\020\231\263\261\241\213\112\367\060
\012\006\010\052\206\110\316\075\004\003\002\003\107\000\060\104
\002\040\007\346\124\332\016\240\132\262\256\021\237\207\305\266
\377\151\336\045\276\370\240\267\010\363\104\316\052\337\010\041
\014\067\002\040\055\046\003\240\005\275\153\321\366\134\370\145
\314\206\155\263\234\064\110\143\204\011\305\215\167\032\342\314
\234\341\164\173
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P256 Certification Authority"
Issuer: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave
Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:0d:6a:5f:08:3f:28:5c:3e:51:95:df:5d
Subject: CN=Trustwave Global ECC P256 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:35:10 2017
Not Valid After : Sat Aug 23 19:35:10 2042
Fingerprint (SHA-256):
94:5B:BC:82:5E:A5:54:F4:89:D1:FD:51:A7:3D:DF:2E:A6:24:AC:70:19:A0:52:05:22:5C:22:A7:8C:CF:A8:B4
Fingerprint (SHA1): B4:90:82:DD:45:0C:BE:8B:5B:B1:66:D3:E2:A4:08:26:CD:ED:42:CF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P256 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\264\220\202\335\105\014\276\213\133\261\146\323\342\244\010\046
\315\355\102\317
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\104\343\215\135\066\206\046\350\015\005\322\131\247\203\124
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\062\065\066\040\103\145\162

\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\014\015\152\137\010\077\050\134\076\121\225\337\135
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Trustwave Global ECC P384 Certification Authority"
#
Issuer: CN=Trustwave Global ECC
P384 Certification Authority,O="Trustwave Holdings, Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156

\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157
\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\235\060\202\002\044\240\003\002\001\002\002\014\010
\275\205\227\154\231\047\244\200\150\107\073\060\012\006\010\052
\206\110\316\075\004\003\003\060\201\221\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\021\060\017\006\003\125\004\010
\023\010\111\154\154\151\156\157\151\163\061\020\060\016\006\003
\125\004\007\023\007\103\150\151\143\141\147\157\061\041\060\037
\006\003\125\004\012\023\030\124\162\165\163\164\167\141\166\145
\040\110\157\154\144\151\156\147\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\003\023\061\124\162\165\163\164\167
\141\166\145\040\107\154\157\142\141\154\040\105\103\103\040\120
\063\070\064\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\067\060\070\062\063\061\071\063\066\064\063\132\027\015\064\062
\060\070\062\063\061\071\063\066\064\063\132\060\201\221\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\021\060\017\006
\003\125\004\010\023\010\111\154\154\151\156\157\151\163\061\020
\060\016\006\003\125\004\007\023\007\103\150\151\143\141\147\157
\061\041\060\037\006\003\125\004\012\023\030\124\162\165\163\164
\167\141\166\145\040\110\157\154\144\151\156\147\163\054\040\111
\156\143\056\061\072\060\070\006\003\125\004\003\023\061\124\162
\165\163\164\167\141\166\145\040\107\154\157\142\141\154\040\105
\103\103\040\120\063\070\064\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\153\332\015\165\065\010\061\107\005
\256\105\231\125\361\021\023\056\112\370\020\061\043\243\176\203
\323\177\050\010\072\046\032\072\317\227\202\037\200\267\047\011
\217\321\216\060\304\012\233\016\254\130\004\253\367\066\175\224
\043\244\233\012\212\213\253\353\375\071\045\146\361\136\376\214
\256\215\101\171\235\011\140\316\050\251\323\212\155\363\326\105
\324\362\230\204\070\145\240\243\103\060\101\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\017\006\003
\125\035\017\001\001\377\004\005\003\003\007\006\000\060\035\006
\003\125\035\016\004\026\004\024\125\251\204\211\322\301\062\275

\030\313\154\246\007\116\310\347\235\276\202\220\060\012\006\010
\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067
\001\222\227\105\022\176\240\363\076\255\031\072\162\335\364\120
\223\003\022\276\104\322\117\101\244\214\234\235\037\243\366\302
\222\347\110\024\376\116\233\245\221\127\256\306\067\162\273\002
\060\147\045\012\261\014\136\356\251\143\222\157\345\220\013\376
\146\042\312\107\375\212\061\367\203\376\172\277\020\276\030\053
\036\217\366\051\036\224\131\357\216\041\067\313\121\230\245\156
\113
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Trustwave Global ECC P384 Certification Authority"
Issuer: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Serial Number:08:bd:85:97:6c:99:27:a4:80:68:47:3b
Subject: CN=Trustwave Global ECC P384 Certification Authority,O="Trustwave Holdings,
Inc.",L=Chicago,ST=Illinois,C=US
Not Valid Before: Wed Aug 23 19:36:43 2017
Not Valid After : Sat Aug 23 19:36:43 2042
Fingerprint (SHA-256):
55:90:38:59:C8:C0:C3:EB:B8:75:9E:CE:4E:25:57:22:5F:F5:75:8B:BD:38:EB:D4:82:76:60:1E:1B:D5:80:97
Fingerprint (SHA1): E7:F3:A3:C8:CF:6F:C3:04:2E:6D:0E:67:32:C5:9E:68:95:0D:5E:D2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Trustwave Global ECC P384 Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\363\243\310\317\157\303\004\056\155\016\147\062\305\236\150
\225\015\136\322
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\352\317\140\304\073\271\025\051\100\241\227\355\170\047\223\326
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\221\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\021\060\017\006\003\125\004\010\023\010\111\154\154\151\156
\157\151\163\061\020\060\016\006\003\125\004\007\023\007\103\150
\151\143\141\147\157\061\041\060\037\006\003\125\004\012\023\030
\124\162\165\163\164\167\141\166\145\040\110\157\154\144\151\156
\147\163\054\040\111\156\143\056\061\072\060\070\006\003\125\004
\003\023\061\124\162\165\163\164\167\141\166\145\040\107\154\157

\142\141\154\040\105\103\103\040\120\063\070\064\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\010\275\205\227\154\231\047\244\200\150\107\073
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "NAVER Global Root Certification Authority"
#
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037
Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157

\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\242\060\202\003\212\240\003\002\001\002\002\024\001
\224\060\036\242\013\335\365\305\063\052\261\103\104\161\370\326
\120\115\015\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\060\151\061\013\060\011\006\003\125\004\006\023\002\113
\122\061\046\060\044\006\003\125\004\012\014\035\116\101\126\105
\122\040\102\125\123\111\116\105\123\123\040\120\114\101\124\106
\117\122\115\040\103\157\162\160\056\061\062\060\060\006\003\125
\004\003\014\051\116\101\126\105\122\040\107\154\157\142\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036\027
\015\061\067\060\070\061\070\060\070\065\070\064\062\132\027\015
\063\067\060\070\061\070\062\063\065\071\065\071\132\060\151\061
\013\060\011\006\003\125\004\006\023\002\113\122\061\046\060\044
\006\003\125\004\012\014\035\116\101\126\105\122\040\102\125\123
\111\116\105\123\123\040\120\114\101\124\106\117\122\115\040\103
\157\162\160\056\061\062\060\060\006\003\125\004\003\014\051\116
\101\126\105\122\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\266\324\361\223\134\265\100
\211\012\253\015\220\133\120\143\256\220\224\164\027\105\162\326
\173\145\132\051\113\247\126\240\113\270\057\102\165\351\331\173
\044\132\061\145\253\027\027\321\063\072\331\021\334\100\066\207
\337\307\152\351\046\136\131\212\167\343\350\110\234\061\026\372
\076\221\261\312\311\243\342\237\316\041\123\243\002\066\060\313
\122\002\345\332\062\135\303\305\346\371\356\021\307\213\311\104
\036\204\223\030\112\264\237\345\022\144\151\320\046\205\142\001
\266\311\002\035\276\203\121\273\134\332\370\255\025\152\231\367
\222\124\367\064\133\351\277\352\051\201\022\324\123\221\226\263
\221\132\335\376\220\163\050\373\060\106\265\312\010\007\307\161
\162\311\146\323\064\227\366\214\364\030\112\341\320\075\132\105
\266\151\247\051\373\043\316\210\330\022\234\000\110\250\246\017
\263\073\222\215\161\016\164\305\213\310\114\371\364\233\216\270
\074\151\355\157\073\120\057\130\355\304\260\320\034\033\152\014
\342\274\104\252\330\315\024\135\224\170\141\277\016\156\332\052
\274\057\014\013\161\246\263\026\077\234\346\371\314\237\123\065
\342\003\240\240\030\277\273\361\276\364\326\214\207\015\102\367
\006\271\361\155\355\004\224\250\376\266\323\006\306\100\141\337
\235\235\363\124\166\316\123\072\001\246\222\101\354\004\243\217

\015\242\325\011\312\326\313\232\361\357\103\135\300\253\245\101
\317\134\123\160\160\311\210\246\055\324\153\141\163\120\046\206
\141\016\137\033\302\053\342\214\325\273\235\301\003\102\272\224
\332\137\251\260\312\314\115\012\357\107\151\003\057\042\373\361
\050\316\277\135\120\145\250\220\155\263\164\260\010\307\254\250
\321\353\076\234\374\135\032\203\056\053\313\265\363\104\235\072
\247\027\141\226\242\161\323\160\226\025\115\267\114\163\356\031
\134\305\133\076\101\376\254\165\140\073\033\143\316\000\335\332
\010\220\142\264\345\055\356\110\247\153\027\231\124\276\207\112
\343\251\136\004\114\353\020\155\124\326\357\361\350\362\142\026
\313\200\153\355\075\355\365\037\060\245\256\113\311\023\355\212
\001\001\311\270\121\130\300\146\072\261\146\113\304\325\061\002
\142\351\164\204\014\333\115\106\055\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\322\237\210
\337\241\315\054\275\354\365\073\001\001\223\063\047\262\353\140
\113\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\062\312\200\263\235\075\124\006\335\322
\322\056\360\244\001\041\013\147\110\312\155\216\340\310\252\015
\252\215\041\127\217\306\076\172\312\333\121\324\122\263\324\226
\204\245\130\140\177\345\013\216\037\365\334\012\025\201\345\073
\266\267\042\057\011\234\023\026\261\154\014\065\010\155\253\143
\162\355\334\276\354\307\127\346\060\040\161\326\327\020\301\023
\125\001\214\052\103\344\101\361\317\072\172\123\222\316\242\003
\005\015\070\337\002\273\020\056\331\073\322\233\172\300\241\246
\370\265\061\346\364\165\311\271\123\231\165\107\042\132\024\025
\307\170\033\266\235\351\014\370\033\166\361\205\204\336\241\332
\022\357\244\342\020\227\172\170\336\014\121\227\250\041\100\213
\206\275\015\360\136\116\113\066\273\073\040\037\212\102\126\341
\013\032\277\173\320\042\103\054\104\214\373\345\052\264\154\034
\034\272\224\340\023\176\041\346\232\302\313\305\102\144\264\036
\224\173\010\045\310\161\314\207\105\127\205\323\237\051\142\042
\203\121\227\000\030\227\167\152\230\222\311\174\140\154\337\154
\175\112\344\160\114\302\236\270\035\367\320\064\307\017\314\373
\247\377\003\276\255\160\220\332\013\335\310\155\227\137\232\177
\011\062\101\375\315\242\314\132\155\114\362\252\111\376\146\370
\351\330\065\353\016\050\036\356\110\057\072\320\171\011\070\174
\246\042\202\223\225\320\003\276\276\002\240\005\335\040\042\343
\157\035\210\064\140\306\346\012\271\011\165\013\360\007\350\151
\226\065\307\373\043\201\216\070\071\270\105\053\103\170\242\321
\054\024\377\015\050\162\162\225\233\136\011\333\211\104\230\252
\241\111\273\161\122\362\277\366\377\047\241\066\257\270\266\167
\210\335\072\244\155\233\064\220\334\024\135\060\277\267\353\027
\344\207\267\161\320\241\327\167\025\324\102\327\362\363\061\231
\135\233\335\026\155\077\352\006\043\370\106\242\042\355\223\366
\335\232\346\052\207\261\230\124\361\042\367\153\105\343\342\216
\166\035\232\215\304\006\215\066\267\024\363\235\124\151\267\216

\074\325\244\155\223\201\267\255\366\275\144\173\302\311\150\071
\240\222\234\315\064\206\221\220\372\144\121\235\376\376\353\245
\365\165\336\211\367\162
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "NAVER Global Root Certification Authority"
Issuer: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Serial Number:01:94:30:1e:a2:0b:dd:f5:c5:33:2a:b1:43:44:71:f8:d6:50:4d:0d
Subject: CN=NAVER Global Root Certification Authority,O=NAVER BUSINESS PLATFORM Corp.,C=KR
Not Valid Before: Fri Aug 18 08:58:42 2017
Not Valid After : Tue Aug 18 23:59:59 2037
Fingerprint (SHA-256):
88:F4:38:DC:F8:FF:D1:FA:8F:42:91:15:FF:E5:F8:2A:E1:E0:6E:0C:70:C3:75:FA:AD:71:7B:34:A4:9E:72:65
Fingerprint (SHA1): 8F:6B:F2:A9:27:4A:DA:14:A0:C4:F4:8E:61:27:F9:C0:1E:78:5D:D1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NAVER Global Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\217\153\362\251\047\112\332\024\240\304\364\216\141\047\371\300
\036\170\135\321
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\310\176\101\366\045\073\365\011\263\027\350\106\075\277\320\233
END
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\046\060\044\006\003\125\004\012\014\035\116\101\126\105\122\040
\102\125\123\111\116\105\123\123\040\120\114\101\124\106\117\122
\115\040\103\157\162\160\056\061\062\060\060\006\003\125\004\003
\014\051\116\101\126\105\122\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\001\224\060\036\242\013\335\365\305\063\052\261\103\104
\161\370\326\120\115\015
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
#
Issuer: CN=AC RAIZ FNMT-RCM
SERVIDORES SEGUROS,OID.2.5.4.97=VATES-Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-
Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_VALUE MULTILINE_OCTAL

\060\202\002\156\060\202\001\363\240\003\002\001\002\002\020\142
\366\062\154\345\304\343\150\134\033\142\335\234\056\235\225\060
\012\006\010\052\206\110\316\075\004\003\003\060\170\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\021\060\017\006\003
\125\004\012\014\010\106\116\115\124\055\122\103\115\061\016\060
\014\006\003\125\004\013\014\005\103\145\162\145\163\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\121\062
\070\062\066\060\060\064\112\061\054\060\052\006\003\125\004\003
\014\043\101\103\040\122\101\111\132\040\106\116\115\124\055\122
\103\115\040\123\105\122\126\111\104\117\122\105\123\040\123\105
\107\125\122\117\123\060\036\027\015\061\070\061\062\062\060\060
\071\063\067\063\063\132\027\015\064\063\061\062\062\060\060\071
\063\067\063\063\132\060\170\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\021\060\017\006\003\125\004\012\014\010\106
\116\115\124\055\122\103\115\061\016\060\014\006\003\125\004\013
\014\005\103\145\162\145\163\061\030\060\026\006\003\125\004\141
\014\017\126\101\124\105\123\055\121\062\070\062\066\060\060\064
\112\061\054\060\052\006\003\125\004\003\014\043\101\103\040\122
\101\111\132\040\106\116\115\124\055\122\103\115\040\123\105\122
\126\111\104\117\122\105\123\040\123\105\107\125\122\117\123\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\366\272\127\123\310\312\253\337\066
\112\122\041\344\227\322\203\147\236\360\145\121\320\136\207\307
\107\261\131\362\127\107\233\000\002\223\104\027\151\333\102\307
\261\262\072\030\016\264\135\214\263\146\135\241\064\371\066\054
\111\333\363\106\374\263\104\151\104\023\146\375\327\305\375\257
\066\115\316\003\115\007\161\317\257\152\005\322\242\103\132\012
\122\157\001\003\116\216\213\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\001\271\057\357\277\021\206\140\362
\117\320\101\156\253\163\037\347\322\156\111\060\012\006\010\052
\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\256
\112\343\053\100\303\164\021\362\225\255\026\043\336\116\014\032
\346\135\245\044\136\153\104\173\374\070\342\117\313\234\105\027
\021\114\024\047\046\125\071\165\112\003\314\023\220\237\222\002
\061\000\372\112\154\140\210\163\363\356\270\230\142\251\316\053
\302\331\212\246\160\061\035\257\260\224\114\353\117\306\343\321
\363\142\247\074\377\223\056\007\134\111\001\147\151\022\002\162
\277\347
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
Issuer: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-

Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Serial Number:62:f6:32:6c:e5:c4:e3:68:5c:1b:62:dd:9c:2e:9d:95
Subject: CN=AC RAIZ FNMT-RCM SERVIDORES SEGUROS,OID.2.5.4.97=VATES-
Q2826004J,OU=Ceres,O=FNMT-RCM,C=ES
Not
Valid Before: Thu Dec 20 09:37:33 2018
Not Valid After : Sun Dec 20 09:37:33 2043
Fingerprint (SHA-256):
55:41:53:B1:3D:2C:F9:DD:B7:53:BF:BE:1A:4E:0A:E0:8D:0A:A4:18:70:58:FE:60:A2:B8:62:B2:E4:B8:7B:CB
Fingerprint (SHA1): 62:FF:D9:9E:C0:65:0D:03:CE:75:93:D2:ED:3F:2D:32:C9:E3:E5:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ FNMT-RCM SERVIDORES SEGUROS"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\377\331\236\300\145\015\003\316\165\223\322\355\077\055\062
\311\343\345\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\031\066\234\122\003\057\322\321\273\043\314\335\036\022\125\273
END
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\021\060\017\006\003\125\004\012\014\010\106\116\115\124\055\122
\103\115\061\016\060\014\006\003\125\004\013\014\005\103\145\162
\145\163\061\030\060\026\006\003\125\004\141\014\017\126\101\124
\105\123\055\121\062\070\062\066\060\060\064\112\061\054\060\052
\006\003\125\004\003\014\043\101\103\040\122\101\111\132\040\106
\116\115\124\055\122\103\115\040\123\105\122\126\111\104\117\122
\105\123\040\123\105\107\125\122\117\123
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\142\366\062\154\345\304\343\150\134\033\142\335\234\056
\235\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root R45"
#
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE

Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
#
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217
\127\334
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\160\060\202\003\130\240\003\002\001\002\002\020\166
\123\376\250\114\120\253\237\215\062\265\035\003\217\127\334\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\122
\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060
\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151
\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125\004
\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123\145
\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040\122
\064\065\060\036\027\015\062\060\060\063\061\070\060\060\060\060
\060\060\132\027\015\064\065\060\063\061\070\060\060\060\060\060
\060\132\060\122\061\013\060\011\006\003\125\004\006\023\002\102
\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157\142
\141\154\123\151\147\156\040\156\166\055\163\141\061\050\060\046

\006\003\125\004\003\023\037\107\154\157\142\141\154\123\151\147
\156\040\123\145\143\165\162\145\040\115\141\151\154\040\122\157
\157\164\040\122\064\065\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\334\171\314\155\006\371\155\273\340
\126\004\154\177\340\165\314\055\005\111\350\113\334\124\354\133
\167\225\162\277\177\142\235\205\251\212\044\120\137\123\345\333
\164\157\244\051\133\023\052\011\255\232\305\057\302\367\166\073
\241\105\106\252\103\346\044\376\053\260\157\062\160\031\106\132
\171\046\057\374\075\175\137\144\313\127\314\141\141\250\331\225
\156\343\225\240\156\177\107\022\030\326\357\003\311\373\212\372
\232\275\202\025\251\125\167\113\021\117\131\340\153\303\161\363
\014\330\124\325\201\150\076\023\271\025\056\207\212\074\104\047
\066\142\044\156\370\054\005\162\060\141\275\102\221\043\304\235
\045\247\331\124\232\024\243\061\255\200\171\014\247\143\154\230
\243\254\127\107\063\037\145\226\341\320\322\065\332\371\161\367
\241\246\045\265\101\135\337\076\140\330\321\366\237\245\362\270
\314\023\252\217\371\262\156\341\203\055\223\335\076\205\032\335
\350\261\134\046\001\313\111\205\374\374\322\324\177\205\142\206
\164\371\313\354\065\042\242\014\060\217\073\253\171\353\126\362
\372\102\363\355\371\037\105\211\100\051\255\352\222\164\352\122
\375\126\264\053\332\242\355\165\302\156\253\316\122\220\113\366
\336\360\111\217\232\110\324\210\031\155\105\346\314\214\271\335
\144\140\140\002\100\370\271\317\274\130\353\075\205\271\306\012
\323\234\007\146\217\307\030\071\043\106\341\074\036\243\057\120
\141\222\013\075\053\154\361\243\107\070\127\221\253\015\217\306
\235\115\004\322\046\122\134\345\245\375\052\055\026\052\001\151
\347\251\175\341\066\267\261\052\305\331\261\215\275\271\213\316
\314\213\241\076\013\110\315\120\225\064\304\330\010\131\330\153
\046\364\276\365\324\042\027\000\127\311\256\233\004\060\063\237
\013\373\337\126\242\311\156\124\166\332\261\227\142\047\131\017
\021\212\042\033\144\226\077\250\361\267\044\112\215\074\123\174
\155\203\166\075\262\046\110\163\365\104\026\001\055\011\052\216
\026\226\120\320\163\006\135\273\042\110\202\114\012\106\132\077
\200\377\134\362\362\232\254\054\010\340\326\352\360\022\070\201
\117\246\020\355\106\253\314\026\234\013\317\144\246\231\002\205
\104\147\106\255\375\115\347\002\003\001\000\001\243\102\060\100
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\240\223\025\050
\156\356\217\010\262\065\306\236\142\171\164\247\261\016\053\173
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\105\012\370\321\134\254\142\201\320\004\327\266
\377\127\121\211\013\014\313\336\044\145\067\373\253\236\355\146
\364\352\014\031\151\211\270\031\261\060\126\264\331\366\367\276
\306\256\227\313\105\366\021\214\072\060\144\114\301\237\131\300
\106\102\010\006\107\144\027\170\340\225\007\006\326\214\242\254
\251\331\077\323\173\126\117\374\304\207\050\337\266\053\026\043

\300\237\037\133\343\326\104\136\042\117\043\004\214\065\026\265
\171\007\206\134\057\227\342\366\010\144\246\334\333\250\212\343
\244\173\167\015\321\051\223\050\040\264\123\243\113\116\137\336
\301\366\165\043\374\037\074\170\117\160\061\170\057\242\065\124
\161\004\254\310\304\155\303\366\221\261\376\315\356\104\156\201
\366\100\305\076\052\001\277\253\114\261\003\077\015\021\344\017
\322\044\343\042\210\233\237\137\107\075\121\111\340\011\067\176
\027\041\061\166\267\147\161\110\050\113\045\327\020\350\237\141
\131\026\305\076\062\116\037\014\316\243\314\017\344\307\021\007
\042\057\070\010\335\133\227\353\102\154\131\232\232\356\172\320
\235\337\305\333\011\103\056\012\252\031\075\153\350\152\060\172
\127\346\277\263\152\071\251\217\343\361\117\145\150\266\275\237
\050\217\241\026\132\011\120\072\062\056\035\057\104\021\102\246
\000\346\061\230\377\055\241\017\346\244\140\126\317\171\327\262
\116\327\260\372\156\014\127\043\307\316\037\245\261\114\155\031
\111\236\016\177\160\217\161\077\130\050\237\165\335\141\340\072
\267\071\266\356\227\324\065\121\373\213\111\140\310\074\146\256
\227\356\215\046\131\127\273\170\360\172\120\060\011\260\140\252
\237\116\334\311\076\036\072\334\142\223\063\260\072\124\164\157
\054\061\105\321\153\021\062\152\150\166\366\075\366\152\023\136
\044\230\347\352\035\232\317\170\202\007\140\367\115\020\323\201
\232\105\215\236\257\233\334\200\307\103\262\225\150\244\303\016
\350\012\107\025\277\124\063\334\001\347\325\246\036\163\330\172
\262\277\057\255\343\125\060\236\337\016\101\274\340\021\365\241
\014\250\042\341\343\000\243\116\160\174\222\343\004\321\172\102
\212\165\220\131\343\233\321\114\242\144\275\163\171\233\157\362
\263\301\366\074
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root R45"
Issuer: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:a8:4c:50:ab:9f:8d:32:b5:1d:03:8f:57:dc
Subject: CN=GlobalSign Secure Mail Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
31:9A:F0:A7:72:9E:6F:89:26:9C:13:1E:A6:A3:A1:6F:CD:86:38:9F:DC:AB:3C:47:A4:A6:75:C1:61:A3:F9:74
Fingerprint (SHA1): 76:18:D1:F3:80:24:3D:52:40:C6:11:6A:AD:57:77:09:7D:81:30:A0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root R45"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\166\030\321\363\200\044\075\122\100\306\021\152\255\127\167\011
\175\201\060\240
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\223\304\173\263\016\124\107\034\103\054\213\276\160\205\142\051
END
CKA_ISSUER
MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\250\114\120\253\237\215\062\265\035\003\217
\127\334
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Secure Mail Root E45"
#
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00
2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19
Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040

\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\041\060\202\001\247\240\003\002\001\002\002\020\166
\123\376\252\047\035\225\106\135\326\361\236\345\270\220\012\060
\012\006\010\052\206\110\316\075\004\003\003\060\122\061\013\060
\011\006\003\125\004\006\023\002\102\105\061\031\060\027\006\003
\125\004\012\023\020\107\154\157\142\141\154\123\151\147\156\040
\156\166\055\163\141\061\050\060\046\006\003\125\004\003\023\037
\107\154\157\142\141\154\123\151\147\156\040\123\145\143\165\162
\145\040\115\141\151\154\040\122\157\157\164\040\105\064\065\060
\036\027\015\062\060\060\063\061\070\060\060\060\060\060\060\132
\027\015\064\065\060\063\061\070\060\060\060\060\060\060\132\060
\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031
\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123
\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003\125
\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040\123
\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164\040
\105\064\065\060\166\060\020\006\007\052\206\110\316\075\002\001
\006\005\053\201\004\000\042\003\142\000\004\371\171\213\201\107
\067\211\226\077\105\111\120\177\032\046\013\223\062\176\056\300
\300\247\010\232\303\156\217\233\076\013\042\354\067\123\267\157
\212\260\274\047\067\113\155\251\106\073\331\037\377\245\241\104
\273\055\163\277\236\101\007\134\123\233\121\010\072\132\273\157
\070\307\026\221\170\302\112\023\151\035\202\337\132\057\000\210
\226\242\056\034\164\371\235\176\146\067\212\243\102\060\100\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\337\023\136\213\137
\302\100\002\375\126\267\224\114\266\036\325\246\261\024\226\060
\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145
\002\060\023\260\276\327\161\040\076\344\253\234\316\066\022\175
\137\114\037\052\265\151\105\063\137\323\055\132\262\344\210\307

\336\012\066\102\062\171\235\246\153\272\341\371\104\052\173\212
\303\022\002\061\000\240\146\034\116\207\235\207\311\355\231\114
\033\012\356\055\140\303\067\307\035\315\265\162\260\331\306\357
\274\362\377\077\360\122\335\010\347\252\144\171\303\344\151\127
\221\057\244\313\174
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Secure Mail Root E45"
Issuer: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:aa:27:1d:95:46:5d:d6:f1:9e:e5:b8:90:0a
Subject: CN=GlobalSign Secure Mail Root E45,O=GlobalSign nv-sa,C=BE
#
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After : Sat Mar 18 00:00:00 2045
Fingerprint (SHA-256):
5C:BF:6F:B8:1F:D4:17:EA:41:28:CD:6F:81:72:A3:C9:40:20:94:F7:4A:B2:ED:3A:06:B4:40:5D:04:F3:0B:19
Fingerprint (SHA1): 18:2E:1F:32:4F:89:DF:BE:FE:88:89:F0:93:C2:C4:A0:2B:67:75:21
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Secure Mail Root E45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\030\056\037\062\117\211\337\276\376\210\211\360\223\302\304\240
\053\147\165\041
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\374\306\056\237\364\122\055\052\250\244\272\373\147\062\377
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\050\060\046\006\003
\125\004\003\023\037\107\154\157\142\141\154\123\151\147\156\040
\123\145\143\165\162\145\040\115\141\151\154\040\122\157\157\164
\040\105\064\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\166\123\376\252\047\035\225\106\135\326\361\236\345\270
\220\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root R46"
#
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\132\060\202\003\102\240\003\002\001\002\002\022\021
\322\273\271\327\043\030\236\100\137\012\235\055\320\337\045\147
\321\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040

\122\157\157\164\040\122\064\066\060\036\027\015\061\071\060\063
\062\060\060\060\060\060\060\060\132\027\015\064\066\060\063\062
\060\060\060\060\060\060\060\132\060\106\061\013\060\011\006\003
\125\004\006\023\002\102\105\061\031\060\027\006\003\125\004\012
\023\020\107\154\157\142\141\154\123\151\147\156\040\156\166\055
\163\141\061\034\060\032\006\003\125\004\003\023\023\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\122\064\066
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\254\254\164\062\350\263\145\345\272\355\103\046\035\246\211
\015\105\272\051\210\262\244\035\143\335\323\301\054\011\127\211
\071\241\125\351\147\064\167\014\156\344\125\035\122\045\322\023
\153\136\341\035\251\267\175\211\062\137\015\236\237\054\172\143
\140\100\037\246\260\266\170\217\231\124\226\010\130\256\344\006
\274\142\005\002\026\277\257\250\043\003\266\224\017\274\156\154
\302\313\325\246\273\014\351\366\301\002\373\041\336\146\335\027
\253\164\102\357\360\164\057\045\364\352\153\125\133\220\333\235
\337\136\207\012\100\373\255\031\153\373\367\312\140\210\336\332
\301\217\326\256\325\177\324\074\203\356\327\026\114\203\105\063
\153\047\320\206\320\034\055\153\363\253\175\361\205\251\365\050
\322\255\357\363\204\113\034\207\374\023\243\072\162\242\132\021
\053\326\047\161\047\355\201\055\155\146\201\222\207\264\033\130
\172\314\077\012\372\106\117\115\170\134\370\053\110\343\004\204
\313\135\366\264\152\263\145\374\102\236\121\046\043\040\313\075
\024\371\201\355\145\026\000\117\032\144\227\146\010\317\214\173
\343\053\300\235\371\024\362\033\361\126\152\026\277\054\205\205
\315\170\070\232\353\102\152\002\064\030\203\027\116\224\126\370
\266\202\265\363\226\335\075\363\276\177\040\167\076\173\031\043
\153\054\324\162\163\103\127\175\340\370\327\151\117\027\066\004
\371\300\220\140\067\105\336\346\014\330\164\215\256\234\242\155
\164\135\102\276\006\365\331\144\156\002\020\254\211\260\114\073
\007\115\100\176\044\305\212\230\202\171\216\244\247\202\040\215
\043\372\047\161\311\337\306\101\164\240\115\366\221\026\334\106
\214\137\051\143\061\131\161\014\330\157\302\266\062\175\373\346
\135\123\246\176\025\374\273\165\174\135\354\370\366\027\034\354
\307\153\031\313\363\173\360\053\007\245\331\154\171\124\166\154
\235\034\246\156\016\351\171\014\250\043\152\243\337\033\060\061
\237\261\124\173\376\152\313\146\252\334\145\320\242\236\112\232
\007\041\153\201\217\333\304\131\372\336\042\300\004\234\343\252
\133\066\223\350\075\275\172\241\235\013\166\261\013\307\235\375
\317\230\250\006\302\370\052\243\241\203\240\267\045\162\245\002
\343\002\003\001\000\001\243\102\060\100\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\003\134\253\163\201\207\250\314\260\246
\325\224\342\066\226\111\377\005\231\054\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\174\170
\354\366\002\054\273\133\176\222\053\135\071\334\276\330\035\242

\102\063\115\371\357\244\052\073\104\151\036\254\331\105\243\116
\074\247\330\044\121\262\124\034\223\116\304\357\173\223\205\140
\046\352\011\110\340\365\273\307\351\150\322\273\152\061\161\314
\171\256\021\250\360\231\375\345\037\274\057\250\314\127\353\166
\304\041\246\107\123\125\115\150\277\005\244\356\327\046\253\142
\332\103\067\113\342\306\265\345\262\203\031\072\307\323\333\115
\236\010\172\363\356\317\076\142\373\254\350\140\314\321\307\241
\134\203\105\304\105\314\363\027\153\024\311\004\002\076\322\044
\246\171\351\036\316\242\347\301\131\025\237\035\342\113\232\076
\237\166\010\055\153\330\272\127\024\332\203\352\376\214\125\351
\320\116\251\314\167\061\261\104\021\172\134\261\076\323\024\105
\025\030\142\044\023\322\313\115\316\134\203\301\066\362\020\265
\016\210\155\270\341\126\237\211\336\226\146\071\107\144\054\156
\115\256\142\173\277\140\164\031\270\126\254\222\254\026\062\355
\255\150\125\376\230\272\323\064\336\364\311\141\303\016\206\366
\113\204\140\356\015\173\265\062\130\171\221\125\054\201\103\263
\164\037\172\252\045\236\035\327\241\213\271\315\102\056\004\244
\146\203\115\211\065\266\154\250\066\112\171\041\170\042\320\102
\274\321\100\061\220\241\276\004\317\312\147\355\365\360\200\323
\140\311\203\052\042\005\320\007\073\122\277\014\236\252\053\371
\273\346\037\217\045\272\205\215\027\036\002\376\135\120\004\127
\317\376\055\274\357\134\300\032\253\266\237\044\306\337\163\150
\110\220\054\024\364\077\122\032\344\322\313\024\303\141\151\317
\342\371\030\305\272\063\237\024\243\004\135\271\161\367\265\224
\330\366\063\301\132\301\064\213\174\233\335\223\072\347\023\242
\160\141\237\257\217\353\330\305\165\370\063\146\324\164\147\072
\067\167\234\347\335\244\017\166\103\146\212\103\362\237\373\014
\102\170\143\321\342\017\157\173\324\241\075\164\227\205\267\110
\071\101\326\040\374\320\072\263\372\350\157\304\212\272\161\067
\276\213\227\261\170\061\117\263\347\266\003\023\316\124\235\256
\045\131\314\177\065\137\010\367\100\105\061\170\052\172
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root R46"
Issuer: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:b9:d7:23:18:9e:40:5f:0a:9d:2d:d0:df:25:67:d1
Subject: CN=GlobalSign Root R46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint
(SHA-256):
4F:A3:12:6D:8D:3A:11:D1:C4:85:5A:4F:80:7C:BA:D6:CF:91:9D:3A:5A:88:B0:3B:EA:2C:63:72:D9:3C:40:C9
Fingerprint (SHA1): 53:A2:B0:4B:CA:6B:D6:45:E6:39:8A:8E:C4:0D:D2:BF:77:C3:A2:90
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root R46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\123\242\260\113\312\153\326\105\346\071\212\216\304\015\322\277
\167\303\242\220
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\024\060\344\372\146\103\224\052\152\033\044\137\031\320\357
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\271\327\043\030\236\100\137\012\235\055\320
\337\045\147\321
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign Root E46"
#
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT
 MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061

\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\013\060\202\001\221\240\003\002\001\002\002\022\021
\322\273\272\063\156\324\274\346\044\150\305\015\204\035\230\350
\103\060\012\006\010\052\206\110\316\075\004\003\003\060\106\061
\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060\027
\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151\147
\156\040\156\166\055\163\141\061\034\060\032\006\003\125\004\003
\023\023\107\154\157\142\141\154\123\151\147\156\040\122\157\157
\164\040\105\064\066\060\036\027\015\061\071\060\063\062\060\060
\060\060\060\060\060\132\027\015\064\066\060\063\062\060\060\060
\060\060\060\060\132\060\106\061\013\060\011\006\003\125\004\006
\023\002\102\105\061\031\060\027\006\003\125\004\012\023\020\107
\154\157\142\141\154\123\151\147\156\040\156\166\055\163\141\061
\034\060\032\006\003\125\004\003\023\023\107\154\157\142\141\154
\123\151\147\156\040\122\157\157\164\040\105\064\066\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\234\016\261\317\267\350\236\122\167\165\064
\372\245\106\247\255\062\031\062\264\007\251\047\312\224\273\014
\322\012\020\307\332\211\260\227\014\160\023\011\001\216\330\352
\107\352\276\262\200\053\315\374\050\015\333\254\274\244\206\067
\355\160\010\000\165\352\223\013\173\056\122\234\043\150\043\006
\103\354\222\057\123\204\333\373\107\024\007\350\137\224\147\135
\311\172\201\074\040\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\061\012\220\217\266\306\235\322\104\113\200
\265\242\346\037\261\022\117\033\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\061\000\337\124\220
\355\233\357\213\224\002\223\027\202\231\276\263\236\054\366\013
\221\214\237\112\024\261\366\144\274\273\150\121\023\014\003\367
\025\213\204\140\271\213\377\122\216\347\214\274\034\002\060\074

\371\021\324\214\116\300\301\141\302\025\114\252\253\035\013\061
\137\073\034\342\000\227\104\061\346\376\163\226\057\332\226\323
\376\010\007\263\064\211\274\005\237\367\036\206\356\213\160
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign Root E46"
Issuer: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Serial Number:11:d2:bb:ba:33:6e:d4:bc:e6:24:68:c5:0d:84:1d:98:e8:43
Subject: CN=GlobalSign Root E46,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 20 00:00:00 2019
Not Valid After : Tue Mar 20 00:00:00 2046
Fingerprint (SHA-256):
CB:B9:C4:4D:84:B8:04:3E:10:50:EA:31:A6:9F:51:49:55:D7:BF:D2:E2:C6:B4:93:01:01:9A:D6:1D:9F:50:58
Fingerprint (SHA1): 39:B4:6C:D5:FE:80:06:EB:E2:2F:4A:BB:08:33:A0:AF:DB:B9:DD:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Root E46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\264\154\325\376\200\006\353\342\057\112\273\010\063\240\257
\333\271\335\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\270\146\355\336\010\203\343\311\342\001\064\006\254\121\157
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\034\060\032\006\003
\125\004\003\023\023\107\154\157\142\141\154\123\151\147\156\040
\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\322\273\272\063\156\324\274\346\044\150\305\015\204
\035\230\350\103
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "GLOBALTRUST 2020"
#
# Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
# Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
# Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
# Not Valid Before: Mon Feb 10 00:00:00 2020
# Not Valid After : Sun Jun 10 00:00:00 2040
# Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
#
 Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2
# For Server Distrust After: Sun Jun 30 00:00:00 2024
# For Email Distrust After: Sun Jun 30 00:00:00 2024
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\202\060\202\003\152\240\003\002\001\002\002\013\132
\113\275\132\373\117\212\133\372\145\345\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\115\061\013\060\011\006
\003\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004
\012\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157
\156\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060
\027\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122
\125\123\124\040\062\060\062\060\060\036\027\015\062\060\060\062
```

\061\060\060\060\060\060\060\060\132\027\015\064\060\060\066\061
\060\060\060\060\060\060\060\132\060\115\061\013\060\011\006\003
\125\004\006\023\002\101\124\061\043\060\041\006\003\125\004\012
\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157\156
\151\164\157\162\151\156\147\040\107\155\142\110\061\031\060\027
\006\003\125\004\003\023\020\107\114\117\102\101\114\124\122\125
\123\124\040\062\060\062\060\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\256\056\126\255\033\034\357\366
\225\217\240\167\033\053\323\143\217\204\115\105\242\017\237\133
\105\253\131\173\121\064\371\354\213\212\170\305\335\153\257\275
\304\337\223\105\036\277\221\070\013\256\016\026\347\101\163\370
\333\273\321\270\121\340\313\203\073\163\070\156\167\212\017\131
\143\046\315\247\052\316\124\373\270\342\300\174\107\316\140\174
\077\262\163\362\300\031\266\212\222\207\065\015\220\050\242\344
\025\004\143\076\272\257\356\174\136\314\246\213\120\262\070\367
\101\143\312\316\377\151\217\150\016\225\066\345\314\271\214\011
\312\113\335\061\220\226\310\314\037\375\126\226\064\333\216\034
\352\054\276\205\056\143\335\252\251\225\323\375\051\225\023\360
\310\230\223\331\055\026\107\220\021\203\242\072\042\242\050\127
\242\353\376\300\214\050\240\246\175\347\052\102\073\202\200\143
\245\143\037\031\314\174\262\146\250\302\323\155\067\157\342\176
\006\121\331\105\204\037\022\316\044\122\144\205\013\110\200\116
\207\261\042\042\060\252\353\256\276\340\002\340\100\350\260\102
\200\003\121\252\264\176\252\104\327\103\141\363\242\153\026\211
\111\244\243\244\053\212\002\304\170\364\150\212\301\344\172\066
\261\157\033\226\033\167\111\215\324\311\006\162\217\317\123\343
\334\027\205\040\112\334\230\047\323\221\046\053\107\036\151\007
\257\336\242\344\344\324\153\013\263\136\174\324\044\200\107\051
\151\073\156\350\254\375\100\353\330\355\161\161\053\362\350\130
\035\353\101\227\042\305\037\324\071\320\047\217\207\343\030\364
\340\251\106\015\365\164\072\202\056\320\156\054\221\243\061\134
\073\106\352\173\004\020\126\136\200\035\365\245\145\350\202\374
\342\007\214\142\105\365\040\336\106\160\206\241\274\223\323\036
\164\246\154\260\054\367\003\014\210\014\313\324\162\123\206\274
\140\106\363\230\152\302\361\277\103\371\160\040\167\312\067\101
\171\125\122\143\215\133\022\237\305\150\304\210\235\254\362\060
\253\267\243\061\227\147\255\217\027\017\154\307\163\355\044\224
\153\310\203\232\320\232\067\111\004\253\261\026\310\154\111\111
\055\253\241\320\214\222\362\101\112\171\041\045\333\143\327\266
\234\247\176\102\151\373\072\143\002\003\001\000\001\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\334\056\037
\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150\234
\042\060\037\006\003\125\035\043\004\030\060\026\200\024\334\056
\037\321\141\067\171\344\253\325\325\263\022\161\150\075\152\150
\234\042\060\015\006\011\052\206\110\206\367\015\001\001\013\005

\000\003\202\002\001\000\221\360\102\002\150\100\356\303\150\300
\124\057\337\354\142\303\303\236\212\240\061\050\252\203\216\244
\126\226\022\020\206\126\272\227\162\322\124\060\174\255\031\325
\035\150\157\373\024\102\330\215\016\363\265\321\245\343\002\102
\136\334\350\106\130\007\065\002\060\340\274\164\112\301\103\052
\377\333\032\320\260\257\154\303\375\313\263\365\177\155\003\056
\131\126\235\055\055\065\214\262\326\103\027\054\222\012\313\135
\350\214\017\113\160\103\320\202\377\250\314\277\244\224\300\276
\207\275\212\343\223\173\306\217\233\026\235\047\145\274\172\305
\102\202\154\134\007\320\251\301\210\140\104\351\230\205\026\137
\370\217\312\001\020\316\045\303\371\140\033\240\305\227\303\323
\054\210\061\242\275\060\354\320\320\300\022\361\301\071\343\345
\365\370\326\112\335\064\315\373\157\301\117\343\000\213\126\342
\222\367\050\262\102\167\162\043\147\307\077\021\025\262\304\003
\005\276\273\021\173\012\277\250\156\347\377\130\103\317\233\147
\240\200\007\266\035\312\255\155\352\101\021\176\055\164\223\373
\302\274\276\121\104\305\357\150\045\047\200\343\310\240\324\022
\354\331\245\067\035\067\174\264\221\312\332\324\261\226\201\357
\150\134\166\020\111\257\176\245\067\200\261\034\122\275\063\201
\114\217\371\335\145\331\024\315\212\045\130\364\342\305\203\245
\011\220\324\154\024\143\265\100\337\353\300\374\304\130\176\015
\024\026\207\124\047\156\126\344\160\204\270\154\062\022\176\202
\061\103\276\327\335\174\241\255\256\326\253\040\022\357\012\303
\020\214\111\226\065\334\013\165\136\261\117\325\117\064\016\021
\040\007\165\103\105\351\243\021\332\254\243\231\302\266\171\047
\342\271\357\310\342\366\065\051\172\164\372\305\177\202\005\142
\246\012\352\150\262\171\107\006\156\362\127\250\025\063\306\367
\170\112\075\102\173\153\176\376\367\106\352\321\353\216\357\210
\150\133\350\301\331\161\176\375\144\357\377\147\107\210\130\045
\057\076\206\007\275\373\250\345\202\250\254\245\323\151\103\315
\061\210\111\204\123\222\300\261\071\033\071\203\001\060\304\362
\251\372\320\003\275\162\067\140\126\037\066\174\275\071\221\365
\155\015\277\173\327\222
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER MULTILINE_OCTAL
\062\064\060\066\063\060\060\060\060\060\060\060\132
END
CKA_NSS_EMAIL_DISTRUST_AFTER MULTILINE_OCTAL
\062\064\060\066\063\060\060\060\060\060\060\060\132
END

Trust for "GLOBALTRUST 2020"
Issuer: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Serial Number:5a:4b:bd:5a:fb:4f:8a:5b:fa:65:e5
Subject: CN=GLOBALTRUST 2020,O=e-commerce monitoring GmbH,C=AT
Not Valid Before: Mon Feb 10 00:00:00 2020

```
# Not Valid After : Sun Jun 10 00:00:00 2040
# Fingerprint (SHA-256):
9A:29:6A:51:82:D1:D4:51:A2:E3:7F:43:9B:74:DA:AF:A2:67:52:33:29:F9:0F:9A:0D:20:07:C3:34:E2:3C:9A
# Fingerprint (SHA1): D0:67:C1:13:51:01:0C:AA:D0:C7:6A:65:37:31:16:26:4F:53:71:A2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2020"
CKA_CERT_SHA1_HASH
 MULTILINE_OCTAL
\320\147\301\023\121\001\014\252\320\307\152\145\067\061\026\046
\117\123\161\242
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\212\307\157\313\155\343\314\242\361\174\203\372\016\170\327\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\043\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155
\145\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040
\107\155\142\110\061\031\060\027\006\003\125\004\003\023\020\107
\114\117\102\101\114\124\122\125\123\124\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\132\113\275\132\373\117\212\133\372\145\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "ANF Secure Server Root CA"
#
# Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad
 de Certificacion,C=ES,serialNumber=G63287510
# Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
# Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de
Certificacion,C=ES,serialNumber=G63287510
# Not Valid Before: Wed Sep 04 10:00:38 2019
# Not Valid After : Tue Aug 30 10:00:38 2039
# Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
# Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
```

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\357\060\202\003\327\240\003\002\001\002\002\010\015
\323\343\274\154\371\153\261\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\204\061\022\060\020\006\003\125
\004\005\023\011\107\066\063\062\070\067\065\061\060\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\047\060\045\006\003
\125\004\012\023\036\101\116\106\040\101\165\164\157\162\151\144
\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141\143
\151\157\156\061\024\060\022\006\003\125\004\013\023\013\101\116
\106\040\103\101\040\122\141\151\172\061\042\060\040\006\003\125
\004\003\023\031\101\116\106\040\123\145\143\165\162\145\040\123
\145\162\166\145\162\040\122\157\157\164\040\103\101\060\036\027
\015\061\071\060\071\060\064\061\060\060\060\063\070\132\027\015
\063\071\060\070\063\060\061\060\060\060\063\070\132\060\201\204
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\047\060\045\006\003\125\004\012\023\036\101\116\106\040
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162

\164\151\146\151\143\141\143\151\157\156\061\024\060\022\006\003
\125\004\013\023\013\101\116\106\040\103\101\040\122\141\151\172
\061\042\060\040\006\003\125\004\003\023\031\101\116\106\040\123
\145\143\165\162\145\040\123\145\162\166\145\162\040\122\157\157
\164\040\103\101\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\333\353\153\053\346\144\124\225\202\220\243
\162\244\031\001\235\234\013\201\137\163\111\272\247\254\363\004
\116\173\226\013\354\021\340\133\246\034\316\033\322\015\203\034
\053\270\236\035\176\105\062\140\017\007\351\167\130\176\237\152
\310\141\116\266\046\301\114\215\377\114\357\064\262\037\145\330
\271\170\365\255\251\161\271\357\117\130\035\245\336\164\040\227
\241\355\150\114\336\222\027\113\274\253\377\145\232\236\373\107
\331\127\162\363\011\241\256\166\104\023\156\234\055\104\071\274
\371\307\073\244\130\075\101\275\264\302\111\243\310\015\322\227
\057\007\145\122\000\247\156\310\257\150\354\364\024\226\266\127
\037\126\303\071\237\053\155\344\363\076\366\065\144\332\014\034
\241\204\113\057\113\113\342\054\044\235\155\223\100\353\265\043
\216\062\312\157\105\323\250\211\173\036\317\036\372\133\103\213
\315\315\250\017\152\312\014\136\271\236\107\217\360\331\266\012
\013\130\145\027\063\271\043\344\167\031\175\313\112\056\222\173
\117\057\020\167\261\215\057\150\234\142\314\340\120\370\354\221
\247\124\114\127\011\325\166\143\305\350\145\036\356\155\152\317
\011\235\372\174\117\255\140\010\375\126\231\017\025\054\173\251
\200\253\214\141\217\112\007\166\102\336\075\364\335\262\044\063
\133\270\265\243\104\311\254\177\167\074\035\043\354\202\251\246
\342\310\006\114\002\376\254\134\231\231\013\057\020\212\246\364
\177\325\207\164\015\131\111\105\366\360\161\134\071\051\326\277
\112\043\213\365\137\001\143\322\207\163\050\265\113\012\365\370
\253\202\054\176\163\045\062\035\013\143\012\027\201\000\377\266
\166\136\347\264\261\100\312\041\273\325\200\121\345\110\122\147
\054\322\141\211\007\015\017\316\102\167\300\104\163\234\104\120
\240\333\020\012\055\225\034\201\257\344\034\345\024\036\361\066
\101\001\002\057\175\163\247\336\102\314\114\351\211\015\126\367
\237\221\324\003\306\154\311\217\333\330\034\340\100\230\135\146
\231\230\200\156\055\377\001\305\316\313\106\037\254\002\306\103
\346\256\242\204\074\305\116\036\075\155\311\024\114\343\056\101
\273\312\071\277\066\074\052\031\252\101\207\116\245\316\113\062
\171\335\220\111\177\002\003\001\000\001\243\143\060\141\060\037
\006\003\125\035\043\004\030\060\026\200\024\234\137\320\154\143
\243\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060
\035\006\003\125\035\016\004\026\004\024\234\137\320\154\143\243
\137\223\312\223\230\010\255\214\207\245\054\134\301\067\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\116\036\271\212\306\240\230\077\156\303\151\300\152
\134\111\122\254\313\053\135\170\070\301\325\124\204\237\223\360

\207\031\075\054\146\211\353\015\102\374\314\360\165\205\077\213
\364\200\135\171\345\027\147\275\065\202\342\362\074\216\175\133
\066\313\132\200\000\051\362\316\053\054\361\217\252\155\005\223
\154\162\307\126\353\337\120\043\050\345\105\020\075\350\147\243
\257\016\125\017\220\011\142\357\113\131\242\366\123\361\300\065
\344\057\301\044\275\171\057\116\040\042\073\375\032\040\260\244
\016\054\160\355\164\077\270\023\225\006\121\310\350\207\046\312
\244\133\152\026\041\222\335\163\140\236\020\030\336\074\201\352
\350\030\303\174\211\362\213\120\076\275\021\342\025\003\250\066
\175\063\001\154\110\025\327\210\220\231\004\305\314\346\007\364
\274\364\220\355\023\342\352\213\303\217\243\063\017\301\051\114
\023\116\332\025\126\161\163\162\202\120\366\232\063\174\242\261
\250\032\064\164\145\134\316\321\353\253\123\340\032\200\330\352
\072\111\344\046\060\233\345\034\212\250\251\025\062\206\231\222
\012\020\043\126\022\340\366\316\114\342\273\276\333\215\222\163
\001\146\057\142\076\262\162\047\105\066\355\115\126\343\227\231
\377\072\065\076\245\124\112\122\131\113\140\333\356\376\170\021
\177\112\334\024\171\140\266\153\144\003\333\025\203\341\242\276
\366\043\227\120\360\011\063\066\247\161\226\045\363\271\102\175
\333\070\077\054\130\254\350\102\341\016\330\323\073\114\056\202
\351\203\056\153\061\331\335\107\206\117\155\227\221\056\117\342
\050\161\065\026\321\362\163\376\045\053\007\107\044\143\047\310
\370\366\331\153\374\022\061\126\010\300\123\102\257\234\320\063
\176\374\006\360\061\104\003\024\361\130\352\362\152\015\251\021
\262\203\276\305\032\277\007\352\131\334\243\210\065\357\234\166
\062\074\115\006\042\316\025\345\335\236\330\217\332\336\322\304
\071\345\027\201\317\070\107\353\177\210\155\131\033\337\237\102
\024\256\176\317\250\260\146\145\332\067\257\237\252\075\352\050
\266\336\325\061\130\026\202\133\352\273\031\165\002\163\032\312
\110\032\041\223\220\012\216\223\204\247\175\073\043\030\222\211
\240\215\254
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ANF Secure Server Root CA"
Issuer: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de
Certificacion,C=ES,serialNumber=G63287510
Serial Number:0d:d3:e3:bc:6c:f9:6b:b1
Subject: CN=ANF Secure Server Root CA,OU=ANF CA Raiz,O=ANF Autoridad de
Certificacion,C=ES,serialNumber=G63287510
Not Valid Before: Wed Sep 04 10:00:38 2019
Not Valid After : Tue Aug 30 10:00:38 2039
Fingerprint (SHA-256):
FB:8F:EC:75:91:69:B9:10:6B:1E:51:16:44:C6:18:C5:13:04:37:3F:6C:06:43:08:8D:8B:EF:FD:1B:99:75:99
Fingerprint (SHA1): 5B:6E:68:D0:CC:15:B6:A0:5F:1E:C1:5F:AE:02:FC:6B:2F:5D:6F:74

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Secure Server Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\156\150\320\314\025\266\240\137\036\301\137\256\002\374\153
\057\135\157\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\246\104\132\331\257\116\057\262\035\266\145\260\116\350\226
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\022\060\020\006\003\125\004\005\023\011\107\066
\063\062\070\067\065\061\060\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\047\060\045\006\003\125\004\012\023\036\101
\116\106\040\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\061\024\060
\022\006\003\125\004\013\023\013\101\116\106\040\103\101\040\122
\141\151\172\061\042\060\040\006\003\125\004\003\023\031\101\116
\106\040\123\145\143\165\162\145\040\123\145\162\166\145\162\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\015\323\343\274\154\371\153\261
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certum EC-384 CA"
#
Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE
CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272
\163\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\145\060\202\001\353\240\003\002\001\002\002\020\170
\217\047\134\201\022\122\040\245\004\320\055\335\272\163\364\060
\012\006\010\052\206\110\316\075\004\003\003\060\164\061\013\060
\011\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003
\125\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141
\040\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060
\045\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\061\031\060\027\006\003\125\004\003\023
\020\103\145\162\164\165\155\040\105\103\055\063\070\064\040\103
\101\060\036\027\015\061\070\060\063\062\066\060\067\062\064\065
\064\132\027\015\064\063\060\063\062\066\060\067\062\064\065\064
\132\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114
\061\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143
\157\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123
\056\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145
\162\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027

\006\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103
\055\063\070\064\040\103\101\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\304
\050\216\253\030\133\152\276\156\144\067\143\344\315\354\253\072
\367\314\241\270\016\202\111\327\206\051\237\241\224\362\343\140
\170\230\201\170\006\115\362\354\232\016\127\140\203\237\264\346
\027\057\032\263\135\002\133\211\043\074\302\021\005\052\247\210
\023\030\363\120\204\327\275\064\054\047\211\125\377\316\114\347
\337\246\037\050\304\360\124\303\271\174\267\123\255\353\302\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\215
\006\146\164\044\166\072\363\211\367\274\326\275\107\175\057\274
\020\137\113\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003
\150\000\060\145\002\060\003\125\055\246\346\030\304\174\357\311
\120\156\301\047\017\234\207\257\156\325\033\010\030\275\222\051
\301\357\224\221\170\322\072\034\125\211\142\345\033\011\036\272
\144\153\361\166\264\324\002\061\000\264\102\204\231\377\253\347
\236\373\221\227\047\135\334\260\133\060\161\316\136\070\032\152
\331\045\347\352\367\141\222\126\370\352\332\066\302\207\145\226
\056\162\045\057\177\337\303\023\311
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum EC-384 CA"
Issuer: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial Number:78:8f:27:5c:81:12:52:20:a5:04:d0:2d:dd:ba:73:f4
#
Subject: CN=Certum EC-384 CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Mon Mar 26 07:24:54 2018
Not Valid After : Thu Mar 26 07:24:54 2043
Fingerprint (SHA-256):
6B:32:80:85:62:53:18:AA:50:D1:73:C9:8D:8B:DA:09:D5:7E:27:41:3D:11:4C:F7:87:A0:F5:D0:6C:03:0C:F6
Fingerprint (SHA1): F3:3E:78:3C:AC:DF:F4:A2:CC:AC:67:55:69:56:D7:E5:16:3C:E1:ED
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum EC-384 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\363\076\170\074\254\337\364\242\314\254\147\125\151\126\327\345
\026\074\341\355
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\266\145\263\226\140\227\022\241\354\116\341\075\243\306\311\361

```
END
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\031\060\027\006
\003\125\004\003\023\020\103\145\162\164\165\155\040\105\103\055
\063\070\064\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\170\217\047\134\201\022\122\040\245\004\320\055\335\272
\163\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Certum Trusted Root CA"
#
# Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
# Serial Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
# Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
# Not Valid Before: Fri Mar
 16 12:10:13 2018
# Not Valid After : Mon Mar 16 12:10:13 2043
# Fingerprint (SHA-256):
FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
# Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
```

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162
\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\300\060\202\003\250\240\003\002\001\002\002\020\036
\277\131\120\270\311\200\067\114\006\367\353\125\117\265\355\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\172
\061\013\060\011\006\003\125\004\006\023\002\120\114\061\041\060
\037\006\003\125\004\012\023\030\101\163\163\145\143\157\040\104
\141\164\141\040\123\171\163\164\145\155\163\040\123\056\101\056
\061\047\060\045\006\003\125\004\013\023\036\103\145\162\164\165
\155\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\061\037\060\035\006\003\125
\004\003\023\026\103\145\162\164\165\155\040\124\162\165\163\164
\145\144\040\122\157\157\164\040\103\101\060\036\027\015\061\070
\060\063\061\066\061\062\061\060\061\063\132\027\015\064\063\060
\063\061\066\061\062\061\060\061\063\132\060\172\061\013\060\011
\006\003\125\004\006\023\002\120\114\061\041\060\037\006\003\125
\004\012\023\030\101\163\163\145\143\157\040\104\141\164\141\040
\123\171\163\164\145\155\163\040\123\056\101\056\061\047\060\045
\006\003\125\004\013\023\036\103\145\162\164\165\155\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\061\037\060\035\006\003\125\004\003\023\026
\103\145\162\164\165\155\040\124\162\165\163\164\145\144\040\122
\157\157\164\040\103\101\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\321\055\216\273\267\066\352\155\067
\221\237\116\223\247\005\344\051\003\045\316\034\202\367\174\231
\237\101\006\315\355\243\272\300\333\011\054\301\174\337\051\176
\113\145\057\223\247\324\001\153\003\050\030\243\330\235\005\301
\052\330\105\361\221\336\337\073\320\200\002\214\317\070\017\352
\247\134\170\021\244\301\310\205\134\045\323\323\262\347\045\317
\021\124\227\253\065\300\036\166\034\357\000\123\237\071\334\024
\245\054\042\045\263\162\162\374\215\263\345\076\010\036\024\052

\067\013\210\074\312\260\364\310\302\241\256\274\301\276\051\147
\125\342\374\255\131\134\376\275\127\054\260\220\215\302\355\067
\266\174\231\210\265\325\003\232\075\025\015\075\072\250\250\105
\360\225\116\045\131\035\315\230\151\273\323\314\062\311\215\357
\201\376\255\175\211\273\272\140\023\312\145\225\147\240\363\031
\366\003\126\324\152\323\047\342\241\255\203\360\112\022\042\167
\034\005\163\342\031\161\102\300\354\165\106\232\220\130\340\152
\216\053\245\106\060\004\216\031\262\027\343\276\251\272\177\126
\361\044\003\327\262\041\050\166\016\066\060\114\171\325\101\232
\232\250\270\065\272\014\072\362\104\033\040\210\367\305\045\327
\075\306\343\076\103\335\207\376\304\352\365\123\076\114\145\377
\073\112\313\170\132\153\027\137\015\307\303\117\116\232\052\242
\355\127\115\042\342\106\232\077\017\221\064\044\175\125\343\214
\225\067\323\032\360\011\053\054\322\311\215\264\015\000\253\147
\051\050\330\001\365\031\004\266\035\276\166\376\162\134\304\205
\312\322\200\101\337\005\250\243\325\204\220\117\013\363\340\077
\233\031\322\067\211\077\362\173\122\034\214\366\341\367\074\007
\227\214\016\242\131\201\014\262\220\075\323\343\131\106\355\017
\251\247\336\200\153\132\252\007\266\031\313\274\127\363\227\041
\172\014\261\053\164\076\353\332\247\147\055\114\304\230\236\066
\011\166\146\146\374\032\077\352\110\124\034\276\060\275\200\120
\277\174\265\316\000\366\014\141\331\347\044\003\340\343\001\201
\016\275\330\205\064\210\275\262\066\250\173\134\010\345\104\200
\214\157\370\057\325\041\312\035\034\320\373\304\265\207\321\072
\116\307\166\265\065\110\265\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\214\373\034\165
\274\002\323\237\116\056\110\331\371\140\124\252\304\263\117\372
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000\003
\202\002\001\000\110\242\325\000\013\056\320\077\274\034\325\265
\124\111\036\132\153\364\344\362\340\100\067\340\314\024\173\271
\311\372\065\265\165\027\223\152\005\151\205\234\315\117\031\170
\133\031\201\363\143\076\303\316\133\217\365\057\136\001\166\023
\077\054\000\271\315\226\122\071\111\155\004\116\305\351\017\206
\015\341\372\263\137\202\022\361\072\316\146\006\044\064\053\350
\314\312\347\151\334\207\235\302\064\327\171\321\323\167\270\252
\131\130\376\235\046\372\070\206\076\235\212\207\144\127\345\027
\072\342\371\215\271\343\063\170\301\220\330\270\335\267\203\121
\344\304\314\043\325\006\174\346\121\323\315\064\061\300\366\106
\273\013\255\374\075\020\005\052\073\112\221\045\356\214\324\204
\207\200\052\274\011\214\252\072\023\137\350\064\171\120\301\020
\031\371\323\050\036\324\321\121\060\051\263\256\220\147\326\037
\012\143\261\305\251\306\102\061\143\027\224\357\151\313\057\372
\214\024\175\304\103\030\211\331\360\062\100\346\200\342\106\137
\345\343\301\000\131\250\371\350\040\274\211\054\016\107\064\013
\352\127\302\123\066\374\247\324\257\061\315\376\002\345\165\372
\271\047\011\371\363\365\073\312\175\237\251\042\313\210\311\252

\321\107\075\066\167\250\131\144\153\047\317\357\047\301\343\044
\265\206\367\256\176\062\115\260\171\150\321\071\350\220\130\303
\203\274\017\054\326\227\353\316\014\341\040\307\332\267\076\303
\077\277\057\334\064\244\373\053\041\315\147\217\113\364\343\352
\324\077\347\117\272\271\245\223\105\034\146\037\041\372\144\136
\157\340\166\224\062\313\165\365\156\345\366\217\307\270\244\314
\250\226\175\144\373\044\132\112\003\154\153\070\306\350\003\103
\232\367\127\271\263\051\151\223\070\364\003\362\273\373\202\153
\007\040\321\122\037\232\144\002\173\230\146\333\134\115\132\017
\320\204\225\240\074\024\103\006\312\312\333\270\101\066\332\152
\104\147\207\257\257\343\105\021\025\151\010\262\276\026\071\227
\044\157\022\105\321\147\135\011\250\311\025\332\372\322\246\137
\023\141\037\277\205\254\264\255\255\005\224\010\203\036\165\027
\323\161\073\223\120\043\131\240\355\074\221\124\235\166\000\305
\303\270\070\333
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certum Trusted Root CA"
Issuer: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Serial
Number:1e:bf:59:50:b8:c9:80:37:4c:06:f7:eb:55:4f:b5:ed
Subject: CN=Certum Trusted Root CA,OU=Certum Certification Authority,O=Asseco Data Systems S.A.,C=PL
Not Valid Before: Fri Mar 16 12:10:13 2018
Not Valid After : Mon Mar 16 12:10:13 2043
Fingerprint (SHA-256):
FE:76:96:57:38:55:77:3E:37:A9:5E:7A:D4:D9:CC:96:C3:01:57:C1:5D:31:76:5B:A9:B1:57:04:E1:AE:78:FD
Fingerprint (SHA1): C8:83:44:C0:18:AE:9F:CC:F1:87:B7:8F:22:D1:C5:D7:45:84:BA:E5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certum Trusted Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\310\203\104\300\030\256\237\314\361\207\267\217\042\321\305\327
\105\204\272\345
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\121\341\302\347\376\114\204\257\131\016\057\364\124\157\352\051
END
CKA_ISSUER MULTILINE_OCTAL
\060\172\061\013\060\011\006\003\125\004\006\023\002\120\114\061
\041\060\037\006\003\125\004\012\023\030\101\163\163\145\143\157
\040\104\141\164\141\040\123\171\163\164\145\155\163\040\123\056
\101\056\061\047\060\045\006\003\125\004\013\023\036\103\145\162

\164\165\155\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\061\037\060\035\006
\003\125\004\003\023\026\103\145\162\164\165\155\040\124\162\165
\163\164\145\144\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\036\277\131\120\270\311\200\067\114\006\367\353\125\117
\265\355
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TunTrust Root CA"
#
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
#
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
Fingerprint (SHA-256):
2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143

\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\024\023\002\325\342\100\114\222\106\206\026\147\135\264\273
\273\262\153\076\374\023
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\263\060\202\003\233\240\003\002\001\002\002\024\023
\002\325\342\100\114\222\106\206\026\147\135\264\273\273\262\153
\076\374\023\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\141\061\013\060\011\006\003\125\004\006\023\002\124
\116\061\067\060\065\006\003\125\004\012\014\056\101\147\145\156
\143\145\040\116\141\164\151\157\156\141\154\145\040\144\145\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\105\154
\145\143\164\162\157\156\151\161\165\145\061\031\060\027\006\003
\125\004\003\014\020\124\165\156\124\162\165\163\164\040\122\157
\157\164\040\103\101\060\036\027\015\061\071\060\064\062\066\060
\070\065\067\065\066\132\027\015\064\064\060\064\062\066\060\070
\065\067\065\066\132\060\141\061\013\060\011\006\003\125\004\006
\023\002\124\116\061\067\060\065\006\003\125\004\012\014\056\101
\147\145\156\143\145\040\116\141\164\151\157\156\141\154\145\040
\144\145\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\105\154\145\143\164\162\157\156\151\161\165\145\061\031\060
\027\006\003\125\004\003\014\020\124\165\156\124\162\165\163\164
\040\122\157\157\164\040\103\101\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\303\315\323\374\275\004\123
\335\014\040\072\325\210\056\005\113\101\365\203\202\176\367\131
\237\236\236\143\350\163\332\366\006\251\117\037\264\371\013\037
\071\214\232\040\320\176\006\324\354\064\331\206\274\165\133\207
\210\360\322\331\324\243\012\262\154\033\353\111\054\076\254\135
\330\224\003\240\354\064\345\060\304\065\175\373\046\115\033\156
\060\124\330\365\200\105\234\071\255\234\311\045\004\115\232\220
\076\116\100\156\212\153\315\051\147\306\314\055\340\164\350\005
\127\012\110\120\372\172\103\332\176\354\133\232\016\142\166\376
\352\235\035\205\162\354\021\273\065\350\037\047\277\301\241\307
\273\110\026\335\126\327\314\116\240\341\271\254\333\325\203\031
\032\205\321\224\227\327\312\243\145\013\363\070\371\002\256\335
\366\147\317\311\077\365\212\054\107\032\231\157\005\015\375\320
\035\202\061\374\051\314\000\130\227\221\114\200\000\034\063\205
\226\057\313\101\302\213\020\204\303\011\044\211\037\265\017\331
\331\167\107\030\222\224\140\134\307\231\003\074\376\367\225\247
\175\120\241\200\302\251\203\255\130\226\125\041\333\206\131\324
\257\306\274\335\201\156\007\333\140\142\376\354\020\156\332\150
\001\364\203\033\251\076\242\133\043\327\144\306\337\334\242\175

\330\113\272\202\322\121\370\146\277\006\106\344\171\052\046\066
\171\217\037\116\231\035\262\217\014\016\034\377\311\135\300\375
\220\020\246\261\067\363\315\072\044\156\264\205\220\277\200\271
\014\214\325\233\326\310\361\126\077\032\200\211\172\251\342\033
\062\121\054\076\362\337\173\366\135\172\051\031\216\345\310\275
\066\161\213\135\114\302\035\077\255\130\242\317\075\160\115\246
\120\230\045\334\043\371\270\130\101\010\161\277\117\270\204\240
\217\000\124\025\374\221\155\130\247\226\073\353\113\226\047\315
\153\242\241\206\254\015\174\124\346\146\114\146\137\220\276\041
\232\002\106\055\344\203\302\200\271\317\113\076\350\177\074\001
\354\217\136\315\177\322\050\102\001\225\212\342\227\075\020\041
\175\366\235\034\305\064\241\354\054\016\012\122\054\022\125\160
\044\075\313\302\024\065\103\135\047\116\276\300\275\252\174\226
\347\374\236\141\255\104\323\000\227\002\003\001\000\001\243\143
\060\141\060\035\006\003\125\035\016\004\026\004\024\006\232\233
\037\123\175\361\365\244\310\323\206\076\241\163\131\264\367\104
\041\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\006
\232\233\037\123\175\361\365\244\310\323\206\076\241\163\131\264
\367\104\041\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\252\005\156\266\335\025\311\277\263
\306\040\366\006\107\260\206\223\045\323\215\271\310\000\077\227
\365\122\047\210\161\311\164\375\353\312\144\333\133\357\036\135
\272\277\321\353\356\134\151\272\026\310\363\271\217\323\066\056
\100\111\007\015\131\336\213\020\260\111\005\342\377\221\077\113
\267\335\002\216\370\201\050\134\314\334\155\257\137\024\234\175
\130\170\015\366\200\011\271\351\016\227\051\031\270\267\353\370
\026\313\125\022\344\306\175\273\304\354\370\265\034\116\076\147
\277\305\137\033\155\155\107\050\252\004\130\141\326\166\277\042
\177\320\007\152\247\144\123\360\227\215\235\200\077\273\301\007
\333\145\257\346\233\062\232\303\124\223\304\034\010\303\104\373
\173\143\021\103\321\152\032\141\152\171\155\220\117\051\216\107
\005\301\022\151\151\326\306\066\061\341\374\372\200\272\134\117
\304\353\267\062\254\370\165\141\027\327\020\031\271\361\322\011
\357\172\102\235\133\132\013\324\306\225\116\052\316\377\007\327
\117\176\030\006\210\361\031\265\331\230\273\256\161\304\034\347
\164\131\130\357\014\211\317\213\037\165\223\032\004\024\222\110
\120\251\353\127\051\000\026\343\066\034\310\370\277\360\063\325
\101\017\304\314\074\335\351\063\103\001\221\020\053\036\321\271
\135\315\062\031\213\217\214\040\167\327\042\304\102\334\204\026
\233\045\155\350\264\125\161\177\260\174\263\323\161\111\271\317
\122\244\004\077\334\075\240\273\257\063\236\012\060\140\216\333
\235\135\224\250\275\140\347\142\200\166\201\203\014\214\314\060
\106\111\342\014\322\250\257\353\141\161\357\347\042\142\251\367
\134\144\154\237\026\214\147\066\047\105\365\011\173\277\366\020
\012\361\260\215\124\103\214\004\272\243\077\357\342\065\307\371
\164\340\157\064\101\320\277\163\145\127\040\371\233\147\172\146

\150\044\116\200\145\275\020\231\006\131\362\145\257\270\306\107
\273\375\220\170\213\101\163\056\257\125\037\334\073\222\162\156
\204\323\320\141\114\015\314\166\127\342\055\205\042\025\066\015
\353\001\235\353\330\353\304\204\231\373\300\014\314\062\350\343
\167\332\203\104\213\236\125\050\300\213\130\323\220\076\116\033
\000\361\025\255\203\053\232
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TunTrust Root CA"
Issuer: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Serial Number:13:02:d5:e2:40:4c:92:46:86:16:67:5d:b4:bb:bb:b2:6b:3e:fc:13
Subject: CN=TunTrust Root CA,O=Agence Nationale de Certification Electronique,C=TN
Not Valid Before: Fri Apr 26 08:57:56 2019
Not Valid After : Tue Apr 26 08:57:56 2044
#
Fingerprint (SHA-256):
2E:44:10:2A:B5:8C:B8:54:19:45:1C:8E:19:D9:AC:F3:66:2C:AF:BC:61:4B:6A:53:96:0A:30:F7:D0:E2:EB:41
Fingerprint (SHA1): CF:E9:70:84:0F:E0:73:0F:9D:F6:0C:7F:2C:4B:EE:20:46:34:9C:BB
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TunTrust Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\317\351\160\204\017\340\163\017\235\366\014\177\054\113\356\040
\106\064\234\273
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\205\023\271\220\133\066\134\266\136\270\132\370\340\061\127\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\067\060\065\006\003\125\004\012\014\056\101\147\145\156\143\145
\040\116\141\164\151\157\156\141\154\145\040\144\145\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\105\154\145\143
\164\162\157\156\151\161\165\145\061\031\060\027\006\003\125\004
\003\014\020\124\165\156\124\162\165\163\164\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\023\002\325\342\100\114\222\106\206\026\147\135\264\273
\273\262\153\076\374\023
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS RSA Root CA 2021"
#
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS
CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\071\312\223\034\357\103\363\306\216\223\307\364\144\211
\070\176
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\244\060\202\003\214\240\003\002\001\002\002\020\071
\312\223\034\357\103\363\306\216\223\307\364\144\211\070\176\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\154
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\044\060\042\006\003\125\004\003\014
\033\110\101\122\111\103\101\040\124\114\123\040\122\123\101\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\060\065\065\063\070\132\027\015\064
\065\060\062\061\063\061\060\065\065\063\067\132\060\154\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110
\101\122\111\103\101\040\124\114\123\040\122\123\101\040\122\157
\157\164\040\103\101\040\062\060\062\061\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\213\302\347\257\145
\233\005\147\226\311\015\044\271\320\016\144\374\316\342\044\030
\054\204\177\167\121\313\004\021\066\270\136\355\151\161\247\236
\344\045\011\227\147\301\107\302\317\221\026\066\142\075\070\004
\341\121\202\377\254\322\264\151\335\056\354\021\243\105\356\153
\153\073\114\277\214\215\244\036\235\021\271\351\070\371\172\016
\014\230\342\043\035\321\116\143\324\347\270\101\104\373\153\257
\153\332\037\323\305\221\210\133\244\211\222\321\201\346\214\071
\130\240\326\151\103\251\255\230\122\130\156\333\012\373\153\317
\150\372\343\244\136\072\105\163\230\007\352\137\002\162\336\014
\245\263\237\256\251\035\267\035\263\374\212\131\347\156\162\145
\255\365\060\224\043\007\363\202\026\113\065\230\234\123\273\057
\312\344\132\331\307\215\035\374\230\231\373\054\244\202\153\360
\052\037\216\013\137\161\134\134\256\102\173\051\211\201\313\003
\243\231\312\210\236\013\100\011\101\063\333\346\130\172\375\256
\231\160\300\132\017\326\023\206\161\057\166\151\374\220\335\333
\055\156\321\362\233\365\032\153\236\157\025\214\172\360\113\050
\240\042\070\200\044\154\066\244\073\362\060\221\363\170\023\317
\301\077\065\253\361\035\021\043\265\103\042\236\001\222\267\030
\002\345\021\321\202\333\025\000\314\141\067\301\052\174\232\341
\320\272\263\120\106\356\202\254\235\061\370\373\043\342\003\000
\110\160\243\011\046\171\025\123\140\363\070\134\255\070\352\201
\000\143\024\271\063\136\335\013\333\240\105\007\032\063\011\370
\115\264\247\002\246\151\364\302\131\005\210\145\205\126\256\113
\313\340\336\074\175\055\032\310\351\373\037\243\141\112\326\052
\023\255\167\114\032\030\233\221\017\130\330\006\124\305\227\370
\252\077\040\212\246\205\246\167\366\246\374\034\342\356\156\224
\063\052\203\120\204\012\345\117\206\370\120\105\170\000\201\353

\133\150\343\046\215\314\173\134\121\364\024\054\100\276\032\140
\035\172\162\141\035\037\143\055\210\252\316\242\105\220\010\374
\153\276\263\120\052\132\375\250\110\030\106\326\220\100\222\220
\012\204\136\150\061\370\353\355\015\323\035\306\175\231\030\125
\126\047\145\056\215\105\305\044\354\316\343\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\012\110\043\246\140\244\222\012\063\352\223\133\305\127\352\045
\115\275\022\356\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\076\220\110\252\156\142\025\045
\146\173\014\325\214\213\211\235\327\355\116\007\357\234\320\024
\137\136\120\275\150\226\220\244\024\021\252\150\155\011\065\071
\100\011\332\364\011\054\064\245\173\131\204\111\051\227\164\310
\007\036\107\155\362\316\034\120\046\343\236\075\100\123\077\367
\177\226\166\020\305\106\245\320\040\113\120\364\065\073\030\364
\125\152\101\033\107\006\150\074\273\011\010\142\331\137\125\102
\252\254\123\205\254\225\126\066\126\253\344\005\214\305\250\332
\037\243\151\275\123\017\304\377\334\312\343\176\362\114\210\206
\107\106\032\363\000\365\200\221\242\334\103\102\224\233\040\360
\321\315\262\353\054\123\302\123\170\112\117\004\224\101\232\217
\047\062\301\345\111\031\277\361\362\302\213\250\012\071\061\050
\264\175\142\066\054\115\354\037\063\266\176\167\155\176\120\360
\237\016\327\021\217\317\030\305\343\047\376\046\357\005\235\317
\317\067\305\320\173\332\073\260\026\204\014\072\223\326\276\027
\333\017\076\016\031\170\011\307\251\002\162\042\113\367\067\166
\272\165\304\205\003\132\143\325\261\165\005\302\271\275\224\255
\214\025\231\247\223\175\366\305\363\252\164\317\004\205\224\230
\000\364\342\371\312\044\145\277\340\142\257\310\305\372\262\311
\236\126\110\332\171\375\226\166\025\276\243\216\126\304\263\064
\374\276\107\364\301\264\250\374\325\060\210\150\356\313\256\311
\143\304\166\276\254\070\030\341\136\134\317\256\072\042\121\353
\321\213\263\363\053\063\007\124\207\372\264\262\023\173\272\123
\004\142\001\235\361\300\117\356\341\072\324\213\040\020\372\002
\127\346\357\301\013\267\220\106\234\031\051\214\334\157\240\112
\151\151\224\267\044\145\240\377\254\077\316\001\373\041\056\375
\150\370\233\362\245\317\061\070\134\025\252\346\227\000\301\337
\132\245\247\071\252\351\204\177\074\121\250\072\331\224\133\214
\277\117\010\161\345\333\250\134\324\322\246\376\000\243\306\026
\307\017\350\200\316\034\050\144\164\031\010\323\102\343\316\000
\135\177\261\334\023\260\341\005\313\321\040\252\206\164\236\071
\347\221\375\377\133\326\367\255\246\057\003\013\155\343\127\124
\353\166\123\030\215\021\230\272
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS RSA Root CA 2021"
Issuer: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:39:ca:93:1c:ef:43:f3:c6:8e:93:c7:f4:64:89:38:7e
Subject: CN=HARICA TLS RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:55:38 2021
Not Valid After : Mon Feb 13 10:55:37 2045
Fingerprint (SHA-256):
D9:5D:0E:8E:DA:79:52:5B:F9:BE:B1:1B:14:D2:10:0D:32:94:98:5F:0C:62:D9:FA:BD:9C:D9:99:EC:CB:7B:1D
Fingerprint (SHA1): 02:2D:05:82:FA:88:CE:14:0C:06:79:DE:7F:14:10:E9:45:D7:A5:6D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\002\055\005\202\372\210\316\024\014\006\171\336\177\024\020\351
\105\327\245\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\145\107\233\130\206\335\054\360\374\242\204\037\036\226\304\221
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\071\312\223\034\357\103\363\306\216\223\307\364\144\211
\070\176
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA TLS ECC Root CA 2021"
#
Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR

```
# Not Valid Before: Fri Feb 19 11:01:10 2021
# Not Valid After : Mon Feb 13 11:01:09 2045
# Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
# Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\002\124\060\202\001\333\240\003\002\001\002\002\020\147
\164\235\215\167\330\073\152\333\042\364\377\131\342\277\316\060
\012\006\010\052\206\110\316\075\004\003\003\060\154\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\044\060\042\006\003\125\004\003\014\033\110\101
\122\111\103\101\040\124\114\123\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\061\060\036\027\015\062\061\060
\062\061\071\061\061\060\061\061\060\132\027\015\064\065\060\062
```

\061\063\061\061\060\061\060\071\132\060\154\061\013\060\011\006
\003\125\004\006\023\002\107\122\061\067\060\065\006\003\125\004
\012\014\056\110\145\154\154\145\156\151\143\040\101\143\141\144
\145\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143
\150\040\111\156\163\164\151\164\165\164\151\157\156\163\040\103
\101\061\044\060\042\006\003\125\004\003\014\033\110\101\122\111
\103\101\040\124\114\123\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\070
\010\376\261\240\226\322\172\254\257\111\072\320\300\340\303\073
\050\252\361\162\155\145\000\107\210\204\374\232\046\153\252\113
\272\154\004\012\210\136\027\362\125\207\374\060\260\064\342\064
\130\127\032\204\123\351\060\331\251\362\226\164\303\121\037\130
\111\061\314\230\116\140\021\207\165\323\162\224\220\117\233\020
\045\052\250\170\055\276\220\101\130\220\025\162\247\241\267\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\311
\033\123\201\022\376\004\325\026\321\252\274\232\157\267\240\225
\031\156\312\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\012\006\010\052\206\110\316\075\004\003\003\003
\147\000\060\144\002\060\021\336\256\370\334\116\210\260\251\360
\042\255\302\121\100\357\140\161\055\356\217\002\304\135\003\160
\111\244\222\352\305\024\210\160\246\323\015\260\252\312\054\100
\234\373\351\202\156\232\002\060\053\107\232\007\306\321\302\201
\174\312\013\226\030\101\033\243\364\060\011\236\265\043\050\015
\237\024\266\074\123\242\114\006\151\175\372\154\221\306\052\111
\105\346\354\267\023\341\072\154
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA TLS ECC Root CA 2021"
Issuer: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:67:74:9d:8d:77:d8:3b:6a:db:22:f4:ff:59:e2:bf:ce
Subject: CN=HARICA TLS ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:01:10 2021
#
Not Valid After : Mon Feb 13 11:01:09 2045
Fingerprint (SHA-256):
3F:99:CC:47:4A:CF:CE:4D:FE:D5:87:94:66:5E:47:8D:15:47:73:9F:2E:78:0F:1B:B4:CA:9B:13:30:97:D4:01
Fingerprint (SHA1): BC:B0:C1:9D:E9:98:92:70:19:38:57:E9:8D:A7:B4:5D:6E:EE:01:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA TLS ECC Root CA 2021"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\274\260\301\235\351\230\222\160\031\070\127\351\215\247\264\135
\156\356\001\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\256\367\114\345\146\065\321\267\233\214\042\223\164\323\113\260
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\044\060\042\006\003\125\004
\003\014\033\110\101\122\111\103\101\040\124\114\123\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\147\164\235\215\167\330\073\152\333\042\364\377\131\342
\277\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client RSA Root CA 2021"
#
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
Fingerprint (SHA1):
 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040

\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\252\060\202\003\222\240\003\002\001\002\002\020\125
\122\370\036\333\033\044\054\236\273\226\030\315\002\050\076\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\157
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003\014
\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040\122
\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061\060
\036\027\015\062\061\060\062\061\071\061\060\065\070\064\066\132
\027\015\064\065\060\062\061\063\061\060\065\070\064\065\132\060
\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067
\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151
\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122
\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164
\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004\003
\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\201\333\127\102\220\054\164\065\364\370\270\164\031\115\253
\011\132\167\105\201\163\142\260\065\237\370\320\267\063\000\207
\023\266\226\253\016\124\022\060\007\274\233\267\110\327\321\031
\203\256\216\330\251\361\251\000\204\260\214\136\236\350\014\217

\124\151\277\366\324\010\117\046\160\376\030\101\143\032\263\062
\213\100\370\007\253\127\061\360\306\026\166\147\232\264\335\057
\362\321\153\305\320\222\204\221\161\156\017\056\143\351\037\123
\244\335\122\023\314\011\203\051\201\014\305\123\165\104\261\016
\147\123\030\320\303\037\210\113\237\224\044\264\051\274\273\350
\116\375\157\322\025\035\111\334\215\160\362\021\032\040\121\125
\021\272\210\157\304\367\120\171\326\252\061\342\204\075\136\062
\310\167\052\120\161\345\013\057\351\266\352\357\253\012\063\071
\016\375\217\245\147\103\202\216\230\151\011\011\033\100\315\070
\147\107\352\311\354\227\161\022\336\044\365\162\074\321\367\103
\114\046\367\220\262\211\351\105\113\125\075\061\005\172\101\342
\225\272\103\300\027\305\266\205\075\031\215\144\160\363\133\254
\315\237\323\051\165\207\113\225\147\152\246\370\321\335\274\220
\206\211\103\051\251\067\133\365\135\260\046\132\123\102\166\220
\053\317\236\126\154\053\124\317\134\232\145\337\133\213\110\140
\070\174\373\305\013\317\166\004\143\002\063\052\175\365\203\147
\347\372\306\103\375\053\017\324\046\057\167\244\062\301\044\352
\144\235\277\263\070\161\061\104\362\107\270\242\146\101\241\373
\233\173\274\307\106\152\165\277\132\242\214\350\152\104\301\270
\226\265\300\062\010\055\173\164\065\163\262\312\306\376\257\021
\162\030\366\347\310\302\317\245\052\352\173\326\131\350\174\240
\262\152\100\011\151\016\245\226\333\321\000\271\361\210\156\066
\360\210\262\235\361\122\362\303\174\277\060\211\074\012\151\371
\042\244\145\341\233\340\164\306\261\205\227\226\054\256\224\217
\120\246\071\022\037\276\107\362\201\170\323\165\066\236\175\132
\040\227\342\122\256\231\237\306\174\233\146\363\376\330\317\356
\275\227\006\035\055\205\334\076\066\123\226\173\040\272\350\310
\341\255\226\142\076\021\174\263\000\204\236\247\114\161\253\112
\067\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\240\326\007\075\136\044\367\173\240\104
\056\044\122\015\031\252\053\004\221\247\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\015\107
\371\011\146\061\122\354\171\356\302\250\362\150\076\355\226\105
\313\072\246\230\143\077\352\053\115\116\003\320\034\202\341\313
\323\345\326\253\133\147\050\274\235\376\014\231\012\200\125\247
\316\033\043\141\015\260\127\360\376\340\312\276\346\220\333\203
\054\276\203\216\364\171\266\376\320\015\102\247\130\037\151\352
\201\365\005\245\376\106\150\353\154\170\311\340\352\347\346\336
\061\305\322\325\054\202\143\050\235\135\250\032\176\210\346\347
\053\361\054\325\320\005\236\334\055\275\067\146\324\004\242\247
\255\277\072\302\250\073\255\377\215\235\063\340\271\232\204\241
\207\037\166\364\202\164\327\016\371\060\110\076\133\210\076\252
\134\153\326\057\014\350\216\163\302\030\221\203\071\266\146\132
\320\037\140\047\135\115\343\366\072\015\146\120\234\170\173\253
\363\023\020\256\017\057\253\350\144\263\030\040\235\106\065\144
\045\163\352\233\020\134\130\065\211\261\106\110\247\364\254\324

\035\236\133\314\251\245\032\023\117\044\120\252\331\033\155\261
\100\373\235\335\130\164\304\302\157\024\162\354\333\065\237\270
\124\165\105\303\246\310\032\050\065\072\256\145\362\251\230\316
\257\133\311\070\214\061\073\177\314\334\226\375\342\133\326\320
\131\364\166\272\013\313\117\203\020\307\100\320\035\140\351\052
\345\110\130\167\014\105\151\276\031\161\004\044\342\343\044\037
\112\310\301\076\231\365\226\230\070\110\045\241\025\260\033\327
\342\204\030\133\366\161\065\232\150\173\100\314\030\134\014\044
\235\324\225\365\231\252\106\352\256\254\277\364\024\031\044\350
\214\354\343\365\274\006\150\212\052\014\005\137\012\227\165\247
\334\176\300\375\327\172\030\337\060\321\070\113\037\260\230\160
\277\314\174\163\360\156\304\061\245\244\227\035\254\277\316\154
\041\112\276\047\043\147\363\006\126\201\012\221\216\266\341\003
\005\063\054\332\064\010\115\116\120\043\255\037\245\305\324\172
\376\352\011\354\247\050\140\213\106\174\265\352\233\335\117\371
\347\153\025\306\210\317\103\333\345\047\334\004\126\156\157\106
\025\361\126\055\350\134\014\163\303\043\201\070\040\313\311\014
\151\317\054\253\073\204\140\063\031\122\375\151\024\063
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client RSA Root CA 2021"
Issuer: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:55:52:f8:1e:db:1b:24:2c:9e:bb:96:18:cd:02:28:3e
Subject: CN=HARICA Client RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:58:46 2021
Not Valid After : Mon Feb 13 10:58:45 2045
Fingerprint (SHA-256):
1B:E7:AB:E3:06:86:B1:63:48:AF:D1:C6:1B:68:66:A0:EA:7F:48:21:E6:7D:5E:8A:F9:37:CF:80:11:BC:75:0D
#
Fingerprint (SHA1): 46:C6:90:0A:77:3A:B6:BC:F4:65:AD:AC:FC:E3:F7:07:00:6E:DE:6E
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\106\306\220\012\167\072\266\274\364\145\255\254\374\343\367\007
\000\156\336\156
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\157\355\134\327\210\314\070\251\334\351\335\331\135\333\330\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061

\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\122\370\036\333\033\044\054\236\273\226\030\315\002
\050\076
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HARICA Client ECC Root CA 2021"
#
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL
 CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\132\060\202\001\341\240\003\002\001\002\002\020\061
\150\331\330\341\142\127\036\322\031\104\210\346\020\175\360\060
\012\006\010\052\206\110\316\075\004\003\003\060\157\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110\101
\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\036\027\015
\062\061\060\062\061\071\061\061\060\063\063\064\132\027\015\064
\065\060\062\061\063\061\061\060\063\063\063\132\060\157\061\013
\060\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006
\003\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101
\143\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145
\141\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156
\163\040\103\101\061\047\060\045\006\003\125\004\003\014\036\110
\101\122\111\103\101\040\103\154\151\145\156\164\040\105\103\103
\040\122\157\157\164\040\103\101\040\062\060\062\061\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\007\030\255\225\226\224\320\134\017\202\367
\052\100\372\002\311\311\075\066\246\243\004\152\301\155\225\001
\210\140\022\124\154\134\242\053\156\023\072\210\225\014\034\046
\206\066\112\211\031\267\030\336\073\350\250\120\037\312\337\133
\277\111\200\025\333\343\060\341\035\132\307\052\212\001\007\376
\155\054\064\357\050\050\227\274\301\371\127\206\225\213\065\317
\236\132\321\150\225\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\122\010\322\276\062\201\045\375\365\032\227
\354\116\137\032\273\123\315\220\255\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\012\006\010\052\206\110
\316\075\004\003\003\003\147\000\060\144\002\060\114\061\105\106
\117\250\346\276\303\167\262\032\030\113\055\210\173\130\346\253

\224\153\104\003\260\027\377\337\202\163\104\121\054\375\223\035
\006\173\024\322\211\354\100\014\357\041\001\056\002\060\057\311
\056\132\154\054\035\331\225\340\236\260\271\134\122\174\366\370
\070\312\056\361\324\035\362\242\111\242\225\370\301\130\136\117
\376\163\012\357\061\260\253\043\130\023\214\213\336\073
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HARICA Client ECC Root CA 2021"
Issuer: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and
Research Institutions CA,C=GR
Serial Number:31:68:d9:d8:e1:62:57:1e:d2:19:44:88:e6:10:7d:f0
Subject: CN=HARICA Client ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:03:34 2021
Not Valid After : Mon Feb 13 11:03:33 2045
Fingerprint (SHA-256):
8D:D4:B5:37:3C:B0:DE:36:76:9C:12:33:92:80:D8:27:46:B3:AA:6C:D4:26:E7:97:A3:1B:AB:E4:27:9C:F0:0B
Fingerprint (SHA1): BE:64:D3:DA:14:4B:D2:6B:CD:AF:8F:DB:A6:A6:72:F8:DE:26:F9:00
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Client ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\276\144\323\332\024\113\322\153\315\257\217\333\246\246\162\370
\336\046\371\000
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\255\270\120\246\251\202\172\154\075\032\252\244\322\143\244\104
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\047\060\045\006\003\125\004
\003\014\036\110\101\122\111\103\101\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\061\150\331\330\341\142\127\036\322\031\104\210\346\020
\175\360
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Autoridad de Certificacion Firmaprofesional CIF A62634068"
#
Issuer: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before:
Tue Sep 23 15:22:07 2014
Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\024\060\202\003\374\240\003\002\001\002\002\010\033
\160\351\322\377\256\154\161\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\121\061\013\060\011\006\003\125\004

\006\023\002\105\123\061\102\060\100\006\003\125\004\003\014\071
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\106\151\162\155\141
\160\162\157\146\145\163\151\157\156\141\154\040\103\111\106\040
\101\066\062\066\063\064\060\066\070\060\036\027\015\061\064\060
\071\062\063\061\065\062\062\060\067\132\027\015\063\066\060\065
\060\065\061\065\062\062\060\067\132\060\121\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\102\060\100\006\003\125\004
\003\014\071\101\165\164\157\162\151\144\141\144\040\144\145\040
\103\145\162\164\151\146\151\143\141\143\151\157\156\040\106\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\040\103
\111\106\040\101\066\062\066\063\064\060\066\070\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\226\153
\216\352\370\373\361\242\065\340\177\114\332\340\303\122\327\175
\266\020\310\002\136\263\103\052\304\117\152\262\312\034\135\050
\232\170\021\032\151\131\127\257\265\040\102\344\213\017\346\337
\133\246\003\222\057\365\021\344\142\327\062\161\070\331\004\014
\161\253\075\121\176\017\007\337\143\005\134\351\277\224\157\301
\051\202\300\264\332\121\260\301\074\273\255\067\112\134\312\361
\113\066\016\044\253\277\303\204\167\375\250\120\364\261\347\306
\057\322\055\131\215\172\012\116\226\151\122\002\252\066\230\354
\374\372\024\203\014\067\037\311\222\067\177\327\201\055\345\304
\271\340\076\064\376\147\364\076\146\321\323\364\100\317\136\142
\064\017\160\006\076\040\030\132\316\367\162\033\045\154\223\164
\024\223\243\163\261\016\252\207\020\043\131\137\040\005\031\107
\355\150\216\222\022\312\135\374\326\053\262\222\074\040\317\341
\137\257\040\276\240\166\177\166\345\354\032\206\141\063\076\347
\173\264\077\240\017\216\242\271\152\157\271\207\046\157\101\154
\210\246\120\375\152\143\013\365\223\026\033\031\217\262\355\233
\233\311\220\365\001\014\337\031\075\017\076\070\043\311\057\217
\014\321\002\376\033\125\326\116\320\215\074\257\117\244\363\376
\257\052\323\005\235\171\010\241\313\127\061\264\234\310\220\262
\147\364\030\026\223\072\374\107\330\321\170\226\061\037\272\053
\014\137\135\231\255\143\211\132\044\040\166\330\337\375\253\116
\246\042\252\235\136\346\047\212\175\150\051\243\347\212\270\332
\021\273\027\055\231\235\023\044\106\367\305\342\330\237\216\177
\307\217\164\155\132\262\350\162\365\254\356\044\020\255\057\024
\332\377\055\232\106\161\107\276\102\337\273\001\333\364\177\323
\050\217\061\131\133\323\311\002\246\264\122\312\156\227\373\103
\305\010\046\157\212\364\273\375\237\050\252\015\325\105\363\023
\072\035\330\300\170\217\101\147\074\036\224\144\256\173\013\305
\350\331\001\210\071\032\227\206\144\101\325\073\207\014\156\372
\017\306\275\110\024\277\071\115\324\236\101\266\217\226\035\143
\226\223\331\225\006\170\061\150\236\067\006\073\200\211\105\141
\071\043\307\033\104\243\025\345\034\370\222\060\273\002\003\001
\000\001\243\201\357\060\201\354\060\035\006\003\125\035\016\004
\026\004\024\145\315\353\253\065\036\000\076\176\325\164\300\034

\264\163\107\016\032\144\057\060\022\006\003\125\035\023\001\001
\377\004\010\060\006\001\001\377\002\001\001\060\201\246\006\003
\125\035\040\004\201\236\060\201\233\060\201\230\006\004\125\035
\040\000\060\201\217\060\057\006\010\053\006\001\005\005\007\002
\001\026\043\150\164\164\160\072\057\057\167\167\167\056\146\151
\162\155\141\160\162\157\146\145\163\151\157\156\141\154\056\143
\157\155\057\143\160\163\060\134\006\010\053\006\001\005\005\007
\002\002\060\120\036\116\000\120\000\141\000\163\000\145\000\157
\000\040\000\144\000\145\000\040\000\154\000\141\000\040\000\102
\000\157\000\156\000\141\000\156\000\157\000\166\000\141\000\040
\000\064\000\067\000\040\000\102\000\141\000\162\000\143\000\145
\000\154\000\157\000\156\000\141\000\040\000\060\000\070\000\060
\000\061\000\067\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\164\207\050\002\053\167\037\146
\211\144\355\217\164\056\106\034\273\250\370\370\013\035\203\266
\072\247\350\105\212\007\267\340\076\040\313\341\010\333\023\010
\370\050\241\065\262\200\263\013\121\300\323\126\232\215\063\105
\111\257\111\360\340\075\007\172\105\023\132\377\310\227\330\323
\030\054\175\226\370\335\242\145\103\160\223\220\025\272\220\337
\350\031\260\333\054\212\140\017\267\157\224\007\036\035\246\311
\205\366\275\064\370\100\170\142\020\160\072\276\175\113\071\201
\251\020\324\226\101\273\370\137\034\013\035\010\362\261\260\211
\172\362\367\240\340\304\217\213\170\265\073\130\245\043\216\117
\125\376\066\073\340\014\267\312\052\060\101\040\264\200\315\256
\374\166\146\163\250\256\156\341\174\332\003\350\224\040\346\042
\243\320\037\220\135\040\123\024\046\127\332\124\227\337\026\104
\020\001\036\210\146\217\162\070\223\335\040\267\064\276\327\361
\356\143\216\107\171\050\006\374\363\131\105\045\140\042\063\033
\243\137\250\272\052\332\032\075\315\100\352\214\356\005\025\225
\325\245\054\040\057\247\230\050\356\105\374\361\270\210\000\054
\217\102\332\121\325\234\345\023\150\161\105\103\213\236\013\041
\074\113\134\005\334\032\237\230\216\332\275\042\236\162\315\255
\012\313\314\243\147\233\050\164\304\233\327\032\074\004\130\246
\202\235\255\307\173\157\377\200\226\351\370\215\152\275\030\220
\035\377\111\032\220\122\067\223\057\074\002\135\202\166\013\121
\347\026\307\127\370\070\371\247\315\233\042\124\357\143\260\025
\155\123\145\003\112\136\112\240\262\247\216\111\000\131\070\325
\307\364\200\144\365\156\225\120\270\021\176\025\160\070\112\260
\177\320\304\062\160\300\031\377\311\070\055\024\054\146\364\102
\104\346\125\166\033\200\025\127\377\300\247\247\252\071\252\330
\323\160\320\056\272\353\224\152\372\137\064\206\347\142\265\375
\212\360\060\205\224\311\257\044\002\057\157\326\335\147\376\343
\260\125\117\004\230\117\244\101\126\342\223\320\152\350\326\363
\373\145\340\316\165\304\061\131\014\356\202\310\014\140\063\112
\031\272\204\147\047\017\274\102\135\275\044\124\015\354\035\160
\006\137\244\274\372\040\174\125
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Autoridad de Certificacion Firmaprofesional CIF A62634068"
Issuer: CN=Autoridad de Certificacion Firmaprofesional
CIF A62634068,C=ES
Serial Number:1b:70:e9:d2:ff:ae:6c:71
Subject: CN=Autoridad de Certificacion Firmaprofesional CIF A62634068,C=ES
Not Valid Before: Tue Sep 23 15:22:07 2014
Not Valid After : Mon May 05 15:22:07 2036
Fingerprint (SHA-256):
57:DE:05:83:EF:D2:B2:6E:03:61:DA:99:DA:9D:F4:64:8D:EF:7E:E8:44:1C:3B:72:8A:FA:9B:CD:E0:F9:B2:6A
Fingerprint (SHA1): 0B:BE:C2:27:22:49:CB:39:AA:DB:35:5C:53:E3:8C:AE:78:FF:B6:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Firmaprofesional CIF A62634068"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\013\276\302\047\042\111\313\071\252\333\065\134\123\343\214\256
\170\377\266\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\116\156\233\124\114\312\267\372\110\344\220\261\025\113\034\243
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\102\060\100\006\003\125\004\003\014\071\101\165\164\157\162\151
\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141
\143\151\157\156\040\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\103\111\106\040\101\066\062\066\063\064
\060\066\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\033\160\351\322\377\256\154\161
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "vTrus ECC Root CA"
#
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN

Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3
Fingerprint (SHA1):
F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244
\073\346\155\034\326\332
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\002\017\060\202\001\225\240\003\002\001\002\002\024\156
\152\274\131\252\123\276\230\071\147\242\322\153\244\073\346\155
\034\326\332\060\012\006\010\052\206\110\316\075\004\003\003\060
\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061\034
\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103\150
\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060\030
\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103\103
\040\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067
\063\061\060\067\062\066\064\064\132\027\015\064\063\060\067\063
\061\060\067\062\066\064\064\132\060\107\061\013\060\011\006\003
\125\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012
\023\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056
\054\114\164\144\056\061\032\060\030\006\003\125\004\003\023\021

\166\124\162\165\163\040\105\103\103\040\122\157\157\164\040\103
\101\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\145\120\112\256\214\171\226
\112\252\034\010\303\243\242\315\376\131\126\101\167\375\046\224
\102\273\035\315\010\333\163\262\133\165\363\317\234\116\202\364
\277\370\141\046\205\154\326\205\133\162\160\322\375\333\142\264
\337\123\213\275\261\104\130\142\102\011\307\372\177\133\020\347
\376\100\375\300\330\303\053\062\347\160\246\267\246\040\125\035
\173\200\135\113\217\147\114\361\020\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\230\071\315\276\330\262\214\367
\262\253\341\255\044\257\173\174\241\333\037\317\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\012\006
\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002\060
\127\235\335\126\361\307\343\351\270\111\120\153\233\151\303\157
\354\303\175\045\344\127\225\023\100\233\122\323\073\363\100\031
\274\046\307\055\006\236\265\173\066\237\365\045\324\143\153\000
\002\061\000\351\323\306\236\126\232\052\314\241\332\077\310\146
\053\323\130\234\040\205\372\253\221\212\160\160\021\070\140\144
\013\142\011\221\130\000\371\115\373\064\150\332\011\255\041\006
\030\224\316
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus ECC Root CA"
Issuer: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:6e:6a:bc:59:aa:53:be:98:39:67:a2:d2:6b:a4:3b:e6:6d:1c:d6:da
Subject: CN=vTrus ECC Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:26:44 2018
Not Valid After : Fri Jul 31 07:26:44 2043
Fingerprint (SHA-256):
30:FB:BA:2C:32:23:8E:2A:98:54:7A:F9:79:31:E5:50:42:8B:9B:3F:1C:8E:EB:66:33:DC:FA:86:C5:B2:7D:D3
Fingerprint (SHA1): F6:9C:DB:B0:FC:F6:02:13:B6:52:32:A6:A3:91:3F:16:70:DA:C3:E1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus ECC Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\366\234\333\260\374\366\002\023\266\122\062\246\243\221\077\026
\160\332\303\341
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\336\113\301\365\122\214\233\103\341\076\217\125\124\027\215\205

```
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\032\060
\030\006\003\125\004\003\023\021\166\124\162\165\163\040\105\103
\103\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\156\152\274\131\252\123\276\230\071\147\242\322\153\244
\073\346\155\034\326\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
#
 Certificate "vTrus Root CA"
#
# Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
# Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
# Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
# Not Valid Before: Tue Jul 31 07:24:05 2018
# Not Valid After : Fri Jul 31 07:24:05 2043
# Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
# Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
```

\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\126\060\202\003\076\240\003\002\001\002\002\024\103
\343\161\023\330\263\131\024\135\267\316\214\375\065\375\157\274
\005\215\105\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\103\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\034\060\032\006\003\125\004\012\023\023\151\124\162\165
\163\103\150\151\156\141\040\103\157\056\054\114\164\144\056\061
\026\060\024\006\003\125\004\003\023\015\166\124\162\165\163\040
\122\157\157\164\040\103\101\060\036\027\015\061\070\060\067\063
\061\060\067\062\064\060\065\132\027\015\064\063\060\067\063\061
\060\067\062\064\060\065\132\060\103\061\013\060\011\006\003\125
\004\006\023\002\103\116\061\034\060\032\006\003\125\004\012\023
\023\151\124\162\165\163\103\150\151\156\141\040\103\157\056\054
\114\164\144\056\061\026\060\024\006\003\125\004\003\023\015\166
\124\162\165\163\040\122\157\157\164\040\103\101\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\275\125\174
\141\323\270\035\004\142\005\240\256\154\267\160\264\101\352\113
\003\136\020\077\220\132\034\213\073\260\146\213\154\110\246\034
\042\272\325\100\222\356\063\262\043\131\311\216\274\130\332\213
\236\320\031\362\057\131\306\214\143\132\272\237\243\013\260\263
\232\134\272\021\270\022\351\014\273\317\156\154\200\207\051\024
\003\054\215\044\232\310\144\203\265\152\254\023\054\063\361\237
\334\054\141\074\032\077\160\125\233\255\000\122\177\317\004\271
\376\066\372\234\300\026\256\142\376\226\114\103\176\125\024\276
\032\263\322\155\302\257\166\146\225\153\052\260\224\167\205\136
\004\017\142\035\143\165\367\153\347\313\133\232\160\354\076\147
\005\360\376\007\010\200\317\050\333\005\306\024\047\057\206\175
\360\047\336\377\346\176\063\110\347\013\036\130\321\047\053\123
\016\127\112\145\327\373\242\200\140\374\114\274\065\123\001\152
\227\162\202\257\361\035\160\350\234\365\357\136\302\154\307\107
\176\132\224\205\046\115\073\272\353\114\350\260\011\302\145\302
\235\235\011\233\116\265\227\005\254\365\006\240\367\066\005\176
\364\220\262\153\304\264\371\144\352\351\032\012\310\015\250\355
\047\311\324\347\263\271\253\202\042\220\047\075\052\350\174\220
\357\274\117\375\342\012\044\247\336\145\044\244\135\352\300\166
\060\323\167\120\370\015\004\233\224\066\001\163\312\006\130\246
\323\073\334\372\004\106\023\125\212\311\104\107\270\121\071\032
\056\350\064\342\171\313\131\112\012\177\274\246\357\037\003\147
\152\131\053\045\142\223\331\123\031\146\074\047\142\051\206\115
\244\153\356\377\324\116\272\325\264\342\216\110\132\000\031\011

\361\005\331\316\221\261\367\353\351\071\117\366\157\004\103\232
\125\365\076\005\024\275\277\263\131\264\330\216\063\204\243\220
\122\252\263\002\225\140\371\014\114\150\371\356\325\027\015\370
\161\127\265\045\344\051\356\145\135\257\321\356\074\027\013\132
\103\305\245\206\352\044\236\342\005\007\334\064\102\022\221\326
\071\164\256\114\101\202\333\362\246\110\321\263\233\363\063\252
\363\246\300\305\116\365\364\235\166\143\346\002\306\042\113\301
\225\077\120\144\054\124\345\266\360\074\051\317\127\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\124\142\160\143\361\165\204\103\130\216\321\026\040\261\306
\254\032\274\366\211\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\051\272\222\111\247\255
\360\361\160\303\344\227\360\237\251\045\325\153\236\064\376\346
\032\144\366\072\153\122\262\020\170\032\237\114\332\212\332\354
\034\067\122\340\102\113\373\154\166\312\044\013\071\022\025\235
\237\021\055\374\171\144\334\340\340\365\335\340\127\311\245\262
\166\160\120\244\376\267\012\160\325\240\064\361\165\327\115\111
\272\021\321\263\330\354\202\377\353\016\304\277\144\055\175\143
\156\027\170\354\135\174\210\310\353\216\127\166\331\131\004\372
\274\122\037\105\254\360\172\200\354\354\157\166\256\221\333\020
\216\004\334\222\337\240\366\346\256\111\323\301\154\022\033\314
\051\252\371\010\245\342\067\024\312\261\270\146\357\032\202\344
\360\370\361\247\026\151\267\333\251\141\074\237\365\061\313\344
\000\106\302\057\164\261\261\327\201\356\250\046\225\274\210\257
\114\065\007\052\002\312\170\024\155\107\053\100\126\351\313\052
\140\241\147\003\240\316\214\274\260\162\147\304\061\316\333\064
\345\045\003\140\045\173\161\230\344\300\033\053\137\164\102\322
\113\305\131\010\007\207\276\305\303\177\347\226\331\341\334\050
\227\326\217\005\343\365\233\116\312\035\120\107\005\123\260\312
\071\347\205\240\211\301\005\073\001\067\323\077\111\342\167\353
\043\310\210\146\073\075\071\166\041\106\361\354\137\043\270\353
\242\146\165\164\301\100\367\330\150\232\223\342\055\251\056\275
\034\243\036\310\164\306\244\055\172\040\253\073\270\260\106\375
\157\335\137\122\125\165\142\360\227\240\174\327\070\375\045\337
\315\240\233\020\317\213\270\070\136\136\305\264\246\002\066\241
\036\137\034\317\342\226\235\051\252\375\230\256\122\341\363\101
\122\373\251\056\162\226\237\047\343\252\163\175\370\032\043\146
\173\073\253\145\260\062\001\113\025\076\075\242\117\014\053\065
\242\306\331\147\022\065\060\315\166\056\026\263\231\236\115\117
\116\055\073\064\103\341\232\016\015\244\146\227\272\322\034\112
\114\054\052\213\213\201\117\161\032\251\335\134\173\173\010\305
\000\015\067\100\343\174\173\124\137\057\205\137\166\366\367\247
\260\034\127\126\301\162\350\255\242\257\215\063\111\272\037\212
\334\346\164\174\140\206\157\207\227\173
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "vTrus Root CA"
Issuer: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Serial Number:43:e3:71:13:d8:b3:59:14:5d:b7:ce:8c:fd:35:fd:6f:bc:05:8d:45
Subject: CN=vTrus Root CA,O="iTrusChina Co.,Ltd.",C=CN
Not Valid Before: Tue Jul 31 07:24:05 2018
Not Valid After : Fri Jul 31 07:24:05 2043
Fingerprint (SHA-256):
8A:71:DE:65:59:33:6F:42:6C:26:E5:38:80:D0:0D:88:A1:8D:A4:C6:A9:1F:0D:CB:61:94:E2:06:C5:C9:63:87
Fingerprint (SHA1): 84:1A:69:FB:F5:CD:1A:25:34:13:3D:E3:F8:FC:B8:99:D0:C9:14:B7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "vTrus Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\204\032\151\373\365\315\032\045\064\023\075\343\370\374\270\231
\320\311\024\267
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\270\311\067\337\372\153\061\204\144\305\352\021\152\033\165\374
END
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\034\060\032\006\003\125\004\012\023\023\151\124\162\165\163\103
\150\151\156\141\040\103\157\056\054\114\164\144\056\061\026\060
\024\006\003\125\004\003\023\015\166\124\162\165\163\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\343\161\023\330\263\131\024\135\267\316\214\375\065
\375\157\274\005\215\105
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "ISRG Root X2"
#
Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security

Research Group,C=US
Not Valid Before: Fri Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\033\060\202\001\241\240\003\002\001\002\002\020\101
\322\235\321\162\352\356\247\200\301\054\154\351\057\207\122\060
\012\006\010\052\206\110\316\075\004\003\003\060\117\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006\003
\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123\145
\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150\040
\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023\014
\111\123\122\107\040\122\157\157\164\040\130\062\060\036\027\015
\062\060\060\071\060\064\060\060\060\060\060\060\132\027\015\064
\060\060\071\061\067\061\066\060\060\060\060\132\060\117\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\051\060\047\006
\003\125\004\012\023\040\111\156\164\145\162\156\145\164\040\123
\145\143\165\162\151\164\171\040\122\145\163\145\141\162\143\150

\040\107\162\157\165\160\061\025\060\023\006\003\125\004\003\023
\014\111\123\122\107\040\122\157\157\164\040\130\062\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\315\233\325\237\200\203\012\354\011\112\363
\026\112\076\134\317\167\254\336\147\005\015\035\007\266\334\026
\373\132\213\024\333\342\161\140\304\272\105\225\021\211\216\352
\006\337\367\052\026\034\244\271\305\305\062\340\003\340\036\202
\030\070\213\327\105\330\012\152\156\346\000\167\373\002\121\175
\042\330\012\156\232\133\167\337\360\372\101\354\071\334\165\312
\150\007\014\037\352\243\102\060\100\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\174\102\226\256\336\113\110\073\372\222\370
\236\214\317\155\213\251\162\067\225\060\012\006\010\052\206\110
\316\075\004\003\003\003\150\000\060\145\002\060\173\171\116\106
\120\204\302\104\207\106\033\105\160\377\130\231\336\364\375\244
\322\125\246\040\055\164\326\064\274\101\243\120\137\001\047\126
\264\276\047\165\006\257\022\056\165\230\215\374\002\061\000\213
\365\167\154\324\310\145\252\340\013\054\356\024\235\047\067\244
\371\123\245\121\344\051\203\327\370\220\061\133\102\237\012\365
\376\256\000\150\347\214\111\017\266\157\133\133\025\362\347
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "ISRG Root X2"
Issuer: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Serial Number:41:d2:9d:d1:72:ea:ee:a7:80:c1:2c:6c:e9:2f:87:52
Subject: CN=ISRG Root X2,O=Internet Security Research Group,C=US
Not Valid Before: Fri
Sep 04 00:00:00 2020
Not Valid After : Mon Sep 17 16:00:00 2040
Fingerprint (SHA-256):
69:72:9B:8E:15:A8:6E:FC:17:7A:57:AF:B7:17:1D:FC:64:AD:D2:8C:2F:CA:8C:F1:50:7E:34:45:3C:CB:14:70
Fingerprint (SHA1): BD:B1:B9:3C:D5:97:8D:45:C6:26:14:55:F8:DB:95:C7:5A:D1:53:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ISRG Root X2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\275\261\271\074\325\227\215\105\306\046\024\125\370\333\225\307
\132\321\123\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\323\236\304\036\043\074\246\337\317\243\176\155\340\024\346\345

END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\051\060\047\006\003\125\004\012\023\040\111\156\164\145\162\156
\145\164\040\123\145\143\165\162\151\164\171\040\122\145\163\145
\141\162\143\150\040\107\162\157\165\160\061\025\060\023\006\003
\125\004\003\023\014\111\123\122\107\040\122\157\157\164\040\130
\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\101\322\235\321\162\352\356\247\200\301\054\154\351\057
\207\122
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "HiPKI Root CA - G1"
#
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL
 CK_FALSE
CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061

\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\152\060\202\003\122\240\003\002\001\002\002\020\055
\335\254\316\142\227\224\241\103\350\260\315\166\152\136\140\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043\060
\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167\141
\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114\164
\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151\120
\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061\060
\036\027\015\061\071\060\062\062\062\060\071\064\066\060\064\132
\027\015\063\067\061\062\063\061\061\065\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043
\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167
\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114
\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110\151
\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\364\036\177\122\163\062\014\163\344\275\023\164\243\324\060
\250\320\256\113\330\266\337\165\107\146\364\174\347\071\004\036
\152\160\040\322\132\107\162\147\125\364\245\350\235\325\036\041
\241\360\147\272\314\041\150\276\104\123\277\215\371\342\334\057
\125\310\067\077\037\244\300\234\263\344\167\134\240\106\376\167
\372\032\240\070\352\355\232\162\336\053\275\224\127\072\272\354
\171\347\137\175\102\144\071\172\046\066\367\044\360\325\057\272
\225\230\021\146\255\227\065\326\165\001\200\340\257\364\204\141
\214\015\036\137\174\207\226\136\101\257\353\207\352\370\135\361
\056\210\005\076\114\042\273\332\037\052\335\122\106\144\071\363
\102\316\331\236\014\263\260\167\227\144\234\300\364\243\056\037
\225\007\260\027\337\060\333\000\030\226\114\241\201\113\335\004
\155\123\243\075\374\007\254\324\305\067\202\353\344\225\010\031
\050\202\322\102\072\243\330\123\354\171\211\140\110\140\310\162
\222\120\334\003\217\203\077\262\102\127\132\333\152\351\021\227
\335\205\050\274\060\114\253\343\302\261\105\104\107\037\340\212
\026\007\226\322\041\017\123\300\355\251\176\324\116\354\233\011
\354\257\102\254\060\326\277\321\020\105\340\246\026\262\245\305
\323\117\163\224\063\161\002\241\152\243\326\063\227\117\041\143
\036\133\217\331\301\136\105\161\167\017\201\135\137\041\232\255

\203\314\372\136\326\215\043\137\033\075\101\257\040\165\146\132
\112\366\237\373\253\030\367\161\300\266\035\061\354\073\040\353
\313\342\270\365\256\222\262\367\341\204\113\362\242\362\223\232
\042\236\323\024\157\066\124\275\037\136\131\025\271\163\250\301
\174\157\173\142\351\026\154\107\132\145\363\016\021\233\106\331
\375\155\334\326\234\300\264\175\245\260\335\077\126\157\241\371
\366\344\022\110\375\006\177\022\127\266\251\043\117\133\003\303
\340\161\052\043\267\367\260\261\073\274\230\275\326\230\250\014
\153\366\216\022\147\246\362\262\130\344\002\011\023\074\251\273
\020\264\322\060\105\361\354\367\000\021\337\145\370\334\053\103
\125\277\026\227\304\017\325\054\141\204\252\162\206\376\346\072
\176\302\077\175\356\374\057\024\076\346\205\335\120\157\267\111
\355\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\362\167\027\372\136\250\376\366\075\161
\325\150\272\311\106\014\070\330\257\260\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\120\121
\360\165\334\160\004\343\377\252\165\324\161\242\313\236\217\250
\251\323\257\165\307\124\317\072\034\004\231\042\254\304\021\342
\357\063\112\246\043\035\016\015\107\330\067\307\157\257\064\177
\117\201\153\065\117\351\162\245\061\342\170\347\367\116\224\030
\133\100\175\317\153\041\124\206\346\225\172\373\306\312\352\234
\110\116\127\011\135\057\254\364\245\264\227\063\130\325\254\171
\251\314\137\371\205\372\122\305\215\370\221\024\353\072\015\027
\320\122\302\173\343\302\163\216\106\170\006\070\054\350\134\332
\146\304\364\244\360\126\031\063\051\132\145\222\005\107\106\112
\253\204\303\036\047\241\037\021\222\231\047\165\223\017\274\066
\073\227\127\217\046\133\014\273\234\017\324\156\060\007\324\334
\137\066\150\146\071\203\226\047\046\212\310\304\071\376\232\041
\157\325\162\206\351\177\142\345\227\116\320\044\320\100\260\320
\165\010\216\275\150\356\010\327\156\174\020\160\106\033\174\340
\210\262\236\162\206\231\001\343\277\237\111\031\264\045\276\126
\145\256\027\143\345\036\337\350\377\107\245\277\341\046\005\204
\344\260\300\257\347\010\231\250\014\136\046\200\105\324\370\150
\057\226\217\256\342\112\034\234\026\014\023\157\070\207\366\273
\310\064\137\222\003\121\171\160\246\337\313\365\231\115\171\315
\116\274\127\237\103\116\153\056\053\030\370\152\163\214\272\305
\065\357\071\152\101\036\317\161\250\242\262\206\007\133\072\311
\341\357\077\145\004\200\107\062\104\160\225\116\061\147\152\164
\133\020\105\165\352\260\237\320\346\065\376\116\237\213\314\053
\222\105\133\156\045\140\205\106\315\321\252\260\166\146\223\167
\226\276\203\276\070\266\044\116\046\013\314\355\172\126\032\340
\351\132\306\144\255\114\172\000\110\104\057\271\100\273\023\076
\276\025\170\235\205\201\112\052\127\336\325\031\103\332\333\312
\133\107\206\203\013\077\266\015\166\170\163\171\042\136\261\200
\037\317\276\321\077\126\020\230\053\225\207\241\037\235\144\024
\140\071\054\263\000\125\056\344\365\263\016\127\304\221\101\000

\234\077\350\245\337\352\366\377\310\360\255\155\122\250\027\253
\233\141\374\022\121\065\344\045\375\257\252\152\206\071
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "HiPKI Root CA - G1"
Issuer: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
Serial Number:2d:dd:ac:ce:62:97:94:a1:43:e8:b0:cd:76:6a:5e:60
Subject: CN=HiPKI Root CA - G1,O="Chunghwa Telecom Co., Ltd.",C=TW
#
Not Valid Before: Fri Feb 22 09:46:04 2019
Not Valid After : Thu Dec 31 15:59:59 2037
Fingerprint (SHA-256):
F0:15:CE:3C:C2:39:BF:EF:06:4B:E9:F1:D2:C4:17:E1:A0:26:4A:0A:94:BE:1F:0C:8D:12:18:64:EB:69:49:CC
Fingerprint (SHA1): 6A:92:E4:A8:EE:1B:EC:96:45:37:E3:29:57:49:CD:96:E3:E5:D2:60
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HiPKI Root CA - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\152\222\344\250\356\033\354\226\105\067\343\051\127\111\315\226
\343\345\322\140
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\105\337\026\145\113\350\150\232\217\166\137\377\200\236\323
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\033\060\031\006\003\125\004\003\014\022\110
\151\120\113\111\040\122\157\157\164\040\103\101\040\055\040\107
\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\055\335\254\316\142\227\224\241\103\350\260\315\166\152
\136\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GlobalSign ECC Root CA - R4"
#
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL
 CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\334\060\202\001\203\240\003\002\001\002\002\015\002
\003\345\176\365\077\223\375\245\011\041\262\246\060\012\006\010
\052\206\110\316\075\004\003\002\060\120\061\044\060\042\006\003
\125\004\013\023\033\107\154\157\142\141\154\123\151\147\156\040
\105\103\103\040\122\157\157\164\040\103\101\040\055\040\122\064
\061\023\060\021\006\003\125\004\012\023\012\107\154\157\142\141
\154\123\151\147\156\061\023\060\021\006\003\125\004\003\023\012
\107\154\157\142\141\154\123\151\147\156\060\036\027\015\061\062
\061\061\061\063\060\060\060\060\060\060\132\027\015\063\070\060

\061\061\071\060\063\061\064\060\067\132\060\120\061\044\060\042
\006\003\125\004\013\023\033\107\154\157\142\141\154\123\151\147
\156\040\105\103\103\040\122\157\157\164\040\103\101\040\055\040
\122\064\061\023\060\021\006\003\125\004\012\023\012\107\154\157
\142\141\154\123\151\147\156\061\023\060\021\006\003\125\004\003
\023\012\107\154\157\142\141\154\123\151\147\156\060\131\060\023
\006\007\052\206\110\316\075\002\001\006\010\052\206\110\316\075
\003\001\007\003\102\000\004\270\306\171\323\217\154\045\016\237
\056\071\031\034\003\244\256\232\345\071\007\011\026\312\143\261
\271\206\370\212\127\301\127\316\102\372\163\241\367\145\102\377
\036\301\000\262\156\163\016\377\307\041\345\030\244\252\331\161
\077\250\324\271\316\214\035\243\102\060\100\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\124\260\173\255\105\270\342\100\177
\373\012\156\373\276\063\311\074\243\204\325\060\012\006\010\052
\206\110\316\075\004\003\002\003\107\000\060\104\002\040\042\117
\164\162\271\140\257\361\346\234\240\026\005\120\137\303\136\073
\156\141\164\357\276\001\304\276\030\110\131\141\202\062\002\040
\046\235\124\143\100\336\067\140\120\317\310\330\355\235\202\256
\067\230\274\243\217\114\114\251\064\053\154\357\373\225\233\046
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL
 CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GlobalSign ECC Root CA - R4"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Serial Number:02:03:e5:7e:f5:3f:93:fd:a5:09:21:b2:a6
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign ECC Root CA - R4
Not Valid Before: Tue Nov 13 00:00:00 2012
Not Valid After : Tue Jan 19 03:14:07 2038
Fingerprint (SHA-256):
B0:85:D7:0B:96:4F:19:1A:73:E4:AF:0D:54:AE:7A:0E:07:AA:FD:AF:9B:71:DD:08:62:13:8A:B7:32:5A:24:A2
Fingerprint (SHA1): 6B:A0:B0:98:E1:71:EF:5A:AD:FE:48:15:80:77:10:F4:BD:6F:0B:28
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign ECC Root CA - R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\153\240\260\230\341\161\357\132\255\376\110\025\200\167\020\364
\275\157\013\050
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\051\370\155\341\210\277\242\145\177\252\304\315\017\177\374

```
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\120\061\044\060\042\006\003\125\004\013\023\033\107\154\157
\142\141\154\123\151\147\156\040\105\103\103\040\122\157\157\164
\040\103\101\040\055\040\122\064\061\023\060\021\006\003\125\004
\012\023\012\107\154\157\142\141\154\123\151\147\156\061\023\060
\021\006\003\125\004\003\023\012\107\154\157\142\141\154\123\151
\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\176\365\077\223\375\245\011\041\262\246
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "GTS Root R1"
#
# Issuer: CN=GTS Root R1,O=Google Trust Services LLC,C=US
# Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
# Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
# Not Valid Before: Wed Jun 22 00:00:00 2016
# Not Valid After : Sun Jun 22
 00:00:00 2036
# Fingerprint (SHA-256):
D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
# Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
```

\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\127\060\202\003\077\240\003\002\001\002\002\015\002
\003\345\223\157\061\260\023\111\210\153\242\027\060\015\006\011
\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\061\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003
\023\013\107\124\123\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\266\021
\002\213\036\343\241\167\233\073\334\277\224\076\267\225\247\100
\074\241\375\202\371\175\062\006\202\161\366\366\214\177\373\350
\333\274\152\056\227\227\243\214\113\371\053\366\261\371\316\204
\035\261\371\305\227\336\357\271\362\243\351\274\022\211\136\247
\252\122\253\370\043\047\313\244\261\234\143\333\327\231\176\360
\012\136\353\150\246\364\306\132\107\015\115\020\063\343\116\261
\023\243\310\030\154\113\354\374\011\220\337\235\144\051\045\043
\007\241\264\322\075\056\140\340\317\322\011\207\273\315\110\360
\115\302\302\172\210\212\273\272\317\131\031\326\257\217\260\007
\260\236\061\361\202\301\300\337\056\246\155\154\031\016\265\330
\176\046\032\105\003\075\260\171\244\224\050\255\017\177\046\345
\250\010\376\226\350\074\150\224\123\356\203\072\210\053\025\226
\011\262\340\172\214\056\165\326\234\353\247\126\144\217\226\117
\150\256\075\227\302\204\217\300\274\100\300\013\134\275\366\207
\263\065\154\254\030\120\177\204\340\114\315\222\323\040\351\063
\274\122\231\257\062\265\051\263\045\052\264\110\371\162\341\312
\144\367\346\202\020\215\350\235\302\212\210\372\070\146\212\374
\143\371\001\371\170\375\173\134\167\372\166\207\372\354\337\261
\016\171\225\127\264\275\046\357\326\001\321\353\026\012\273\216
\013\265\305\305\212\125\253\323\254\352\221\113\051\314\031\244
\062\045\116\052\361\145\104\320\002\316\252\316\111\264\352\237
\174\203\260\100\173\347\103\253\247\154\243\217\175\211\201\372
\114\245\377\325\216\303\316\113\340\265\330\263\216\105\317\166
\300\355\100\053\375\123\017\260\247\325\073\015\261\212\242\003

\336\061\255\314\167\352\157\173\076\326\337\221\042\022\346\276
\372\330\062\374\020\143\024\121\162\336\135\326\026\223\275\051
\150\063\357\072\146\354\007\212\046\337\023\327\127\145\170\047
\336\136\111\024\000\242\000\177\232\250\041\266\251\261\225\260
\245\271\015\026\021\332\307\154\110\074\100\340\176\015\132\315
\126\074\321\227\005\271\313\113\355\071\113\234\304\077\322\125
\023\156\044\260\326\161\372\364\301\272\314\355\033\365\376\201
\101\330\000\230\075\072\310\256\172\230\067\030\005\225\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\344\257\053\046\161\032\053\110\047\205\057\122\146
\054\357\360\211\023\161\076\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\237\252\102\046\333
\013\233\276\377\036\226\222\056\076\242\145\112\152\230\272\042
\313\175\301\072\330\202\012\006\306\366\245\336\300\116\207\146
\171\241\371\246\130\234\252\371\265\346\140\347\340\350\261\036
\102\101\063\013\067\075\316\211\160\025\312\265\044\250\317\153
\265\322\100\041\230\317\042\064\317\073\305\042\204\340\305\016
\212\174\135\210\344\065\044\316\233\076\032\124\036\156\333\262
\207\247\374\363\372\201\125\024\142\012\131\251\042\005\061\076
\202\326\356\333\127\064\274\063\225\323\027\033\350\047\242\213
\173\116\046\032\172\132\144\266\321\254\067\361\375\240\363\070
\354\162\360\021\165\235\313\064\122\215\346\166\153\027\306\337
\206\253\047\216\111\053\165\146\201\020\041\246\352\076\364\256
\045\377\174\025\336\316\214\045\077\312\142\160\012\367\057\011
\146\007\310\077\034\374\360\333\105\060\337\142\210\301\265\017
\235\303\237\112\336\131\131\107\305\207\042\066\346\202\247\355
\012\271\342\007\240\215\173\172\112\074\161\322\342\003\241\037
\062\007\335\033\344\102\316\014\000\105\141\200\265\013\040\131
\051\170\275\371\125\313\143\305\074\114\364\266\377\333\152\137
\061\153\231\236\054\301\153\120\244\327\346\030\024\275\205\077
\147\253\106\237\240\377\102\247\072\177\134\313\135\260\160\035
\053\064\365\324\166\011\014\353\170\114\131\005\363\063\102\303
\141\025\020\033\167\115\316\042\214\324\205\362\105\175\267\123
\352\357\100\132\224\012\134\040\137\116\100\135\142\042\166\337
\377\316\141\275\214\043\170\322\067\002\340\216\336\321\021\067
\211\366\277\355\111\007\142\256\222\354\100\032\257\024\011\331
\320\116\262\242\367\276\356\356\330\377\334\032\055\336\270\066
\161\342\374\171\267\224\045\321\110\163\133\241\065\347\263\231
\147\165\301\031\072\053\107\116\323\102\216\375\061\310\026\146
\332\322\014\074\333\263\216\311\241\015\200\017\173\026\167\024
\277\377\333\011\224\262\223\274\040\130\025\351\333\161\103\363
\336\020\303\000\334\250\052\225\266\302\326\077\220\153\166\333
\154\376\214\274\362\160\065\014\334\231\031\065\334\327\310\106
\143\325\066\161\256\127\373\267\202\155\334
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R1"
Issuer: CN=GTS Root R1,O=Google
Trust Services LLC,C=US
Serial Number:02:03:e5:93:6f:31:b0:13:49:88:6b:a2:17
Subject: CN=GTS Root R1,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
D9:47:43:2A:BD:E7:B7:FA:90:FC:2E:6B:59:10:1B:12:80:E0:E1:C7:E4:E4:0F:A3:C6:88:7F:FF:57:A7:F4:CF
Fingerprint (SHA1): E5:8C:1C:C4:91:3B:38:63:4B:E9:10:6E:E3:AD:8E:6B:9D:D9:81:4A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\345\214\034\304\221\073\070\143\113\351\020\156\343\255\216\153
\235\331\201\112
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\005\376\320\277\161\250\243\166\143\332\001\340\330\122\334\100
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\015\002\003\345\223\157\061\260\023\111\210\153\242\027
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R2"
#
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US

Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\256\305\215\004\045\032\253\021\045\252
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\127\060\202\003\077\240\003\002\001\002\002\015\002
\003\345\256\305\215\004\045\032\253\021\045\252\060\015\006\011
\052\206\110\206\367\015\001\001\014\005\000\060\107\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\042\060\040\006\003
\125\004\012\023\031\107\157\157\147\154\145\040\124\162\165\163
\164\040\123\145\162\166\151\143\145\163\040\114\114\103\061\024
\060\022\006\003\125\004\003\023\013\107\124\123\040\122\157\157
\164\040\122\062\060\036\027\015\061\066\060\066\062\062\060\060
\060\060\060\060\132\027\015\063\066\060\066\062\062\060\060\060
\060\060\060\132\060\107\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\042\060\040\006\003\125\004\012\023\031\107\157
\157\147\154\145\040\124\162\165\163\164\040\123\145\162\166\151
\143\145\163\040\114\114\103\061\024\060\022\006\003\125\004\003
\023\013\107\124\123\040\122\157\157\164\040\122\062\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\316\336
\375\246\373\354\354\024\064\074\007\006\132\154\131\367\031\065

\335\367\301\235\125\252\323\315\073\244\223\162\357\012\372\155
\235\366\360\205\200\133\241\110\122\237\071\305\267\356\050\254
\357\313\166\150\024\271\337\255\001\154\231\037\304\042\035\237
\376\162\167\340\054\133\257\344\004\277\117\162\240\032\064\230
\350\071\150\354\225\045\173\166\241\346\151\271\205\031\275\211
\214\376\255\355\066\352\163\274\377\203\342\313\175\301\322\316
\112\263\215\005\236\213\111\223\337\301\133\320\156\136\360\056
\060\056\202\374\372\274\264\027\012\110\345\210\233\305\233\153
\336\260\312\264\003\360\332\364\220\270\145\144\367\134\114\255
\350\176\146\136\231\327\270\302\076\310\320\023\235\255\356\344
\105\173\211\125\367\212\037\142\122\204\022\263\302\100\227\343
\212\037\107\221\246\164\132\322\370\261\143\050\020\270\263\011
\270\126\167\100\242\046\230\171\306\376\337\045\356\076\345\240
\177\324\141\017\121\113\074\077\214\332\341\160\164\330\302\150
\241\371\301\014\351\241\342\177\273\125\074\166\006\356\152\116
\314\222\210\060\115\232\275\117\013\110\232\204\265\230\243\325
\373\163\301\127\141\335\050\126\165\023\256\207\216\347\014\121
\011\020\165\210\114\274\215\371\173\074\324\042\110\037\052\334
\353\153\273\104\261\313\063\161\062\106\257\255\112\361\214\350
\164\072\254\347\032\042\163\200\322\060\367\045\102\307\042\073
\073\022\255\226\056\306\303\166\007\252\040\267\065\111\127\351
\222\111\350\166\026\162\061\147\053\226\176\212\243\307\224\126
\042\277\152\113\176\001\041\262\043\062\337\344\232\104\155\131
\133\135\365\000\240\034\233\306\170\227\215\220\377\233\310\252
\264\257\021\121\071\136\331\373\147\255\325\133\021\235\062\232
\033\275\325\272\133\245\311\313\045\151\123\125\047\134\340\312
\066\313\210\141\373\036\267\320\313\356\026\373\323\246\114\336
\222\245\324\342\337\365\006\124\336\056\235\113\264\223\060\252
\201\316\335\032\334\121\163\015\117\160\351\345\266\026\041\031
\171\262\346\211\013\165\144\312\325\253\274\011\301\030\241\377
\324\124\241\205\074\375\024\044\003\262\207\323\244\267\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\273\377\312\216\043\237\117\231\312\333\342\150\246
\245\025\047\027\036\331\016\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\037\312\316\335\307
\276\241\237\331\047\114\013\334\027\230\021\152\210\336\075\346
\161\126\162\262\236\032\116\234\325\053\230\044\135\233\153\173
\260\063\202\011\275\337\045\106\352\230\236\266\033\376\203\074
\322\142\141\301\004\355\316\340\305\311\310\023\023\125\347\250
\143\255\214\173\001\376\167\060\341\316\150\233\005\370\022\356
\171\061\240\101\105\065\050\012\161\244\044\117\214\334\074\202
\007\137\146\334\175\020\376\014\141\263\005\225\356\341\256\201
\017\250\370\307\217\115\250\043\002\046\153\035\203\122\125\316
\265\057\000\312\200\100\340\341\164\254\140\365\207\200\235\256
\066\144\221\135\260\150\030\352\212\141\311\167\250\227\304\311
\307\245\374\125\113\363\360\177\271\145\075\047\150\320\314\153

\372\123\235\341\221\032\311\135\032\226\155\062\207\355\003\040
\310\002\316\132\276\331\352\375\262\115\304\057\033\337\137\172
\365\370\213\306\356\061\072\045\121\125\147\215\144\062\173\351
\236\303\202\272\052\055\351\036\264\340\110\006\242\374\147\257
\037\042\002\163\373\040\012\257\235\124\113\241\315\377\140\107
\260\077\135\357\033\126\275\227\041\226\055\012\321\136\235\070
\002\107\154\271\364\366\043\045\270\240\152\232\053\167\010\372
\304\261\050\220\046\130\010\074\342\176\252\327\075\157\272\061
\210\012\005\353\047\265\241\111\356\240\105\124\173\346\047\145
\231\040\041\250\243\274\373\030\226\273\122\157\014\355\203\121
\114\351\131\342\040\140\305\302\145\222\202\214\363\020\037\016
\212\227\276\167\202\155\077\217\035\135\274\111\047\275\314\117
\017\341\316\166\206\004\043\305\300\214\022\133\375\333\204\240
\044\361\110\377\144\174\320\276\134\026\321\357\231\255\300\037
\373\313\256\274\070\042\006\046\144\332\332\227\016\077\050\025
\104\250\117\000\312\360\232\314\317\164\152\264\076\074\353\225
\354\265\323\132\330\201\231\351\103\030\067\353\263\273\321\130
\142\101\363\146\322\217\252\170\225\124\040\303\132\056\164\053
\325\321\276\030\151\300\254\325\244\317\071\272\121\204\003\145
\351\142\300\142\376\330\115\125\226\342\320\021\372\110\064\021
\354\236\355\005\035\344\310\326\035\206\313
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R2"
Issuer: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:ae:c5:8d:04:25:1a:ab:11:25:aa
Subject: CN=GTS Root R2,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
8D:25:CD:97:22:9D:BF:70:35:6B:DA:4E:B3:CC:73:40:31:E2:4C:F0:0F:AF:CF:D3:2D:C7:6E:B5:84:1C:7E:A8
#
 Fingerprint (SHA1): 9A:44:49:76:32:DB:DE:FA:D0:BC:FB:5A:7B:17:BD:9E:56:09:24:94
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\232\104\111\166\062\333\336\372\320\274\373\132\173\027\275\236
\126\011\044\224
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\036\071\300\123\346\036\051\202\013\312\122\125\066\135\127\334

END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\256\305\215\004\045\032\253\021\045\252
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "GTS Root R3"
#
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124

\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\270\202\353\040\370\045\047\155\075\146\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\063\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\063\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\037\117\063\207\063\051\212\241\204\336\313\307\041\130
\101\211\352\126\235\053\113\205\306\035\114\047\274\177\046\121
\162\157\342\237\326\243\312\314\105\024\106\213\255\357\176\206
\214\354\261\176\057\377\251\161\235\030\204\105\004\101\125\156
\053\352\046\177\273\220\001\343\113\031\272\344\124\226\105\011
\261\325\154\221\104\255\204\023\216\232\214\015\200\014\062\366
\340\047\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\301\361\046\272\240\055\256\205\201\317\323\361\052\022
\275\270\012\147\375\274\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\366\341\040\225\024\173
\124\243\220\026\021\277\204\310\352\157\153\027\236\036\106\230
\040\233\237\323\015\331\254\323\057\315\174\370\133\056\125\273
\277\335\222\367\244\014\334\061\341\242\002\061\000\374\227\146
\146\345\103\026\023\203\335\307\337\057\276\024\070\355\001\316
\261\027\032\021\165\351\275\003\217\046\176\204\345\311\140\246
\225\327\124\131\267\347\021\054\211\324\271\356\027
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust
 for "GTS Root R3"
Issuer: CN=GTS Root R3,O=Google Trust Services LLC,C=US

```
# Serial Number:02:03:e5:b8:82:eb:20:f8:25:27:6d:3d:66
# Subject: CN=GTS Root R3,O=Google Trust Services LLC,C=US
# Not Valid Before: Wed Jun 22 00:00:00 2016
# Not Valid After : Sun Jun 22 00:00:00 2036
# Fingerprint (SHA-256):
34:D8:A7:3E:E2:08:D9:BC:DB:0D:95:65:20:93:4B:4E:40:E6:94:82:59:6E:8B:6F:73:C8:42:6B:01:0A:6F:48
# Fingerprint (SHA1): ED:E5:71:80:2B:C8:92:B9:5B:83:3C:D2:32:68:3F:09:CD:A0:1E:46
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\355\345\161\200\053\310\222\271\133\203\074\322\062\150\077\011
\315\240\036\106
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\076\347\235\130\002\224\106\121\224\345\340\042\112\213\347\163
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\015\002\003\345\270\202\353\040\370\045\047\155\075\146
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "GTS Root R4"
#
# Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
# Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52
# Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
# Not Valid Before: Wed Jun 22 00:00:00 2016
# Not Valid After : Sun Jun 22 00:00:00 2036
# Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
# Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS
```

CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\002\011\060\202\001\216\240\003\002\001\002\002\015\002
\003\345\300\150\357\143\032\234\162\220\120\122\060\012\006\010
\052\206\110\316\075\004\003\003\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\042\060\040\006\003\125\004\012
\023\031\107\157\157\147\154\145\040\124\162\165\163\164\040\123
\145\162\166\151\143\145\163\040\114\114\103\061\024\060\022\006
\003\125\004\003\023\013\107\124\123\040\122\157\157\164\040\122
\064\060\036\027\015\061\066\060\066\062\062\060\060\060\060\060
\060\132\027\015\063\066\060\066\062\062\060\060\060\060\060\060
\132\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154
\145\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163
\040\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107
\124\123\040\122\157\157\164\040\122\064\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\363\164\163\247\150\213\140\256\103\270\065\305\201\060
\173\113\111\235\373\301\141\316\346\336\106\275\153\325\141\030
\065\256\100\335\163\367\211\221\060\132\353\074\356\205\174\242
\100\166\073\251\306\270\107\330\052\347\222\221\152\163\351\261
\162\071\237\051\237\242\230\323\137\136\130\206\145\017\241\204
\145\006\321\334\213\311\307\163\310\214\152\057\345\304\253\321
\035\212\243\102\060\100\060\016\006\003\125\035\017\001\001\377

\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\200\114\326\353\164\377\111\066\243\325\330\374\265\076
\305\152\360\224\035\214\060\012\006\010\052\206\110\316\075\004
\003\003\003\151\000\060\146\002\061\000\350\100\377\203\336\003
\364\237\256\035\172\247\056\271\257\117\366\203\035\016\055\205
\001\035\321\331\152\354\017\302\257\307\136\126\136\134\325\034
\130\042\050\013\367\060\266\057\261\174\002\061\000\360\141\074
\247\364\240\202\343\041\325\204\035\163\206\234\055\257\312\064
\233\361\237\271\043\066\342\274\140\003\235\200\263\232\126\310
\341\342\273\024\171\312\315\041\324\224\265\111\103
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "GTS Root R4"
Issuer: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Serial Number:02:03:e5:c0:68:ef:63:1a:9c:72:90:50:52
Subject: CN=GTS Root R4,O=Google Trust Services LLC,C=US
Not Valid Before: Wed Jun 22 00:00:00 2016
Not Valid After : Sun Jun 22 00:00:00 2036
Fingerprint (SHA-256):
34:9D:FA:40:58:C5:E2:63:12:3B:39:8A:E7:95:57:3C:4E:13:13:C8:3F:E6:8F:93:55:6C:D5:E8:03:1B:3C:7D
Fingerprint (SHA1): 77:D3:03:67:B5:E0:0C:15:F6:0C:38:61:DF:7C:E1:3B:92:46:4D:47
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTS Root R4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\167\323\003\147\265\340\014\025\366\014\070\141\337\174\341\073
\222\106\115\107
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\103\226\203\167\031\115\166\263\235\145\122\344\035\042\245\350
END
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\042\060\040\006\003\125\004\012\023\031\107\157\157\147\154\145
\040\124\162\165\163\164\040\123\145\162\166\151\143\145\163\040
\114\114\103\061\024\060\022\006\003\125\004\003\023\013\107\124
\123\040\122\157\157\164\040\122\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\002\003\345\300\150\357\143\032\234\162\220\120\122

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Telia Root CA v2"
#
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root
 CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018
Not Valid After : Sun Nov 29 11:55:54 2043
Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\017\001
\147\137\047\326\376\172\343\344\254\276\011\133\005\236\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\060\104\061

\013\060\011\006\003\125\004\006\023\002\106\111\061\032\060\030
\006\003\125\004\012\014\021\124\145\154\151\141\040\106\151\156
\154\141\156\144\040\117\171\152\061\031\060\027\006\003\125\004
\003\014\020\124\145\154\151\141\040\122\157\157\164\040\103\101
\040\166\062\060\036\027\015\061\070\061\061\062\071\061\061\065
\065\065\064\132\027\015\064\063\061\061\062\071\061\061\065\065
\065\064\132\060\104\061\013\060\011\006\003\125\004\006\023\002
\106\111\061\032\060\030\006\003\125\004\012\014\021\124\145\154
\151\141\040\106\151\156\154\141\156\144\040\117\171\152\061\031
\060\027\006\003\125\004\003\014\020\124\145\154\151\141\040\122
\157\157\164\040\103\101\040\166\062\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\262\320\077\007\274\342
\173\320\153\231\370\342\167\151\347\316\235\244\003\274\202\155
\241\376\201\145\037\114\047\254\216\000\272\026\173\353\060\152
\000\300\263\164\150\176\262\257\307\325\142\263\172\077\120\312
\214\066\104\044\143\322\066\351\014\205\366\103\166\325\114\241
\140\162\147\342\050\063\245\313\061\270\072\042\043\064\270\175
\275\126\042\100\235\352\364\173\003\255\150\374\262\201\117\230
\320\164\352\215\345\175\315\143\303\243\366\336\222\302\130\031
\340\226\273\305\304\251\075\245\164\226\376\257\371\211\252\275
\225\027\124\330\170\104\361\014\167\025\222\340\230\102\247\244
\326\252\040\222\315\301\240\263\226\262\072\204\102\215\175\325
\225\344\326\333\351\142\304\130\263\171\305\214\323\065\063\203
\237\165\241\122\047\141\070\361\131\075\216\120\340\275\171\074
\347\154\226\376\136\331\002\145\264\216\134\320\021\064\337\135
\277\122\247\201\000\303\177\231\105\231\025\325\027\310\012\123
\354\143\363\231\175\314\151\022\206\302\027\360\001\236\277\204
\274\321\122\313\033\222\146\316\244\123\345\241\277\304\333\011
\326\346\211\126\053\310\343\174\336\343\377\211\345\065\156\050
\350\154\013\043\121\251\045\005\353\110\370\335\261\312\372\154
\010\121\357\267\030\154\104\312\046\341\163\306\211\006\201\345
\212\254\260\342\051\306\271\044\263\153\104\021\364\245\103\302
\114\103\345\160\066\214\266\063\127\172\225\056\202\240\364\134
\020\263\141\203\366\002\005\206\056\174\055\154\334\003\106\156
\065\223\325\172\225\057\336\040\330\133\176\224\220\004\152\272
\131\075\004\005\165\235\067\242\016\056\075\353\301\244\122\203
\376\320\153\324\146\216\334\306\351\022\116\035\052\127\252\020
\274\174\136\202\175\246\246\311\362\055\271\365\027\047\255\321
\016\211\124\053\225\372\300\255\035\230\024\170\063\102\206\012
\251\163\265\373\164\015\267\033\060\031\304\132\016\034\047\267
\332\030\320\377\212\310\005\272\361\252\034\242\067\267\346\110
\244\106\054\224\352\250\166\142\107\213\020\123\007\110\127\154
\342\222\115\266\256\005\313\334\301\112\136\217\254\075\031\116
\302\355\140\165\053\333\301\312\102\325\002\003\001\000\001\243
\143\060\141\060\037\006\003\125\035\043\004\030\060\026\200\024
\162\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057
\206\330\044\071\060\035\006\003\125\035\016\004\026\004\024\162

\254\344\063\171\252\105\207\366\375\254\035\236\326\307\057\206
\330\044\071\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\240\073\131\247\011\224\076\066
\204\322\176\057\071\245\226\227\372\021\255\374\147\363\161\011
\362\262\211\204\147\104\257\271\357\355\226\354\234\144\333\062
\060\157\147\232\254\176\137\262\253\001\066\176\201\372\344\204
\136\322\254\066\340\153\142\305\175\113\016\202\155\322\166\142
\321\376\227\370\237\060\174\030\371\264\122\167\202\035\166\333
\323\035\251\360\301\232\000\275\155\165\330\175\347\372\307\070
\243\234\160\350\106\171\003\257\056\164\333\165\370\156\123\014
\003\310\231\032\211\065\031\074\323\311\124\174\250\360\054\346
\156\007\171\157\152\341\346\352\221\202\151\012\035\303\176\131
\242\236\153\106\025\230\133\323\257\106\035\142\310\316\200\122
\111\021\077\311\004\022\303\023\174\077\073\212\226\333\074\240
\036\012\264\213\124\262\044\147\015\357\202\313\276\074\175\321
\342\177\256\026\326\126\130\271\332\040\261\203\025\241\357\212
\115\062\157\101\057\023\122\202\224\327\032\301\170\242\121\335
\053\160\155\267\032\371\367\260\340\147\227\126\333\174\141\123
\011\003\050\002\100\307\263\330\375\234\160\152\306\050\303\205
\351\342\355\032\223\240\336\113\230\242\204\076\005\167\001\226
\075\373\264\040\017\234\162\002\172\022\057\325\243\272\121\170
\257\052\053\104\145\116\265\375\012\350\301\315\171\207\141\053
\336\200\127\105\277\147\361\233\221\136\245\244\354\131\110\020
\015\070\307\260\372\303\104\155\004\365\170\120\034\222\226\133
\332\365\270\056\272\133\317\345\360\152\235\113\057\130\163\055
\117\055\304\034\076\364\263\077\253\025\016\073\031\101\212\244
\301\127\022\146\161\114\372\123\343\127\353\142\225\011\236\124
\335\321\302\074\127\074\275\070\255\230\144\267\270\003\232\123
\126\140\135\263\330\102\033\134\113\022\212\034\353\353\175\306
\172\151\307\047\177\244\370\213\362\344\224\146\207\113\351\224
\007\011\022\171\212\262\353\164\004\334\316\364\104\131\340\026
\312\305\054\130\327\074\173\317\142\206\152\120\175\065\066\146
\247\373\067\347\050\307\330\320\255\245\151\224\217\350\301\337
\044\370\033\007\061\207\201\330\135\366\350\050\330\112\122\200
\254\023\356\120\024\036\230\307
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telia Root CA v2"
Issuer: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Serial Number:01:67:5f:27:d6:fe:7a:e3:e4:ac:be:09:5b:05:9e
Subject: CN=Telia Root CA v2,O=Telia Finland Oyj,C=FI
Not Valid Before: Thu Nov 29 11:55:54 2018

```
# Not Valid After : Sun Nov 29 11:55:54 2043
# Fingerprint (SHA-256):
24:2B:69:74:2F:CB:1E:5B:2A:BF:98:89:8B:94:57:21:87:54:4E:5B:4D:99:11:78:65:73:62:1F:6A:74:B8:2C
# Fingerprint (SHA1): B9:99:CD:D1:73:50:8A:C4:47:05:08:9C:8C:88:FB:BE:A0:2B:40:CD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telia Root CA v2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\271\231\315\321\163\120\212\304\107\005\010\234\214\210\373\276
\240\053\100\315
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\217\254\252\202\337\205\261\364\334\020\034\374\231\331\110
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\032\060\030\006\003\125\004\012\014\021\124\145\154\151\141\040
\106\151\156\154\141\156\144\040\117\171\152\061\031\060\027\006
\003\125\004\003\014\020\124\145\154\151\141\040\122\157\157\164
\040\103\101\040\166\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\001\147\137\047\326\376\172\343\344\254\276\011\133\005
\236
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "D-TRUST BR Root CA 1 2020"
#
# Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
# Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
# Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
# Not Valid Before: Tue Feb 11 09:45:00 2020
# Not Valid After : Sun Feb 11 09:44:59
 2035
# Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
# Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
```

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\174
\311\217\053\204\327\337\352\017\311\145\232\323\113\115\226\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\102\122\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\060
\071\064\065\060\060\132\027\015\063\065\060\062\061\061\060\071
\064\064\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\102\122
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\306\313\307\050\321\373\204\365\232
\357\102\024\040\341\103\153\156\165\255\374\053\003\204\324\166
\223\045\327\131\073\101\145\153\036\346\064\052\273\164\366\022
\316\350\155\347\253\344\074\116\077\104\010\213\315\026\161\313
\277\222\231\364\244\327\074\120\124\122\220\205\203\170\224\147
\147\243\034\011\031\075\165\064\205\336\355\140\175\307\014\264
\101\122\271\156\345\356\102\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\163\221\020\253\377

\125\263\132\174\011\045\325\262\272\010\240\153\253\037\155\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\142\162\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\102
\122\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316
\075\004\003\003\003\151\000\060\146\002\061\000\224\220\055\023
\372\341\143\370\141\143\350\255\205\170\124\221\234\270\223\070
\076\032\101\332\100\026\123\102\010\312\057\216\361\076\201\126
\300\252\330\355\030\304\260\256\364\076\372\046\002\061\000\363
\050\342\306\333\053\231\373\267\121\270\044\243\244\224\172\032
\077\346\066\342\003\127\063\212\060\313\202\307\326\024\021\325
\165\143\133\024\225\234\037\001\317\330\325\162\247\017\073
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST BR Root CA 1 2020"
Issuer: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:7c:c9:8f:2b:84:d7:df:ea:0f:c9:65:9a:d3:4b:4d:96
Subject: CN=D-TRUST BR Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 09:45:00 2020
Not Valid After : Sun Feb 11 09:44:59 2035
Fingerprint (SHA-256):
E5:9A:AA:81:60:09:C2:2B:FF:5B:25:BA:D3:7D:F3:06:F0:49:79:7C:1F:81:D8:5A:B0:89:E6:57:BD:8F:00:44
Fingerprint (SHA1): 1F:5B:98:F0:E3:B5:F7:74:3C:ED:E6:B0:36:7D:32:CD:F4:09:41:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST BR Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\037\133\230\360\343\265\367\164\074\355\346\260\066\175\062\315
\364\011\101\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\265\252\113\325\355\367\343\125\056\217\162\012\363\165\270\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\102\122\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\174\311\217\053\204\327\337\352\017\311\145\232\323\113
\115\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-TRUST EV Root CA 1
 2020"
#
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035
Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163

\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\333\060\202\002\140\240\003\002\001\002\002\020\137
\002\101\327\172\207\174\114\003\243\254\226\215\373\377\320\060
\012\006\010\052\206\110\316\075\004\003\003\060\110\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\042\060\040\006\003\125\004\003\023\031\104\055\124\122
\125\123\124\040\105\126\040\122\157\157\164\040\103\101\040\061
\040\062\060\062\060\060\036\027\015\062\060\060\062\061\061\061
\060\060\060\060\060\132\027\015\063\065\060\062\061\061\060\071
\065\071\065\071\132\060\110\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014\104
\055\124\162\165\163\164\040\107\155\142\110\061\042\060\040\006
\003\125\004\003\023\031\104\055\124\122\125\123\124\040\105\126
\040\122\157\157\164\040\103\101\040\061\040\062\060\062\060\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\361\013\335\206\103\040\031\337\227
\205\350\042\112\233\317\235\230\277\264\005\046\311\313\343\246
\322\217\305\236\170\173\061\211\251\211\255\047\074\145\020\202
\374\337\303\235\116\360\063\043\304\322\062\365\034\260\337\063
\027\135\305\360\261\212\371\357\271\267\024\312\051\112\302\017
\251\177\165\145\111\052\060\147\364\144\367\326\032\167\332\303
\302\227\141\102\173\111\255\243\202\001\015\060\202\001\011\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\177\020\001\026\067
\072\244\050\344\120\370\244\367\354\153\062\266\376\351\213\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\201\306\006\003\125\035\037\004\201\276\060\201\273\060\076\240
\074\240\072\206\070\150\164\164\160\072\057\057\143\162\154\056
\144\055\164\162\165\163\164\056\156\145\164\057\143\162\154\057
\144\055\164\162\165\163\164\137\145\166\137\162\157\157\164\137
\143\141\137\061\137\062\060\062\060\056\143\162\154\060\171\240
\167\240\165\206\163\154\144\141\160\072\057\057\144\151\162\145
\143\164\157\162\171\056\144\055\164\162\165\163\164\056\156\145
\164\057\103\116\075\104\055\124\122\125\123\124\045\062\060\105
\126\045\062\060\122\157\157\164\045\062\060\103\101\045\062\060
\061\045\062\060\062\060\062\060\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\060\012\006\010\052\206\110\316

\075\004\003\003\003\151\000\060\146\002\061\000\312\074\306\052
\165\302\136\165\142\071\066\000\140\132\213\301\223\231\314\331
\333\101\073\073\207\231\027\073\325\314\117\312\042\367\240\200
\313\371\264\261\033\126\365\162\322\374\031\321\002\061\000\221
\367\060\223\077\020\106\053\161\244\320\073\104\233\300\051\002
\005\262\101\167\121\363\171\132\236\216\024\240\116\102\322\133
\201\363\064\152\003\347\042\070\120\133\355\031\117\103\026
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-TRUST EV Root CA 1 2020"
Issuer: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Serial Number:5f:02:41:d7:7a:87:7c:4c:03:a3:ac:96:8d:fb:ff:d0
Subject: CN=D-TRUST EV Root CA 1 2020,O=D-Trust GmbH,C=DE
Not Valid Before: Tue Feb 11 10:00:00 2020
Not Valid After : Sun Feb 11 09:59:59 2035
Fingerprint (SHA-256):
08:17:0D:1A:A3:64:53:90:1A:2F:95:92:45:E3:47:DB:0C:8D:37:AB:AA:BC:56:B8:1A:A1:00:DC:95:89:70:DB
#
Fingerprint (SHA1): 61:DB:8C:21:59:69:03:90:D8:7C:9C:12:86:54:CF:9D:3D:F4:DD:07
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST EV Root CA 1 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\333\214\041\131\151\003\220\330\174\234\022\206\124\317\235
\075\364\335\007
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\055\235\160\237\110\231\021\006\021\373\351\313\060\300\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\110\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\042\060\040\006\003\125\004\003\023
\031\104\055\124\122\125\123\124\040\105\126\040\122\157\157\164
\040\103\101\040\061\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\002\101\327\172\207\174\114\003\243\254\226\215\373
\377\320
END
CKA_TRUST_SERVER_AUTH

CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS ECC P384 Root G5"
#
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE
CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\031\060\202\001\237\240\003\002\001\002\002\020\011
\340\223\145\254\367\331\310\271\076\034\013\004\052\056\363\060
\012\006\010\052\206\110\316\075\004\003\003\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111

\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\036\027\015\062
\061\060\061\061\065\060\060\060\060\060\060\132\027\015\064\066
\060\061\061\064\062\063\065\071\065\071\132\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\046\060\044\006\003\125\004\003\023\035\104\151
\147\151\103\145\162\164\040\124\114\123\040\105\103\103\040\120
\063\070\064\040\122\157\157\164\040\107\065\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\301\104\241\317\021\227\120\232\336\043\202\065\007
\315\320\313\030\235\322\361\177\167\065\117\073\335\224\162\122
\355\302\073\370\354\372\173\153\130\040\354\231\256\311\374\150
\263\165\271\333\011\354\310\023\365\116\306\012\035\146\060\114
\273\037\107\012\074\141\020\102\051\174\245\010\016\340\042\351
\323\065\150\316\233\143\237\204\265\231\115\130\240\216\365\124
\347\225\311\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\301\121\105\120\131\253\076\347\054\132\372\040\042\022
\007\200\210\174\021\152\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\211\152\215\107\347
\354\374\156\125\003\331\147\154\046\116\203\306\375\311\373\053
\023\274\267\172\214\264\145\322\151\151\143\023\143\073\046\120
\056\001\241\171\006\221\235\110\277\302\276\002\060\107\303\025
\173\261\240\221\231\111\223\250\074\174\350\106\006\213\054\362
\061\000\224\235\142\310\211\275\031\204\024\351\245\373\001\270
\015\166\103\214\056\123\313\174\337\014\027\226\120
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS ECC P384 Root G5"
Issuer: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:09:e0:93:65:ac:f7:d9:c8:b9:3e:1c:0b:04:2a:2e:f3
Subject: CN=DigiCert TLS ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
01:8E:13:F0:77:25:32:CF:80:9B:D1:B1:72:81:86:72:83:FC:48:C6:E1:3B:E9:C6:98:12:85:4A:49:0C:1B:05
Fingerprint (SHA1): 17:F3:DE:5E:9F:0F:19:E9:8E:F6:1F:32:26:6E:20:C4:07:AE:30:EE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "DigiCert TLS ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\027\363\336\136\237\017\031\351\216\366\037\062\046\156\040\304
\007\256\060\356
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\323\161\004\152\103\034\333\246\131\341\250\243\252\305\161\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\046\060\044\006\003\125\004
\003\023\035\104\151\147\151\103\145\162\164\040\124\114\123\040
\105\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\340\223\145\254\367\331\310\271\076\034\013\004\052
\056\363
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert TLS RSA4096 Root G5"
#
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
#
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040

\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\146\060\202\003\116\240\003\002\001\002\002\020\010
\371\264\170\250\372\176\332\152\063\067\211\336\174\317\212\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\115
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023
\034\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123
\101\064\060\071\066\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\115\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025
\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\045\060\043\006\003\125\004\003\023\034
\104\151\147\151\103\145\162\164\040\124\114\123\040\122\123\101
\064\060\071\066\040\122\157\157\164\040\107\065\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\263\320\364
\311\171\021\235\375\374\146\201\347\314\325\344\274\354\201\076
\152\065\216\056\267\347\336\257\371\007\115\317\060\235\352\011
\013\231\275\154\127\332\030\112\270\170\254\072\071\250\246\110
\254\056\162\345\275\353\361\032\315\347\244\003\251\077\021\264
\330\057\211\026\373\224\001\075\273\057\370\023\005\241\170\034
\216\050\340\105\340\203\364\131\033\225\263\256\176\003\105\345
\276\302\102\376\356\362\074\266\205\023\230\062\235\026\250\051
\302\013\034\070\334\237\061\167\134\277\047\243\374\047\254\267
\053\275\164\233\027\055\362\201\332\135\260\341\043\027\076\210
\112\022\043\320\352\317\235\336\003\027\261\102\112\240\026\114
\244\155\223\351\077\072\356\072\174\235\130\235\364\116\217\374
\073\043\310\155\270\342\005\332\314\353\354\303\061\364\327\247
\051\124\200\317\104\133\114\157\060\236\363\314\335\037\224\103
\235\115\177\160\160\015\324\072\321\067\360\154\235\233\300\024
\223\130\357\315\101\070\165\274\023\003\225\174\177\343\134\351

\325\015\325\342\174\020\142\252\153\360\075\166\363\077\243\350
\260\301\375\357\252\127\115\254\206\247\030\264\051\301\054\016
\277\144\276\051\214\330\002\055\315\134\057\362\177\357\025\364
\014\025\254\012\260\361\323\015\117\152\115\167\227\001\240\361
\146\267\267\316\357\316\354\354\245\165\312\254\343\341\143\367
\270\241\004\310\274\173\077\135\055\026\042\126\355\110\111\376
\247\057\171\060\045\233\272\153\055\077\235\073\304\027\347\035
\056\373\362\317\246\374\343\024\054\226\230\041\214\264\221\351
\031\140\203\362\060\053\006\163\120\325\230\073\006\351\307\212
\014\140\214\050\370\122\233\156\341\366\115\273\006\044\233\327
\053\046\077\375\052\057\161\365\326\044\276\177\061\236\017\155
\350\217\117\115\243\077\377\065\352\337\111\136\101\217\206\371
\361\167\171\113\033\264\243\136\057\373\106\002\320\146\023\136
\136\205\117\316\330\160\210\173\316\001\265\226\227\327\315\175
\375\202\370\302\044\301\312\001\071\117\215\242\301\024\100\037
\234\146\325\014\011\106\326\362\320\321\110\166\126\072\103\313
\266\012\021\071\272\214\023\154\006\265\236\317\353\002\003\001
\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\121\063\034\355\066\100\257\027\323\045\315\151\150\362\257
\116\043\076\263\101\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\140\246\257\133\137\127
\332\211\333\113\120\251\304\043\065\041\377\320\141\060\204\221
\267\077\020\317\045\216\311\277\106\064\331\301\041\046\034\160
\031\162\036\243\311\207\376\251\103\144\226\072\310\123\004\012
\266\101\273\304\107\000\331\237\030\030\073\262\016\363\064\352
\044\367\335\257\040\140\256\222\050\137\066\347\135\344\336\307
\074\333\120\071\255\273\075\050\115\226\174\166\306\133\364\301
\333\024\245\253\031\142\007\030\100\137\227\221\334\234\307\253
\265\121\015\346\151\123\125\314\071\175\332\305\021\125\162\305
\073\213\211\370\064\055\244\027\345\027\346\231\175\060\210\041
\067\315\060\027\075\270\362\274\250\165\240\103\334\076\211\113
\220\256\155\003\340\034\243\240\226\011\273\175\243\267\052\020
\104\113\106\007\064\143\355\061\271\004\356\243\233\232\256\346
\061\170\364\352\044\141\073\253\130\144\377\273\207\047\142\045
\201\337\334\241\057\366\355\247\377\172\217\121\056\060\370\244
\001\322\205\071\137\001\231\226\157\132\133\160\031\106\376\206
\140\076\255\200\020\011\335\071\045\057\130\177\273\322\164\360
\367\106\037\106\071\112\330\123\320\363\056\073\161\245\324\157
\374\363\147\344\007\217\335\046\031\341\215\133\372\243\223\021
\233\351\310\072\303\125\150\232\222\341\122\166\070\350\341\272
\275\373\117\325\357\263\347\110\203\061\360\202\041\343\266\276
\247\253\157\357\237\337\114\317\001\270\142\152\043\075\347\011
\115\200\033\173\060\244\303\335\007\177\064\276\244\046\262\366
\101\350\011\035\343\040\230\252\067\117\377\367\361\342\051\160
\061\107\077\164\320\024\026\372\041\212\002\325\212\011\224\167
\056\362\131\050\213\174\120\222\012\146\170\070\203\165\304\265

\132\250\021\306\345\301\235\146\125\317\123\304\257\327\165\205
\251\102\023\126\354\041\167\201\223\132\014\352\226\331\111\312
\241\010\362\227\073\155\233\004\030\044\104\216\174\001\362\334
\045\330\136\206\232\261\071\333\365\221\062\152\321\246\160\212
\242\367\336\244\105\205\046\250\036\214\135\051\133\310\113\330
\232\152\003\136\160\362\205\117\154\113\150\057\312\124\366\214
\332\062\376\303\153\203\077\070\306\176
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert TLS RSA4096 Root G5"
Issuer: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:08:f9:b4:78:a8:fa:7e:da:6a:33:37:89:de:7c:cf:8a
Subject: CN=DigiCert TLS RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
37:1A:00:DC:05:33:B3:72:1A:7E:EB:40:E8:41:9E:70:79:9D:2B:0A:0F:2C:1D:80:69:31:65:F7:CE:C4:AD:75
Fingerprint (SHA1): A7:88:49:DC:5D:7C:75:8C:8C:DE:39:98:56:B3:AA:D0:B2:A5:71:35
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert TLS RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\247\210\111\334\135\174\165\214\214\336\071\230\126\263\252\320
\262\245\161\065
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\254\376\367\064\226\251\362\263\264\022\113\344\047\101\157\341
END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\124\114\123\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\371\264\170\250\372\176\332\152\063\067\211\336\174
\317\212
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME ECC P384 Root G5"
#
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
#
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\034\060\202\001\243\240\003\002\001\002\002\020\005
\077\156\240\006\001\162\175\355\077\303\243\266\243\326\357\060
\012\006\010\052\206\110\316\075\004\003\003\060\120\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003

\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\050\060\046\006\003\125\004\003\023\037\104\151
\147\151\103\145\162\164\040\123\115\111\115\105\040\105\103\103
\040\120\063\070\064\040\122\157\157\164\040\107\065\060\036\027
\015\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015
\064\066\060\061\061\064\062\063\065\071\065\071\132\060\120\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025
\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054
\040\111\156\143\056\061\050\060\046\006\003\125\004\003\023\037
\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\026\235\125\345\266\324\373\373\147
\153\032\324\241\252\322\167\225\076\210\345\007\237\266\160\146
\040\050\244\210\354\160\065\257\263\062\377\067\023\112\236\274
\001\003\336\204\301\270\306\346\145\107\211\362\023\125\277\315
\245\036\010\140\177\255\177\350\141\222\051\317\011\107\136\013
\034\300\037\244\277\362\133\274\230\357\231\114\314\160\153\266
\272\320\050\035\277\276\004\243\102\060\100\060\035\006\003\125
\035\016\004\026\004\024\163\172\153\226\333\102\007\213\122\146
\302\144\062\027\376\340\147\220\056\255\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\012\006\010\052
\206\110\316\075\004\003\003\003\147\000\060\144\002\060\067\104
\365\062\200\343\161\353\364\155\317\174\314\221\232\303\156\161
\330\322\043\135\222\115\202\102\155\134\141\225\366\221\365\247
\010\366\152\227\351\234\224\055\230\160\375\063\266\011\002\060
\007\074\057\271\130\202\136\017\243\142\250\223\147\360\040\303
\151\277\003\054\073\120\247\073\257\101\070\311\122\110\221\326
\016\373\274\140\060\174\144\077\022\036\105\177\121\076\364\246
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME ECC P384 Root G5"
Issuer: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
#
Serial Number:05:3f:6e:a0:06:01:72:7d:ed:3f:c3:a3:b6:a3:d6:ef
Subject: CN=DigiCert SMIME ECC P384 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
E8:E8:17:65:36:A6:0C:C2:C4:E1:01:87:C3:BE:FC:A2:0E:F2:63:49:70:18:F5:66:D5:BE:A0:F9:4D:0C:11:1B
Fingerprint (SHA1): 1C:B8:A7:08:C9:0D:20:79:01:A0:B2:36:7F:F0:95:65:E4:53:24:FE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\034\270\247\010\311\015\040\171\001\240\262\066\177\360\225\145
\344\123\044\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\376\364\122\066\104\330\356\015\267\003\013\357\164\263\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\050\060\046\006\003\125\004
\003\023\037\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\105\103\103\040\120\063\070\064\040\122\157\157\164\040
\107\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\005\077\156\240\006\001\162\175\355\077\303\243\266\243
\326\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DigiCert SMIME RSA4096 Root G5"
#
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A
Fingerprint
(SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\005\366\272\004\043\203\106\313\175\134\346\271\133\272
\034\125
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\152\060\202\003\122\240\003\002\001\002\002\020\005
\366\272\004\043\203\106\313\175\134\346\271\133\272\034\125\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\117
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003\023
\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105\040
\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065\060
\036\027\015\062\061\060\061\061\065\060\060\060\060\060\060\132
\027\015\064\066\060\061\061\064\062\063\065\071\065\071\132\060
\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162
\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004\003
\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115\105
\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107\065
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\340\152\133\331\370\371\175\354\265\173\357\137\335\134\064
\330\332\135\321\313\145\165\253\041\174\133\000\324\202\157\105
\205\101\212\251\022\002\162\062\360\024\365\003\165\273\143\227
\111\017\100\231\013\032\036\126\247\322\320\341\253\335\345\004
\033\343\037\024\022\002\210\365\240\200\011\366\047\232\120\360
\272\343\242\340\254\152\024\221\265\153\070\020\172\242\061\341
\221\033\267\271\360\053\133\310\167\011\166\267\121\304\066\012
\231\123\124\104\045\267\011\065\206\027\005\126\223\075\101\267
\002\327\142\037\212\222\021\207\352\021\155\352\010\021\334\261
\170\110\111\222\366\264\121\200\170\043\330\376\341\126\032\072

\220\023\126\064\211\325\342\225\213\137\336\262\314\373\077\070
\267\205\367\352\236\277\056\241\056\057\115\175\152\021\056\066
\240\377\021\010\004\225\125\340\033\073\147\223\251\224\125\352
\062\355\006\072\177\302\177\343\255\023\047\321\064\101\263\060
\303\277\264\210\370\003\202\244\337\076\253\170\167\240\131\223
\161\347\335\353\000\004\173\314\110\071\050\340\036\243\025\151
\310\066\262\241\013\227\337\125\326\357\221\234\244\366\026\367
\121\012\356\003\043\221\334\004\377\340\335\070\366\042\003\000
\302\007\161\032\022\311\327\106\052\224\033\315\326\273\033\356
\277\276\115\120\130\260\013\315\060\166\051\365\317\345\266\152
\057\166\260\260\151\152\320\155\145\030\065\176\223\274\162\027
\301\125\102\315\057\302\045\273\364\375\035\241\144\042\124\135
\342\236\162\101\204\156\161\226\352\105\007\266\136\172\112\206
\235\163\144\167\070\003\322\017\123\245\125\040\304\115\377\150
\157\125\251\352\335\161\344\117\331\205\243\174\116\051\002\236
\013\011\362\032\123\314\000\246\335\321\064\366\015\301\060\261
\234\002\144\254\065\355\245\260\051\261\322\225\063\017\322\040
\063\275\354\043\113\362\031\371\332\230\144\344\054\061\037\056
\341\215\034\004\225\050\115\214\130\315\113\345\163\202\206\214
\354\250\326\171\134\373\144\273\334\014\114\050\366\027\257\342
\150\326\026\206\230\333\374\001\334\061\272\370\234\016\371\050
\106\112\341\375\226\006\105\171\021\150\027\145\134\213\046\207
\133\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\321\243\324\127\035\117\125\333\165\114\134
\102\236\143\026\316\264\306\073\037\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\007\247
\012\336\123\273\232\353\160\277\262\066\220\315\344\247\270\361
\014\344\135\132\035\170\145\374\311\270\036\043\021\127\174\151
\065\155\001\377\123\120\277\007\016\272\307\001\077\130\052\224
\165\003\253\034\013\043\334\033\212\036\067\075\035\130\217\163
\331\263\052\157\337\020\240\133\014\247\312\260\177\271\044\242
\001\065\062\345\136\106\101\353\330\177\163\347\102\351\244\121
\046\167\201\012\250\353\017\012\120\235\176\212\040\147\374\013
\216\072\021\323\305\214\140\030\331\113\261\374\324\361\264\111
\116\256\207\341\321\373\166\241\137\363\006\317\227\226\014\351
\236\165\201\134\123\015\042\374\066\346\111\156\164\333\000\205
\215\174\042\240\216\373\020\114\324\142\023\133\357\113\162\046
\213\374\116\212\217\376\227\020\123\305\170\213\102\144\033\137
\340\211\375\273\011\177\120\340\124\205\046\021\152\035\145\371
\111\051\334\174\066\337\373\075\367\322\254\356\062\215\156\246
\175\071\234\105\304\312\015\365\073\264\171\123\245\057\126\307
\121\305\212\114\144\135\220\103\043\216\153\114\027\170\314\350
\277\365\073\344\250\110\317\255\233\014\337\062\112\323\331\022
\216\043\170\015\055\257\237\257\236\074\011\302\227\000\355\072
\151\034\161\077\071\337\323\217\304\146\365\357\066\224\017\363
\335\222\266\226\137\220\246\335\163\252\246\040\224\224\045\152

\011\014\162\344\023\043\140\114\243\312\027\056\173\147\000\333
\320\315\352\172\037\071\046\127\211\060\167\313\116\345\225\105
\117\137\373\066\134\075\371\040\265\072\020\045\117\223\062\132
\356\301\226\350\351\126\004\260\111\141\115\354\170\250\235\030
\301\377\330\352\057\126\357\225\053\173\004\136\147\343\125\100
\355\071\004\371\013\171\365\152\214\134\017\211\232\220\307\315
\213\336\333\046\065\241\156\315\263\102\362\242\017\073\014\216
\223\377\024\317\374\367\223\367\344\101\010\156\031\122\021\017
\123\031\163\170\014\317\330\205\201\370\255\125\310\260\236\106
\143\257\234\122\356\134\277\360\300\133\067\036\011\040\322\076
\043\306\241\025\112\016\066\176\060\305\171\152\274\042\210\331
\014\122\100\037\335\116\017\147\046\026\322\255\027\034
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DigiCert SMIME
RSA4096 Root G5"
Issuer: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Serial Number:05:f6:ba:04:23:83:46:cb:7d:5c:e6:b9:5b:ba:1c:55
Subject: CN=DigiCert SMIME RSA4096 Root G5,O="DigiCert, Inc.",C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After : Sun Jan 14 23:59:59 2046
Fingerprint (SHA-256):
90:37:0D:3E:FA:88:BF:58:C3:01:05:BA:25:10:4A:35:84:60:A7:FA:52:DF:C2:01:1D:F2:33:A0:F4:17:91:2A
Fingerprint (SHA1): 5B:C5:AD:E2:9A:A7:54:DA:84:89:53:A5:FE:D7:5B:46:86:D0:57:08
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert SMIME RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\133\305\255\342\232\247\124\332\204\211\123\245\376\327\133\106
\206\320\127\010
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\321\173\340\265\077\065\162\237\175\276\013\245\244\035\251\156
END
CKA_ISSUER MULTILINE_OCTAL
\060\117\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\047\060\045\006\003\125\004
\003\023\036\104\151\147\151\103\145\162\164\040\123\115\111\115
\105\040\122\123\101\064\060\071\066\040\122\157\157\164\040\107
\065
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\005\366\272\004\043\203\106\313\175\134\346\271\133\272
\034\125
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Certainly Root R1"
#
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
#
Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\216\017\371\113\220\161\150\145\063\124\364\324\104
\071\267\340
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\107\060\202\003\057\240\003\002\001\002\002\021\000

\216\017\371\113\220\161\150\145\063\124\364\324\104\071\267\340
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156
\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162
\164\141\151\156\154\171\040\122\157\157\164\040\122\061\060\036
\027\015\062\061\060\064\060\061\060\060\060\060\060\060\132\027
\015\064\066\060\064\060\061\060\060\060\060\060\060\060\132\060\075
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022\060
\020\006\003\125\004\012\023\011\103\145\162\164\141\151\156\154
\171\061\032\060\030\006\003\125\004\003\023\021\103\145\162\164
\141\151\156\154\171\040\122\157\157\164\040\122\061\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\320\066
\324\037\352\335\253\344\321\266\346\373\042\300\335\023\015\152
\173\042\023\034\227\074\150\143\146\062\234\003\265\215\244\201
\203\332\170\060\021\317\334\262\053\276\222\277\216\344\304\023
\276\244\150\114\332\002\150\026\164\276\262\335\004\344\153\052
\335\067\037\140\054\333\365\367\241\174\225\267\014\160\206\056
\361\072\357\122\367\314\323\233\371\213\276\016\337\061\267\235
\150\134\222\246\365\345\363\012\064\265\377\173\242\344\207\241
\306\257\027\000\357\003\221\355\251\034\116\161\075\322\213\154
\211\364\170\206\346\152\111\240\316\265\322\260\253\233\366\364
\324\056\343\162\371\066\306\353\025\267\045\214\072\374\045\015
\263\042\163\041\164\310\112\226\141\222\365\057\013\030\245\364
\255\342\356\101\275\001\171\372\226\214\215\027\002\060\264\371
\257\170\032\214\264\066\020\020\007\005\160\320\364\061\220\212
\121\305\206\046\171\262\021\210\136\305\360\012\124\315\111\246
\277\002\234\322\104\247\355\343\170\357\106\136\155\161\321\171
\160\034\106\137\121\351\311\067\334\137\176\151\173\101\337\064
\105\340\073\204\364\241\212\012\066\236\067\314\142\122\341\211
\015\050\371\172\043\261\015\075\075\232\375\235\201\357\054\220
\300\173\104\116\273\111\340\016\112\126\222\274\313\265\335\171
\027\211\221\336\141\211\164\222\250\343\062\205\276\116\205\244
\113\131\313\053\305\170\216\161\124\320\002\067\231\214\345\111
\352\340\124\162\244\021\006\057\013\214\301\133\276\265\241\260
\123\156\234\270\140\221\037\131\153\371\055\364\224\012\227\265
\354\305\166\003\124\033\145\122\272\114\222\126\121\065\240\100
\330\051\333\256\122\166\073\055\060\100\233\212\320\102\126\264
\267\210\001\244\207\073\123\226\315\243\026\217\363\146\252\027
\261\307\140\340\301\103\005\014\356\233\133\140\157\006\134\207
\133\047\371\100\021\236\234\063\301\267\345\065\127\005\177\047
\316\027\040\214\034\374\361\373\332\061\051\111\355\365\013\204
\247\117\301\366\116\302\050\234\372\356\340\257\007\373\063\021
\172\041\117\013\041\020\266\100\072\253\042\072\004\234\213\233
\204\206\162\232\322\247\245\304\264\165\221\251\053\043\002\003
\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001

\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\340\252\077\045\215\237\104\134\301\072\350\056\256
\167\114\204\076\147\014\364\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\002\001\000\271\127\257\270\022
\332\127\203\217\150\013\063\035\003\123\125\364\225\160\344\053
\075\260\071\353\372\211\142\375\367\326\030\004\057\041\064\335
\361\150\360\325\226\132\336\302\200\243\301\215\306\152\367\131
\167\256\025\144\317\133\171\005\167\146\352\214\323\153\015\335
\361\131\054\301\063\245\060\200\025\105\007\105\032\061\042\266
\222\000\253\231\115\072\217\167\257\251\042\312\057\143\312\025
\326\307\306\360\075\154\374\034\015\230\020\141\236\021\242\042
\327\012\362\221\172\153\071\016\057\060\303\066\111\237\340\351
\017\002\104\120\067\224\125\175\352\237\366\073\272\224\245\114
\351\274\076\121\264\350\312\222\066\124\155\134\045\050\332\335
\255\024\375\323\356\342\042\005\353\320\362\267\150\022\327\132
\212\101\032\306\222\245\132\073\143\105\117\277\341\072\167\042
\057\134\277\106\371\132\003\205\023\102\137\312\336\123\327\142
\265\246\065\004\302\107\377\231\375\204\337\134\316\351\136\200
\050\101\362\175\347\036\220\330\117\166\076\202\074\015\374\245
\003\372\173\032\331\105\036\140\332\304\216\371\374\053\311\173
\225\305\052\377\252\211\337\202\061\017\162\377\014\047\327\012
\036\126\000\120\036\014\220\301\226\265\330\024\205\273\247\015
\026\301\370\007\044\033\272\205\241\032\005\011\200\272\225\143
\311\072\354\045\237\177\235\272\244\107\025\233\104\160\361\152
\113\326\070\136\103\363\030\176\120\156\351\132\050\346\145\346
\167\033\072\375\035\276\003\046\243\333\324\341\273\176\226\047
\053\035\356\244\373\332\045\124\023\003\336\071\306\303\037\115
\220\354\217\033\112\322\034\355\205\225\070\120\171\106\326\301
\220\120\061\251\134\232\156\035\365\063\126\213\247\231\322\362
\310\054\063\223\222\060\307\116\214\145\063\020\144\027\375\044
\027\226\321\215\302\072\152\053\353\023\213\104\362\041\363\112
\032\267\167\137\327\355\210\244\162\345\071\037\225\235\276\147
\301\160\021\075\273\364\370\111\267\343\046\227\072\237\322\137
\174\373\300\231\174\071\051\340\173\035\277\015\247\217\322\051
\064\156\044\025\313\336\220\136\277\032\304\146\352\302\346\272
\071\137\212\231\251\101\131\007\260\054\257
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root R1"
Issuer: CN=Certainly Root R1,O=Certainly,C=US
Serial Number:00:8e:0f:f9:4b:90:71:68:65:33:54:f4:d4:44:39:b7:e0
Subject: CN=Certainly Root R1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046

```
# Fingerprint
 (SHA-256):
77:B8:2C:D8:64:4C:43:05:F7:AC:C5:CB:15:6B:45:67:50:04:03:3D:51:C6:0C:62:02:A8:E0:C3:34:67:D3:A0
# Fingerprint (SHA1): A0:50:EE:0F:28:71:F4:27:B2:12:6D:6F:50:96:25:BA:CC:86:42:AF
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\240\120\356\017\050\161\364\047\262\022\155\157\120\226\045\272
\314\206\102\257
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\007\160\324\076\202\207\240\372\063\066\023\364\372\063\347\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\216\017\371\113\220\161\150\145\063\124\364\324\104
\071\267\340
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Certainly Root E1"
#
# Issuer: CN=Certainly Root E1,O=Certainly,C=US
# Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
# Subject: CN=Certainly Root E1,O=Certainly,C=US
# Not Valid Before: Thu Apr 01 00:00:00 2021
# Not Valid After : Sun Apr 01 00:00:00 2046
# Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
# Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
```

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\001\367\060\202\001\175\240\003\002\001\002\002\020\006
\045\063\261\107\003\063\047\134\371\215\232\271\277\314\370\060
\012\006\010\052\206\110\316\075\004\003\003\060\075\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003
\125\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032
\060\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156
\154\171\040\122\157\157\164\040\105\061\060\036\027\015\062\061
\060\064\060\061\060\060\060\060\060\060\132\027\015\064\066\060
\064\060\061\060\060\060\060\060\060\060\132\060\075\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\022\060\020\006\003\125
\004\012\023\011\103\145\162\164\141\151\156\154\171\061\032\060
\030\006\003\125\004\003\023\021\103\145\162\164\141\151\156\154
\171\040\122\157\157\164\040\105\061\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\336\157\370\177\034\337\355\371\107\207\206\261\244\300\212
\370\202\227\200\352\217\310\112\136\052\175\210\150\247\001\142
\024\221\044\172\134\236\243\027\175\212\206\041\064\030\120\033
\020\336\320\067\113\046\307\031\140\200\351\064\275\140\031\066
\100\326\051\207\011\074\221\172\366\274\023\043\335\131\116\004
\136\317\310\002\034\030\123\301\061\330\332\040\351\104\215\344
\166\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\363\050\030\313\144\165\356\051\052\353\355\256\043\130\070
\205\353\310\042\007\060\012\006\010\052\206\110\316\075\004\003
\003\003\150\000\060\145\002\061\000\261\216\132\040\303\262\031
\142\115\336\260\117\337\156\322\160\212\361\237\176\152\214\346
\272\336\203\151\312\151\263\251\005\265\226\222\027\207\302\322

\352\320\173\316\330\101\133\174\256\002\060\106\336\352\313\135
\232\354\062\302\145\026\260\114\060\134\060\363\332\116\163\206
\006\330\316\211\004\110\067\067\370\335\063\121\235\160\257\173
\125\330\001\056\175\005\144\016\206\270\221
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Certainly Root E1"
Issuer: CN=Certainly Root E1,O=Certainly,C=US
Serial Number:06:25:33:b1:47:03:33:27:5c:f9:8d:9a:b9:bf:cc:f8
Subject:
CN=Certainly Root E1,O=Certainly,C=US
Not Valid Before: Thu Apr 01 00:00:00 2021
Not Valid After : Sun Apr 01 00:00:00 2046
Fingerprint (SHA-256):
B4:58:5F:22:E4:AC:75:6A:4E:86:12:A1:36:1C:5D:9D:03:1A:93:FD:84:FE:BB:77:8F:A3:06:8B:0F:C4:2D:C2
Fingerprint (SHA1): F9:E1:6D:DC:01:89:CF:D5:82:45:63:3E:C5:37:7D:C2:EB:93:6F:2B
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certainly Root E1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\341\155\334\001\211\317\325\202\105\143\076\305\067\175\302
\353\223\157\053
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\236\312\315\076\122\120\306\066\363\113\243\355\247\123\351
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\023\011\103\145\162\164\141\151
\156\154\171\061\032\060\030\006\003\125\004\003\023\021\103\145
\162\164\141\151\156\154\171\040\122\157\157\164\040\105\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\006\045\063\261\107\003\063\047\134\371\215\232\271\277
\314\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "DIGITALSIGN GLOBAL ROOT RSA CA"
#
# Issuer: CN=DIGITALSIGN GLOBAL ROOT RSA CA,O=DigitalSign Certificadora Digital,C=PT
# Serial Number:5d:59:c8:ca:ab:09:57:f5:e6:b5:da:29:94:04:6a:ff:c5:d4:95:87
# Subject: CN=DIGITALSIGN GLOBAL ROOT RSA CA,O=DigitalSign Certificadora Digital,C=PT
# Not Valid Before: Thu Jan 21 10:50:34 2021
# Not Valid After : Mon Jan 15 10:50:34 2046
# Fingerprint (SHA-256):
82:BD:5D:85:1A:CF:7F:6E:1B:A7:BF:CB:C5:30:30:D0:E7:BC:3C:21:DF:77:2D:85:8C:AB:41:D1:99:BD:F5:95
# Fingerprint (SHA1): B9:82:07:97:AE:52:A5:68:6F:46:07:DF:FD:03:72:3D:92:86:88:2D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL
 CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DIGITALSIGN GLOBAL ROOT RSA CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\047\060\045\006
\003\125\004\003\014\036\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\122\123
\101\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\047\060\045\006
\003\125\004\003\014\036\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\122\123
\101\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\024\135\131\310\312\253\011\127\365\346\265\332\051\224\004
\152\377\305\324\225\207
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\265\060\202\003\235\240\003\002\001\002\002\024\135
\131\310\312\253\011\127\365\346\265\332\051\224\004\152\377\305
\324\225\207\060\015\006\011\052\206\110\206\367\015\001\001\015
\005\000\060\142\061\013\060\011\006\003\125\004\006\023\002\120
\124\061\052\060\050\006\003\125\004\012\014\041\104\151\147\151
```

\164\141\154\123\151\147\156\040\103\145\162\164\151\146\151\143
\141\144\157\162\141\040\104\151\147\151\164\141\154\061\047\060
\045\006\003\125\004\003\014\036\104\111\107\111\124\101\114\123
\111\107\116\040\107\114\117\102\101\114\040\122\117\117\124\040
\122\123\101\040\103\101\060\036\027\015\062\061\060\061\062\061
\061\060\065\060\063\064\132\027\015\064\066\060\061\061\065\061
\060\065\060\063\064\132\060\142\061\013\060\011\006\003\125\004
\006\023\002\120\124\061\052\060\050\006\003\125\004\012\014\041
\104\151\147\151\164\141\154\123\151\147\156\040\103\145\162\164
\151\146\151\143\141\144\157\162\141\040\104\151\147\151\164\141
\154\061\047\060\045\006\003\125\004\003\014\036\104\111\107\111
\124\101\114\123\111\107\116\040\107\114\117\102\101\114\040\122
\117\117\124\040\122\123\101\040\103\101\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\310\207\266\070\323
\034\360\336\022\370\203\307\304\212\342\211\270\264\042\172\170
\370\014\146\121\150\166\067\012\325\117\302\132\010\270\026\134
\367\162\001\011\067\204\201\052\124\153\327\222\320\154\372\250
\247\103\022\064\353\016\333\067\017\051\376\212\061\121\102\350
\113\234\220\250\310\054\021\323\375\240\051\176\316\336\224\366
\202\340\130\264\116\105\045\361\042\362\075\323\017\173\124\032
\334\062\266\326\121\116\176\101\264\127\270\054\306\271\016\056
\312\127\361\325\310\323\130\347\245\351\102\021\256\323\040\045
\224\151\327\217\312\242\015\303\323\237\007\150\077\025\322\147
\056\123\375\166\202\233\013\163\251\051\015\236\021\223\024\010
\230\354\236\124\022\112\126\242\006\025\354\153\154\056\222\140
\056\206\015\256\202\037\121\115\343\262\007\327\020\031\127\042
\366\251\151\104\204\363\331\075\240\006\277\314\210\176\177\365
\316\133\245\302\052\152\164\102\352\157\246\377\371\150\261\320
\137\275\221\322\125\157\063\127\114\036\235\344\342\213\301\205
\145\240\340\152\234\000\000\210\222\335\130\010\026\362\160\061
\250\034\341\336\275\116\161\351\326\276\176\265\241\132\303\115
\367\277\233\275\224\244\375\365\252\123\223\106\311\046\001\004
\160\304\240\161\272\316\045\146\373\221\176\125\160\356\111\012
\115\142\177\302\120\232\162\362\030\147\235\351\105\250\064\204
\350\370\201\366\321\132\042\036\007\117\073\263\177\335\021\245
\163\334\276\251\031\072\151\251\155\033\062\342\211\252\245\047
\013\132\176\164\342\017\144\071\135\176\134\271\301\027\374\307
\215\136\311\354\044\355\322\362\077\172\204\105\067\002\276\076
\153\131\304\346\133\026\155\300\252\236\252\265\131\056\054\160
\125\234\314\231\226\230\044\124\321\216\332\312\264\021\264\267
\160\103\037\157\220\013\040\240\250\166\023\145\333\333\043\132
\165\113\241\013\061\167\012\356\175\150\141\032\023\214\352\121
\176\134\126\243\127\114\135\241\353\023\145\277\124\024\314\363
\356\334\327\354\074\227\362\170\126\270\337\162\134\160\374\316
\006\335\237\322\007\061\357\347\122\221\236\315\272\327\300\030
\104\007\061\145\111\062\151\023\112\353\217\002\003\001\000\001
\243\143\060\141\060\017\006\003\125\035\023\001\001\377\004\005

\060\003\001\001\377\060\037\006\003\125\035\043\004\030\060\026
\200\024\265\066\274\074\214\032\253\054\366\131\031\055\203\024
\332\223\045\025\326\206\060\035\006\003\125\035\016\004\026\004
\024\265\066\274\074\214\032\253\054\366\131\031\055\203\024\332
\223\045\025\326\206\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001
\001\015\005\000\003\202\002\001\000\024\373\061\045\070\061\370
\312\010\262\043\166\070\255\370\323\131\365\314\264\127\045\341
\104\276\176\374\026\354\256\372\046\237\117\147\026\112\126\360
\375\355\307\031\001\064\216\220\132\055\326\200\134\354\161\322
\201\045\202\036\000\161\337\232\321\325\035\042\273\321\245\363
\142\017\264\353\334\044\163\376\246\126\315\232\024\305\004\065
\026\061\242\007\353\245\000\342\266\370\137\162\375\077\141\111
\216\336\176\115\070\327\172\036\164\067\154\121\334\276\000\004
\270\070\024\363\040\301\355\233\247\043\375\015\102\204\035\177
\362\163\303\320\170\143\361\237\354\327\133\351\361\276\154\240
\113\003\236\215\151\341\024\332\210\020\201\043\123\377\332\124
\053\013\306\271\226\225\004\030\106\363\173\250\227\330\133\150
\244\344\070\034\016\105\345\230\323\011\256\232\136\354\263\171
\015\071\162\362\364\224\235\016\236\140\042\346\250\366\114\205
\315\007\202\072\150\071\315\075\137\343\070\364\266\257\073\153
\112\237\140\121\105\242\100\002\345\252\014\343\076\321\170\324
\242\164\234\046\272\005\232\050\160\112\076\246\013\320\035\111
\360\272\370\256\101\020\176\244\007\022\275\250\317\051\075\127
\273\307\361\103\107\000\076\256\160\030\132\040\173\011\313\072
\072\160\200\345\114\140\230\301\025\301\035\112\367\310\360\233
\341\162\255\347\135\150\130\013\004\261\214\274\237\267\373\156
\213\133\004\125\373\353\043\125\327\170\120\332\045\313\276\047
\066\273\044\032\171\034\121\321\376\023\273\377\170\054\334\244
\276\057\366\305\113\123\317\247\114\231\136\160\254\131\210\004
\256\144\004\277\173\246\172\115\323\350\167\275\241\176\120\025
\363\357\111\060\205\115\041\127\252\333\054\165\227\255\201\001
\207\242\261\160\235\036\006\132\003\140\261\077\246\155\202\054
\324\024\261\201\245\350\075\210\035\264\162\054\130\067\212\216
\070\224\270\163\335\251\340\270\366\167\242\263\174\130\336\256
\151\072\265\213\245\032\273\362\330\164\006\234\375\142\163\040
\041\166\261\176\160\236\031\324\353\027\142\031\070\231\315\066
\053\107\376\061\313\337\271\344\254\010\323\330\246\353\324\236
\176\113\144\244\125\135\053\027\311
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DIGITALSIGN GLOBAL ROOT RSA CA"
Issuer: CN=DIGITALSIGN GLOBAL ROOT RSA CA,O=DigitalSign Certificadora Digital,C=PT
Serial Number:5d:59:c8:ca:ab:09:57:f5:e6:b5:da:29:94:04:6a:ff:c5:d4:95:87

Subject: CN=DIGITALSIGN GLOBAL ROOT RSA CA,O=DigitalSign Certificadora Digital,C=PT
Not Valid Before: Thu Jan 21 10:50:34 2021
Not Valid After : Mon Jan 15 10:50:34 2046
Fingerprint (SHA-256):
82:BD:5D:85:1A:CF:7F:6E:1B:A7:BF:CB:C5:30:30:D0:E7:BC:3C:21:DF:77:2D:85:8C:AB:41:D1:99:BD:F5:95
Fingerprint (SHA1): B9:82:07:97:AE:52:A5:68:6F:46:07:DF:FD:03:72:3D:92:86:88:2D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DIGITALSIGN GLOBAL ROOT RSA CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\271\202\007\227\256\122\245\150\157\106\007\337\375\003\162\075
\222\206\210\055
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\033\032\275\032\171\306\333\264\355\263\207\314\251\323\116\170
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\047\060\045\006
\003\125\004\003\014\036\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\122\123
\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\135\131\310\312\253\011\127\365\346\265\332\051\224\004
\152\377\305\324\225\207
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "DIGITALSIGN GLOBAL ROOT ECDSA CA"
#
Issuer: CN=DIGITALSIGN GLOBAL ROOT ECDSA CA,O=DigitalSign Certificadora Digital,C=PT
Serial Number:36:2d:8f:72:88:a2:28:27:e4:00:ff:24:c6:2d:e4:eb:fa:9d:b6:e1
Subject: CN=DIGITALSIGN GLOBAL ROOT ECDSA CA,O=DigitalSign Certificadora Digital,C=PT
Not Valid Before: Thu Jan 21 11:07:50 2021
Not Valid After : Mon Jan 15 11:07:50 2046
Fingerprint (SHA-256):
26:1D:71:14:AE:5F:8F:F2:D8:C7:20:9A:9D:E4:28:9E:6A:FC:9D:71:70:23:D8:54:50:90:91:99:F1:85:7C:FE

Fingerprint (SHA1): 67:A8:08:EB:8F:88:F5:80:6C:05:45:1B:17:F3:D7:00:2F:D2:4A:8A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DIGITALSIGN GLOBAL ROOT ECDSA CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\051\060\047\006
\003\125\004\003\014\040\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\105\103
\104\123\101\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\051\060\047\006
\003\125\004\003\014\040\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\105\103
\104\123\101\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\066\055\217\162\210\242\050\047\344\000\377\044\306\055
\344\353\372\235\266\341
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\152\060\202\001\360\240\003\002\001\002\002\024\066
\055\217\162\210\242\050\047\344\000\377\044\306\055\344\353\372
\235\266\341\060\012\006\010\052\206\110\316\075\004\003\003\060
\144\061\013\060\011\006\003\125\004\006\023\002\120\124\061\052
\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141\154
\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144\157
\162\141\040\104\151\147\151\164\141\154\061\051\060\047\006\003
\125\004\003\014\040\104\111\107\111\124\101\114\123\111\107\116
\040\107\114\117\102\101\114\040\122\117\117\124\040\105\103\104
\123\101\040\103\101\060\036\027\015\062\061\060\061\062\061\061
\061\060\067\065\060\132\027\015\064\066\060\061\061\065\061\061
\060\067\065\060\132\060\144\061\013\060\011\006\003\125\004\006
\023\002\120\124\061\052\060\050\006\003\125\004\012\014\041\104
\151\147\151\164\141\154\123\151\147\156\040\103\145\162\164\151
\146\151\143\141\144\157\162\141\040\104\151\147\151\164\141\154
\061\051\060\047\006\003\125\004\003\014\040\104\111\107\111\124

\101\114\123\111\107\116\040\107\114\117\102\101\114\040\122\117
\117\124\040\105\103\104\123\101\040\103\101\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\156\013\243\253\063\115\034\352\112\350\374\004\215
\024\240\175\360\010\054\137\203\253\223\321\322\173\272\327\111
\175\217\354\022\120\137\324\271\313\345\360\371\063\143\037\311
\127\354\100\330\021\013\227\350\122\026\314\051\216\364\006\206
\036\070\334\075\127\304\356\252\275\310\124\004\046\132\047\023
\121\107\075\037\037\032\216\250\225\244\063\320\314\107\314\155
\270\374\110\243\143\060\141\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043\004
\030\060\026\200\024\316\257\112\213\032\165\342\361\070\347\002
\360\026\255\136\352\144\325\173\264\060\035\006\003\125\035\016
\004\026\004\024\316\257\112\213\032\165\342\361\070\347\002\360
\026\255\136\352\144\325\173\264\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\012\006\010\052\206\110\316
\075\004\003\003\003\150\000\060\145\002\060\012\210\304\161\234
\104\003\115\215\264\307\274\250\256\331\060\047\065\152\153\026
\143\327\374\347\131\341\247\211\033\114\061\232\043\125\104\346
\363\103\041\325\107\047\157\155\127\001\252\002\061\000\373\262
\352\342\227\177\121\265\237\110\353\274\157\065\211\250\144\160
\253\127\166\315\300\306\024\140\312\177\342\202\000\163\367\314
\065\352\216\044\233\345\010\131\307\004\214\163\170\376
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "DIGITALSIGN GLOBAL ROOT ECDSA CA"
Issuer: CN=DIGITALSIGN GLOBAL ROOT ECDSA CA,O=DigitalSign Certificadora Digital,C=PT
Serial Number:36:2d:8f:72:88:a2:28:27:e4:00:ff:24:c6:2d:e4:eb:fa:9d:b6:e1
Subject: CN=DIGITALSIGN GLOBAL ROOT ECDSA CA,O=DigitalSign Certificadora Digital,C=PT
Not Valid Before: Thu Jan 21 11:07:50 2021
Not
Valid After : Mon Jan 15 11:07:50 2046
Fingerprint (SHA-256):
26:1D:71:14:AE:5F:8F:F2:D8:C7:20:9A:9D:E4:28:9E:6A:FC:9D:71:70:23:D8:54:50:90:91:99:F1:85:7C:FE
Fingerprint (SHA1): 67:A8:08:EB:8F:88:F5:80:6C:05:45:1B:17:F3:D7:00:2F:D2:4A:8A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DIGITALSIGN GLOBAL ROOT ECDSA CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\147\250\010\353\217\210\365\200\154\005\105\033\027\363\327\000
\057\322\112\212
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\055\241\316\377\041\302\210\313\132\036\214\341\311\222\217
END
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\052\060\050\006\003\125\004\012\014\041\104\151\147\151\164\141
\154\123\151\147\156\040\103\145\162\164\151\146\151\143\141\144
\157\162\141\040\104\151\147\151\164\141\154\061\051\060\047\006
\003\125\004\003\014\040\104\111\107\111\124\101\114\123\111\107
\116\040\107\114\117\102\101\114\040\122\117\117\124\040\105\103
\104\123\101\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\066\055\217\162\210\242\050\047\344\000\377\044\306\055
\344\353\372\235\266\341
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication RootCA3"
#
Issuer: CN=Security Communication RootCA3,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number:00:e1:7c:37:40:fd:1b:fe:67
Subject: CN=Security Communication RootCA3,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Thu Jun 16 06:17:16 2016
Not Valid After : Mon Jan 18 06:17:16 2038
Fingerprint (SHA-256):
24:A5:5C:2A:B0:51:44:2D:06:17:76:65:41:23:9A:4A:D0:32:D7:C5:51:75:AA:34:FF:DE:2F:BC:4F:5C:52:94
Fingerprint (SHA1): C3:03:C8:22:74:92:E5:61:A2:9C:5F:79:91:2B:1E:44:13:91:30:3A
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\003\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\063
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\003\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\011\000\341\174\067\100\375\033\376\147
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\177\060\202\003\147\240\003\002\001\002\002\011\000
\341\174\067\100\375\033\376\147\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\060\135\061\013\060\011\006\003\125
\004\006\023\002\112\120\061\045\060\043\006\003\125\004\012\023
\034\123\105\103\117\115\040\124\162\165\163\164\040\123\171\163
\164\145\155\163\040\103\117\056\054\114\124\104\056\061\047\060
\045\006\003\125\004\003\023\036\123\145\143\165\162\151\164\171
\040\103\157\155\155\165\156\151\143\141\164\151\157\156\040\122
\157\157\164\103\101\063\060\036\027\015\061\066\060\066\061\066
\060\066\061\067\061\066\132\027\015\063\070\060\061\061\070\060
\066\061\067\061\066\132\060\135\061\013\060\011\006\003\125\004
\006\023\002\112\120\061\045\060\043\006\003\125\004\012\023\034
\123\105\103\117\115\040\124\162\165\163\164\040\123\171\163\164
\145\155\163\040\103\117\056\054\114\124\104\056\061\047\060\045
\006\003\125\004\003\023\036\123\145\143\165\162\151\164\171\040
\103\157\155\155\165\156\151\143\141\164\151\157\156\040\122\157
\157\164\103\101\063\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\343\311\162\111\367\060\336\011\174\251
\100\201\130\323\264\072\335\272\141\017\223\120\156\151\074\065
\302\356\133\163\220\033\147\114\041\354\137\065\273\071\076\053
\012\140\357\273\155\053\206\373\161\242\310\254\344\126\224\371
\311\257\261\162\324\040\254\164\322\270\025\255\121\376\205\164
\241\271\020\376\005\200\371\122\223\263\100\075\165\020\254\300
\226\267\247\176\166\274\343\033\122\031\316\021\037\013\004\064
\365\330\365\151\074\167\363\144\364\015\252\205\336\340\011\120
\004\027\226\204\267\310\212\274\115\162\374\034\273\317\363\006
\115\371\237\144\367\176\246\146\206\065\161\310\021\200\114\301
\161\100\130\036\276\240\163\366\374\076\120\341\340\057\046\075
\176\134\043\265\171\160\336\372\340\321\245\326\014\101\161\173
\367\352\214\034\210\307\354\213\365\321\057\125\226\106\174\132
\073\130\073\373\272\330\055\265\045\332\172\116\317\104\256\041
\246\236\230\312\040\156\174\273\210\205\133\373\300\020\142\273
\362\371\047\107\357\321\211\071\103\304\337\336\341\101\277\124

\163\040\227\055\154\332\363\324\007\243\346\271\330\157\256\374
\214\031\056\323\147\147\053\225\333\130\134\265\152\002\363\270
\203\136\264\153\276\101\176\127\011\165\104\120\125\315\132\021
\141\041\012\141\302\251\210\375\023\274\055\211\057\315\141\340
\225\276\312\265\173\341\173\064\147\013\037\266\014\307\174\036
\031\123\312\247\261\112\025\040\126\024\160\075\053\202\054\017
\235\025\035\107\200\107\377\170\231\016\061\257\157\076\217\355
\206\151\036\173\030\210\024\262\302\374\202\063\056\234\113\055
\373\160\073\161\252\053\173\046\047\363\032\302\334\373\027\270
\241\352\313\240\264\256\323\224\176\172\320\253\303\354\070\055
\021\056\210\277\324\077\255\022\073\102\254\217\002\156\175\314
\321\137\141\276\241\274\072\152\110\352\046\125\042\026\135\137
\015\377\047\063\237\030\003\164\212\133\122\040\107\153\105\115
\042\167\214\125\047\360\257\036\214\311\203\042\124\267\232\320
\117\331\316\374\331\056\034\226\050\261\002\323\003\275\045\122
\034\064\146\117\043\253\364\167\202\226\035\321\127\060\010\021
\005\375\127\321\331\307\002\003\001\000\001\243\102\060\100\060
\035\006\003\125\035\016\004\026\004\024\144\024\174\374\130\162
\026\246\012\051\064\025\157\052\313\274\374\257\250\253\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202
\002\001\000\334\002\043\010\342\357\041\072\307\015\267\046\322
\142\223\247\245\043\162\007\040\202\140\337\030\327\124\255\151
\045\222\236\331\024\317\231\271\122\201\317\256\154\212\073\132
\071\310\154\001\103\302\042\155\002\360\142\315\116\143\103\300
\024\332\364\143\360\352\364\161\356\116\207\343\161\251\364\311
\127\345\056\137\034\171\273\043\252\207\104\127\351\275\065\115
\101\273\113\050\243\230\262\033\331\013\027\007\345\367\352\235
\365\166\327\277\304\266\201\130\377\310\377\144\151\142\171\255
\156\016\037\177\356\035\151\345\267\162\161\263\376\245\001\065
\224\124\053\300\122\155\217\125\304\311\322\270\313\312\064\010
\121\205\240\365\274\264\027\130\352\012\134\172\275\143\306\072
\057\377\226\111\031\204\352\147\330\004\261\141\364\000\133\112
\267\234\161\067\031\205\171\277\201\260\307\023\016\166\161\076
\072\200\006\256\006\026\247\215\265\302\304\313\377\100\245\134
\215\245\311\072\355\162\201\312\134\230\074\322\064\003\167\010
\375\360\051\131\135\041\010\307\140\277\244\161\173\270\331\036
\202\276\011\257\145\157\050\253\277\113\265\356\076\010\107\047
\240\017\157\017\213\077\254\225\030\363\271\016\334\147\125\156
\142\236\106\016\321\004\170\312\162\256\166\331\245\370\262\337
\210\011\141\213\357\044\116\321\131\077\132\324\075\311\223\074
\053\144\365\201\015\026\226\367\222\303\376\061\157\350\052\062
\164\016\364\114\230\112\030\016\060\124\325\305\353\274\305\025
\236\350\231\041\353\047\053\011\012\333\361\346\160\030\126\273
\014\344\276\371\350\020\244\023\222\270\034\340\333\147\035\123
\003\244\042\247\334\135\222\020\074\352\377\374\033\020\032\303
\330\320\234\235\145\313\320\053\047\061\003\036\066\341\075\166

\165\014\377\105\046\271\335\121\274\043\307\137\330\330\207\020
\100\022\015\075\070\067\347\104\074\030\300\123\011\144\217\377
\325\232\246\174\160\056\163\125\041\350\337\377\203\271\035\076
\062\036\326\246\175\054\361\146\351\134\035\247\243\316\136\045
\062\053\343\225\254\052\007\316\264\050\170\206\074\055\246\235
\115\322\164\060\335\144\121\025\333\203\203\121\327\257\375\063
\235\115\146
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Security Communication RootCA3"
Issuer: CN=Security Communication RootCA3,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number:00:e1:7c:37:40:fd:1b:fe:67
Subject: CN=Security Communication RootCA3,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Thu Jun 16 06:17:16 2016
Not Valid After : Mon Jan 18 06:17:16 2038
Fingerprint (SHA-256):
24:A5:5C:2A:B0:51:44:2D:06:17:76:65:41:23:9A:4A:D0:32:D7:C5:51:75:AA:34:FF:DE:2F:BC:4F:5C:52:94
Fingerprint (SHA1): C3:03:C8:22:74:92:E5:61:A2:9C:5F:79:91:2B:1E:44:13:91:30:3A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication RootCA3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\303\003\310\042\164\222\345\141\242\234\137\171\221\053\036\104
\023\221\060\072
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\034\232\026\377\236\134\340\115\212\024\001\364\065\135\051\046
END
CKA_ISSUER
MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\047\060\045\006\003\125\004\003\023
\036\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\122\157\157\164\103\101\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\341\174\067\100\375\033\376\147
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Security Communication ECC RootCA1"
#
Issuer: CN=Security Communication ECC RootCA1,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number:00:d6:5d:9b:b3:78:81:2e:eb
Subject: CN=Security Communication ECC RootCA1,O="SECOM Trust Systems CO.,LTD.",C=JP
#
Not Valid Before: Thu Jun 16 05:15:28 2016
Not Valid After : Mon Jan 18 05:15:28 2038
Fingerprint (SHA-256):
E7:4F:BD:A5:5B:D5:64:C4:73:A3:6B:44:1A:A7:99:C8:A6:8E:07:74:40:E8:28:8B:9F:A1:E5:0E:4B:BA:CA:11
Fingerprint (SHA1): B8:0E:26:A9:BF:D2:B2:3B:C0:EF:46:C9:BA:C7:BB:F6:1D:0D:41:41
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication ECC RootCA1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\053\060\051\006\003\125\004\003\023
\042\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\103\103\040\122\157\157\164
\103\101\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\053\060\051\006\003\125\004\003\023
\042\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\103\103\040\122\157\157\164
\103\101\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\326\135\233\263\170\201\056\353
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\070\060\202\001\276\240\003\002\001\002\002\011\000
\326\135\233\263\170\201\056\353\060\012\006\010\052\206\110\316

\075\004\003\003\060\141\061\013\060\011\006\003\125\004\006\023
\002\112\120\061\045\060\043\006\003\125\004\012\023\034\123\105
\103\117\115\040\124\162\165\163\164\040\123\171\163\164\145\155
\163\040\103\117\056\054\114\124\104\056\061\053\060\051\006\003
\125\004\003\023\042\123\145\143\165\162\151\164\171\040\103\157
\155\155\165\156\151\143\141\164\151\157\156\040\105\103\103\040
\122\157\157\164\103\101\061\060\036\027\015\061\066\060\066\061
\066\060\065\061\065\062\070\132\027\015\063\070\060\061\061\070
\060\065\061\065\062\070\132\060\141\061\013\060\011\006\003\125
\004\006\023\002\112\120\061\045\060\043\006\003\125\004\012\023
\034\123\105\103\117\115\040\124\162\165\163\164\040\123\171\163
\164\145\155\163\040\103\117\056\054\114\124\104\056\061\053\060
\051\006\003\125\004\003\023\042\123\145\143\165\162\151\164\171
\040\103\157\155\155\165\156\151\143\141\164\151\157\156\040\105
\103\103\040\122\157\157\164\103\101\061\060\166\060\020\006\007
\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142
\000\004\244\245\157\140\003\003\303\275\061\364\323\027\234\053
\204\165\254\345\375\075\127\156\327\143\277\346\004\211\222\216
\201\234\343\351\107\156\312\220\022\310\023\340\247\235\367\145
\164\037\154\020\262\350\344\351\357\155\205\062\231\104\261\136
\375\314\166\020\330\133\275\242\306\371\326\102\344\127\166\334
\220\302\065\251\113\210\074\022\107\155\134\377\111\117\032\112
\120\261\243\102\060\100\060\035\006\003\125\035\016\004\026\004
\024\206\034\347\376\055\245\112\213\010\376\050\021\372\276\243
\146\370\140\131\057\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\012\006\010\052\206\110\316\075\004
\003\003\003\150\000\060\145\002\060\025\135\102\075\374\266\356
\367\073\261\066\350\236\366\304\106\050\111\063\320\130\103\052
\143\051\314\115\261\264\172\242\271\015\070\245\135\110\052\375
\313\262\163\135\243\210\010\307\014\002\061\000\300\253\055\016
\155\355\030\242\333\123\351\045\333\125\010\340\120\314\337\104
\141\026\202\253\111\260\262\201\354\163\207\170\264\114\262\142
\033\022\372\026\115\045\113\143\275\036\067\331
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust
 for "Security Communication ECC RootCA1"
Issuer: CN=Security Communication ECC RootCA1,O="SECOM Trust Systems CO.,LTD.",C=JP
Serial Number:00:d6:5d:9b:b3:78:81:2e:eb
Subject: CN=Security Communication ECC RootCA1,O="SECOM Trust Systems CO.,LTD.",C=JP
Not Valid Before: Thu Jun 16 05:15:28 2016
Not Valid After : Mon Jan 18 05:15:28 2038
Fingerprint (SHA-256):

E7:4F:BD:A5:5B:D5:64:C4:73:A3:6B:44:1A:A7:99:C8:A6:8E:07:74:40:E8:28:8B:9F:A1:E5:0E:4B:BA:CA:11
Fingerprint (SHA1): B8:0E:26:A9:BF:D2:B2:3B:C0:EF:46:C9:BA:C7:BB:F6:1D:0D:41:41
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Security Communication ECC RootCA1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\270\016\046\251\277\322\262\073\300\357\106\311\272\307\273\366
\035\015\101\101
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\176\103\260\222\150\354\005\103\114\230\253\135\065\056\176\206
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\053\060\051\006\003\125\004\003\023
\042\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\103\103\040\122\157\157\164
\103\101\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\011\000\326\135\233\263\170\201\056\353
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "BJCA Global Root CA1"
#
Issuer: CN=BJCA Global Root CA1,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Serial Number:55:6f:65:e3:b4:d9:90:6a:1b:09:d1:6c:3e:c0:6c:20
Subject: CN=BJCA Global Root CA1,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Not Valid Before: Thu Dec 19 03:16:17 2019
Not Valid
 After : Mon Dec 12 03:16:17 2044
Fingerprint (SHA-256):
F3:89:6F:88:FE:7C:0A:88:27:66:A7:FA:6A:D2:74:9F:B5:7A:7F:3E:98:FB:76:9C:1F:A7:B0:9C:2C:44:D5:AE
Fingerprint (SHA1): D5:EC:8D:7B:4C:BA:79:F4:E7:E8:CB:9D:6B:AE:77:83:10:03:21:6A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "BJCA Global Root CA1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116
\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157
\157\164\040\103\101\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116
\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157
\157\164\040\103\101\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\125\157\145\343\264\331\220\152\033\011\321\154\076\300
\154\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\164\060\202\003\134\240\003\002\001\002\002\020\125
\157\145\343\264\331\220\152\033\011\321\154\076\300\154\040\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\124
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\046\060
\044\006\003\125\004\012\014\035\102\105\111\112\111\116\107\040
\103\105\122\124\111\106\111\103\101\124\105\040\101\125\124\110
\117\122\111\124\131\061\035\060\033\006\003\125\004\003\014\024
\102\112\103\101\040\107\154\157\142\141\154\040\122\157\157\164
\040\103\101\061\060\036\027\015\061\071\061\062\061\071\060\063
\061\066\061\067\132\027\015\064\064\061\062\061\062\060\063\061
\066\061\067\132\060\124\061\013\060\011\006\003\125\004\006\023
\002\103\116\061\046\060\044\006\003\125\004\012\014\035\102\105
\111\112\111\116\107\040\103\105\122\124\111\106\111\103\101\124
\105\040\101\125\124\110\117\122\111\124\131\061\035\060\033\006
\003\125\004\003\014\024\102\112\103\101\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\061\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\361\146\010\275\331
\305\025\141\313\204\004\101\245\151\067\167\035\301\260\173\372
\303\167\110\220\023\162\144\321\270\174\220\065\235\030\171\210
\343\227\001\074\107\201\362\016\242\230\015\236\077\067\340\031
\262\220\362\106\034\222\261\072\141\316\372\267\106\236\003\206
\327\063\156\355\367\105\214\166\067\336\156\226\221\367\327\176

\053\207\027\325\213\065\356\204\221\162\127\334\140\303\303\271
\347\307\147\044\043\117\143\012\143\366\146\175\113\125\247\077
\170\144\111\151\022\227\340\114\015\323\011\240\062\060\072\372
\237\300\362\234\305\022\052\056\034\265\004\063\332\244\070\021
\152\336\306\030\366\107\072\042\101\207\042\374\304\211\050\124
\330\214\245\060\012\370\027\026\312\254\067\375\171\247\221\027
\170\070\231\255\130\355\262\336\314\211\175\003\234\263\211\145
\347\343\073\261\042\206\217\006\155\170\007\375\221\022\177\260
\153\034\211\015\371\270\313\164\133\007\302\310\364\065\321\144
\143\172\351\156\232\050\326\060\275\346\033\335\025\257\204\352
\234\307\312\365\016\352\362\135\051\207\217\151\163\071\276\056
\044\157\105\041\254\305\324\151\045\006\203\255\172\110\205\023
\054\015\006\270\154\171\126\374\243\147\062\201\365\127\245\312
\127\102\151\351\134\044\141\357\342\060\030\116\104\230\125\157
\172\302\223\330\031\266\336\174\107\212\021\116\111\107\333\050
\224\002\013\224\112\054\371\022\320\117\350\061\176\154\172\277
\246\077\233\071\075\002\026\243\030\263\147\254\133\077\054\203
\053\147\071\201\134\271\176\224\325\144\335\236\217\156\256\350
\174\133\264\327\152\107\110\327\176\263\324\055\216\126\166\116
\317\151\361\156\104\154\324\044\352\215\044\241\030\277\275\127
\376\251\231\065\265\333\020\167\270\075\110\272\326\301\347\361
\043\076\327\337\205\235\047\074\324\100\275\012\014\275\365\347
\215\045\326\201\164\207\106\324\051\165\242\102\154\367\163\211
\347\175\277\172\112\037\323\042\311\025\125\317\337\157\174\125
\320\244\213\007\021\067\137\203\246\046\127\246\001\133\176\376
\130\150\007\251\351\172\331\271\350\377\120\037\253\302\264\300
\316\350\352\375\017\275\215\115\270\274\161\002\003\001\000\001
\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024\305
\357\355\314\330\215\041\306\110\344\343\327\024\056\247\026\223
\345\230\001\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\122\202\254\041\064\037\043\362
\242\330\371\270\257\067\066\040\211\321\067\003\326\151\237\270
\141\020\272\242\061\230\131\107\350\321\015\045\036\025\101\014
\340\052\125\325\127\122\313\370\344\307\151\243\035\115\161\002
\136\137\041\105\140\110\134\011\216\111\020\301\004\334\251\142
\153\002\360\103\310\116\235\070\111\164\311\062\160\124\155\301
\107\374\216\264\066\236\324\234\275\335\040\326\123\311\030\251
\265\126\271\166\213\225\147\146\356\275\230\376\256\357\276\156
\373\140\366\375\131\306\052\033\077\043\112\224\044\060\047\310
\211\274\353\104\044\232\313\075\276\117\325\172\316\216\027\313
\142\301\331\336\036\016\172\377\103\206\064\122\274\141\077\074
\137\273\331\166\264\123\274\227\263\376\212\114\022\056\053\363
\327\316\341\242\377\335\173\160\373\073\241\115\244\143\002\375
\070\227\225\077\005\160\240\153\337\142\201\103\213\264\131\015
\112\214\124\234\305\273\201\237\315\175\245\357\013\045\036\072
\040\333\034\374\037\230\147\002\012\324\163\104\023\333\121\204

\032\125\003\126\340\000\176\164\006\377\070\304\162\035\323\250
\077\150\061\135\323\011\307\056\214\133\143\340\350\334\036\322
\354\141\036\362\336\345\357\366\231\166\140\055\036\224\162\161
\306\013\052\062\307\222\116\325\106\327\035\371\251\031\012\310
\372\225\316\155\043\230\252\013\070\255\232\126\015\157\215\361
\061\000\210\301\027\234\315\031\066\065\376\125\123\240\340\074
\063\137\226\136\342\062\351\337\063\273\006\112\251\330\204\163
\316\167\322\306\254\161\341\134\243\035\014\273\012\337\137\342
\243\161\330\332\067\132\240\170\053\364\324\175\353\166\355\362
\141\160\245\145\232\323\211\064\030\253\373\162\076\327\264\075
\171\134\330\037\241\063\173\331\202\120\014\223\027\252\154\334
\302\202\273\002\127\066\257\230\047\052\071\120\341\260\211\365
\045\227\176\107\150\020\264\354\163\312\263\227\321\044\334\366
\142\240\050\323\265\243\270\144\267\210\142\102\317\235\123\315
\231\276\144\150\217\117\036\022\110\367\322\051\303\230\050\312
\362\062\013\223\214\051\117\074\140\062\315\005\226\141\354\362
\257\376\263\160\054\056\246\362
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "BJCA Global Root CA1"
Issuer: CN=BJCA Global Root CA1,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Serial Number:55:6f:65:e3:b4:d9:90:6a:1b:09:d1:6c:3e:c0:6c:20
Subject: CN=BJCA Global Root CA1,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Not Valid Before: Thu Dec 19 03:16:17 2019
Not Valid After : Mon Dec 12 03:16:17 2044
Fingerprint (SHA-256):
F3:89:6F:88:FE:7C:0A:88:27:66:A7:FA:6A:D2:74:9F:B5:7A:7F:3E:98:FB:76:9C:1F:A7:B0:9C:2C:44:D5:AE
Fingerprint (SHA1): D5:EC:8D:7B:4C:BA:79:F4:E7:E8:CB:9D:6B:AE:77:83:10:03:21:6A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "BJCA Global Root CA1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\325\354\215\173\114\272\171\364\347\350\313\235\153\256\167\203
\020\003\041\152
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\102\062\231\166\103\063\066\044\065\007\202\233\050\371\320\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116

\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157
\157\164\040\103\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\125\157\145\343\264\331\220\152\033\011\321\154\076\300
\154\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "BJCA Global Root CA2"
#
Issuer: CN=BJCA Global Root CA2,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Serial Number:2c:17:08:7d:64:2a:c0:fe:85:18:59:06:cf:b4:4a:eb
#
 Subject: CN=BJCA Global Root CA2,O=BEIJING CERTIFICATE AUTHORITY,C=CN
Not Valid Before: Thu Dec 19 03:18:21 2019
Not Valid After : Mon Dec 12 03:18:21 2044
Fingerprint (SHA-256):
57:4D:F6:93:1E:27:80:39:66:7B:72:0A:FD:C1:60:0F:C2:7E:B6:6D:D3:09:29:79:FB:73:85:64:87:21:28:82
Fingerprint (SHA1): F4:27:86:EB:6E:B8:6D:88:31:67:02:FB:BA:66:A4:53:00:AA:7A:A6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "BJCA Global Root CA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116
\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157
\157\164\040\103\101\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116
\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157

\157\164\040\103\101\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\054\027\010\175\144\052\300\376\205\030\131\006\317\264
\112\353
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\045\060\202\001\253\240\003\002\001\002\002\020\054
\027\010\175\144\052\300\376\205\030\131\006\317\264\112\353\060
\012\006\010\052\206\110\316\075\004\003\003\060\124\061\013\060
\011\006\003\125\004\006\023\002\103\116\061\046\060\044\006\003
\125\004\012\014\035\102\105\111\112\111\116\107\040\103\105\122
\124\111\106\111\103\101\124\105\040\101\125\124\110\117\122\111
\124\131\061\035\060\033\006\003\125\004\003\014\024\102\112\103
\101\040\107\154\157\142\141\154\040\122\157\157\164\040\103\101
\062\060\036\027\015\061\071\061\062\061\071\060\063\061\070\062
\061\132\027\015\064\064\061\062\061\062\060\063\061\070\062\061
\132\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116
\061\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111
\116\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101
\125\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004
\003\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122
\157\157\164\040\103\101\062\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\235
\313\200\221\215\123\147\265\271\120\261\003\370\345\111\037\101
\042\011\260\121\122\130\326\053\064\217\305\022\106\024\305\213
\057\054\204\377\054\156\250\325\361\011\343\003\041\024\304\103
\075\174\301\054\304\113\152\112\315\351\207\340\175\366\042\276
\372\112\121\270\060\212\375\341\336\030\022\012\366\107\267\347
\027\277\047\212\324\101\114\226\074\140\226\301\375\025\034\243
\102\060\100\060\035\006\003\125\035\016\004\026\004\024\322\112
\261\121\177\006\360\321\202\037\116\156\137\253\203\374\110\324
\260\221\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003
\150\000\060\145\002\060\032\274\133\327\376\251\322\124\016\112
\135\322\155\261\100\334\364\103\325\322\112\231\031\022\126\200
\367\203\064\341\065\116\110\155\004\017\127\061\060\060\055\261
\252\235\003\070\333\006\002\061\000\313\314\207\123\313\172\337
\040\121\163\220\300\250\133\141\320\305\120\071\375\205\376\301
\343\170\370\246\326\113\275\233\207\217\017\345\326\123\226\253
\074\310\100\332\141\367\123\243\367
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Trust for "BJCA Global Root CA2"
# Issuer: CN=BJCA Global Root CA2,O=BEIJING CERTIFICATE
 AUTHORITY,C=CN
# Serial Number:2c:17:08:7d:64:2a:c0:fe:85:18:59:06:cf:b4:4a:eb
# Subject: CN=BJCA Global Root CA2,O=BEIJING CERTIFICATE AUTHORITY,C=CN
# Not Valid Before: Thu Dec 19 03:18:21 2019
# Not Valid After : Mon Dec 12 03:18:21 2044
# Fingerprint (SHA-256):
57:4D:F6:93:1E:27:80:39:66:7B:72:0A:FD:C1:60:0F:C2:7E:B6:6D:D3:09:29:79:FB:73:85:64:87:21:28:82
# Fingerprint (SHA1): F4:27:86:EB:6E:B8:6D:88:31:67:02:FB:BA:66:A4:53:00:AA:7A:A6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "BJCA Global Root CA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\364\047\206\353\156\270\155\210\061\147\002\373\272\146\244\123
\000\252\172\246
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\012\366\107\137\246\024\350\021\001\225\077\115\001\353\074
END
CKA_ISSUER MULTILINE_OCTAL
\060\124\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\046\060\044\006\003\125\004\012\014\035\102\105\111\112\111\116
\107\040\103\105\122\124\111\106\111\103\101\124\105\040\101\125
\124\110\117\122\111\124\131\061\035\060\033\006\003\125\004\003
\014\024\102\112\103\101\040\107\154\157\142\141\154\040\122\157
\157\164\040\103\101\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\054\027\010\175\144\052\300\376\205\030\131\006\317\264
\112\353
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "LAWtrust Root CA2 (4096)"
#
# Issuer: CN=LAWtrust Root CA2 (4096),O=LAWtrust,C=ZA
# Serial Number: 1427795633 (0x551a6eb1)
# Subject: CN=LAWtrust Root CA2 (4096),O=LAWtrust,C=ZA
# Not Valid Before: Tue Feb 14 09:19:38 2023
# Not Valid After : Fri Feb 14 09:49:38 2053
```

Fingerprint (SHA-256):
48:E1:CF:9E:43:B6:88:A5:10:44:16:0F:46:D7:73:B8:27:7F:E4:5B:EA:AD:0E:4D:F9:0D:19:74:38:2F:EA:99
Fingerprint (SHA1): EC:A2:D5:30:A9:AB:2C:7D:0E:75:61:64:4E:0A:E0:16:A1:54:38:7D
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LAWtrust Root CA2 (4096)"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\021\060\017\006\003\125\004\012\023\010\114\101\127\164\162\165
\163\164\061\041\060\037\006\003\125\004\003\023\030\114\101\127
\164\162\165\163\164\040\122\157\157\164\040\103\101\062\040\050
\064\060\071\066\051
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\021\060\017\006\003\125\004\012\023\010\114\101\127\164\162\165
\163\164\061\041\060\037\006\003\125\004\003\023\030\114\101\127
\164\162\165\163\164\040\122\157\157\164\040\103\101\062\040\050
\064\060\071\066\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\125\032\156\261
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\230\060\202\003\200\240\003\002\001\002\002\004\125
\032\156\261\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\103\061\013\060\011\006\003\125\004\006\023\002\132
\101\061\021\060\017\006\003\125\004\012\023\010\114\101\127\164
\162\165\163\164\061\041\060\037\006\003\125\004\003\023\030\114
\101\127\164\162\165\163\164\040\122\157\157\164\040\103\101\062
\040\050\064\060\071\066\051\060\040\027\015\062\063\060\062\061
\064\060\071\061\071\063\070\132\030\017\062\060\065\063\060\062
\061\064\060\071\064\071\063\070\132\060\103\061\013\060\011\006
\003\125\004\006\023\002\132\101\061\021\060\017\006\003\125\004
\012\023\010\114\101\127\164\162\165\163\164\061\041\060\037\006
\003\125\004\003\023\030\114\101\127\164\162\165\163\164\040\122
\157\157\164\040\103\101\062\040\050\064\060\071\066\051\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\314
\027\313\053\103\272\154\371\311\223\212\145\015\022\114\354\047
\024\267\023\171\340\324\325\055\030\126\361\371\352\052\020\026
\116\154\104\307\152\145\106\363\232\211\065\321\207\370\063\211
\057\210\011\032\222\020\221\220\301\153\237\016\156\177\046\212

\023\135\030\254\150\001\015\020\170\145\160\330\216\217\204\132
\227\060\030\320\021\016\112\215\122\020\245\201\053\121\050\365
\143\304\266\354\100\263\001\345\255\167\275\345\070\357\274\215
\263\335\031\240\173\015\215\264\333\152\373\045\063\132\372\221
\257\304\161\105\060\370\210\051\173\313\277\325\272\047\004\216
\335\262\000\367\312\134\231\065\024\352\375\165\006\025\010\273
\312\127\150\373\077\373\264\064\163\143\321\325\343\310\070\132
\151\175\152\172\104\014\015\212\116\355\222\035\020\217\073\042
\054\266\337\355\305\306\360\211\171\124\145\136\137\033\275\217
\175\337\271\267\355\353\344\305\007\321\147\074\225\073\221\376
\102\172\122\100\200\004\322\071\127\113\364\222\175\377\233\357
\345\235\311\011\262\221\022\070\246\051\010\073\256\353\312\314
\355\115\347\116\041\001\007\374\157\062\316\151\214\204\122\306
\167\352\047\060\012\336\245\257\060\053\150\037\254\324\354\041
\255\042\111\166\316\017\302\362\007\052\371\152\022\203\232\073
\004\256\031\172\376\241\206\044\372\101\136\045\174\100\254\047
\266\343\051\066\157\065\342\127\320\031\130\337\377\144\366\303
\001\111\166\333\053\276\274\271\117\024\012\325\033\130\041\366
\034\056\000\174\370\224\265\313\067\032\024\344\062\271\026\324
\140\354\005\252\137\062\372\152\043\022\254\324\020\273\322\242
\202\264\113\016\213\160\047\252\326\007\301\147\210\372\204\303
\010\311\212\204\310\322\067\162\201\017\215\026\112\344\327\065
\121\245\070\017\214\204\113\225\066\300\365\327\235\340\135\217
\253\221\356\000\010\271\235\122\037\354\370\231\273\171\126\261
\111\332\322\345\330\141\213\133\257\360\253\067\305\173\032\216
\206\276\176\305\173\025\036\141\150\350\013\207\213\163\111\241
\027\163\176\051\170\216\312\340\101\057\165\163\164\242\227\072
\177\367\056\164\011\270\114\140\213\106\066\031\020\055\235\002
\003\001\000\001\243\201\221\060\201\216\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\053\006\003\125
\035\020\004\044\060\042\200\017\062\060\062\063\060\062\061\064
\060\071\061\071\063\070\132\201\017\062\060\065\063\060\062\061
\064\060\071\064\071\063\070\132\060\037\006\003\125\035\043\004
\030\060\026\200\024\327\326\126\142\134\077\027\201\346\163\104
\051\365\121\005\357\013\140\067\254\060\035\006\003\125\035\016
\004\026\004\024\327\326\126\142\134\077\027\201\346\163\104\051
\365\121\005\357\013\140\067\254\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\111\234\051\376
\075\354\236\105\177\253\076\074\376\043\157\067\076\167\247\123
\377\170\237\374\111\104\200\127\146\234\156\332\171\377\315\105
\255\114\223\277\265\131\306\351\020\267\345\370\214\373\207\305
\036\213\330\263\077\002\226\012\273\212\216\357\327\264\300\203
\040\070\227\131\105\144\374\366\167\023\362\011\327\241\310\070
\164\010\352\371\110\114\372\037\004\234\264\377\354\156\126\066
\162\223\154\225\076\054\137\336\017\013\253\311\314\025\076\026
\217\146\374\262\020\270\241\321\264\336\300\143\031\314\357\123
\252\165\066\042\213\045\037\277\233\310\327\301\137\354\246\067

\011\252\173\142\274\366\042\055\361\326\130\335\214\273\122\364
\013\247\166\251\172\173\032\215\334\255\232\201\142\056\206\005
\220\162\107\057\241\311\147\204\260\015\154\260\270\233\026\267
\320\231\024\057\234\022\233\043\250\215\246\103\036\351\345\055
\345\170\247\037\144\224\144\266\167\262\250\134\373\011\253\051
\353\036\155\165\321\366\320\305\245\303\035\237\036\363\032\055
\262\310\037\345\050\012\156\363\137\375\332\346\043\241\166\220
\134\113\230\001\202\054\356\107\055\002\032\137\177\064\305\151
\265\162\255\076\363\317\236\155\370\051\350\021\047\053\340\131
\013\033\141\353\112\312\151\245\244\325\315\121\033\224\216\171
\315\337\366\256\164\135\261\054\033\206\123\376\321\060\006\101
\064\007\142\202\114\364\176\307\207\164\016\260\041\036\011\040
\200\301\263\025\075\106\155\323\361\006\222\077\357\240\225\212
\034\156\167\061\266\353\170\051\014\173\356\202\245\117\176\244
\051\136\236\252\055\370\216\300\363\374\015\006\205\233\116\334
\367\342\011\174\320\024\121\036\172\263\043\257\372\321\141\052
\145\265\001\331\270\343\007\312\044\166\322\360\112\276\357\206
\004\200\102\025\160\021\150\176\327\307\273\376\347\116\233\234
\225\245\034\112\244\311\320\011\214\252\316\110\322\036\222\227
\327\021\351\355\146\314\067\334\365\327\033\164\233\246\352\102
\254\135\062\340\130\364\201\107\377\322\022\342\176\034\334\111
\166\226\303\035\237\113\312\134\052\067\133\075\212\321\070\233
\041\332\343\277\105\103\323\340\130\167\037\050
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "LAWtrust
 Root CA2 (4096)"
Issuer: CN=LAWtrust Root CA2 (4096),O=LAWtrust,C=ZA
Serial Number: 1427795633 (0x551a6eb1)
Subject: CN=LAWtrust Root CA2 (4096),O=LAWtrust,C=ZA
Not Valid Before: Tue Feb 14 09:19:38 2023
Not Valid After : Fri Feb 14 09:49:38 2053
Fingerprint (SHA-256):
48:E1:CF:9E:43:B6:88:A5:10:44:16:0F:46:D7:73:B8:27:7F:E4:5B:EA:AD:0E:4D:F9:0D:19:74:38:2F:EA:99
Fingerprint (SHA1): EC:A2:D5:30:A9:AB:2C:7D:0E:75:61:64:4E:0A:E0:16:A1:54:38:7D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LAWtrust Root CA2 (4096)"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\242\325\060\251\253\054\175\016\165\141\144\116\012\340\026
\241\124\070\175
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\257\035\306\323\105\305\353\365\246\141\043\060\075\056\021\261
END
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\021\060\017\006\003\125\004\012\023\010\114\101\127\164\162\165
\163\164\061\041\060\037\006\003\125\004\003\023\030\114\101\127
\164\162\165\163\164\040\122\157\157\164\040\103\101\062\040\050
\064\060\071\066\051
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\125\032\156\261
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Sectigo Public Email Protection Root E46"
#
Issuer: CN=Sectigo Public Email Protection Root E46,O=Sectigo Limited,C=GB
Serial Number:6e:f5:d3:a7:41:8e:a0:59:40:a7:30:6b:d2:40:65:56
Subject: CN=Sectigo Public Email Protection Root E46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
22:D9:59:92:34:D6:0F:1D:4B:C7:C7:E9:6F:43:FA:55:5B:07:30:1F:D4:75:17:50:89:DA:FB:8C:25:E4:77:B3
Fingerprint (SHA1): 3A:C5:C3:78:34:5B:E1:82:92:46:ED:17:86:B3:93:91:7B:51:F2:14
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Email Protection Root E46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\105\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061

\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\156\365\323\247\101\216\240\131\100\247\060\153\322\100
\145\126
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\061\060\202\001\267\240\003\002\001\002\002\020\156
\365\323\247\101\216\240\131\100\247\060\153\322\100\145\126\060
\012\006\010\052\206\110\316\075\004\003\003\060\132\061\013\060
\011\006\003\125\004\006\023\002\107\102\061\030\060\026\006\003
\125\004\012\023\017\123\145\143\164\151\147\157\040\114\151\155
\151\164\145\144\061\061\060\057\006\003\125\004\003\023\050\123
\145\143\164\151\147\157\040\120\165\142\154\151\143\040\105\155
\141\151\154\040\120\162\157\164\145\143\164\151\157\156\040\122
\157\157\164\040\105\064\066\060\036\027\015\062\061\060\063\062
\062\060\060\060\060\060\060\132\027\015\064\066\060\063\062\061
\062\063\065\071\065\071\132\060\132\061\013\060\011\006\003\125
\004\006\023\002\107\102\061\030\060\026\006\003\125\004\012\023
\017\123\145\143\164\151\147\157\040\114\151\155\151\164\145\144
\061\061\060\057\006\003\125\004\003\023\050\123\145\143\164\151
\147\157\040\120\165\142\154\151\143\040\105\155\141\151\154\040
\120\162\157\164\145\143\164\151\157\156\040\122\157\157\164\040
\105\064\066\060\166\060\020\006\007\052\206\110\316\075\002\001
\006\005\053\201\004\000\042\003\142\000\004\270\247\122\224\365
\076\005\260\033\366\037\261\323\176\271\344\005\146\124\200\316
\154\245\150\175\344\123\122\333\202\372\304\206\337\103\170\367
\310\255\026\274\077\170\062\313\153\323\111\326\104\345\263\176
\237\173\246\306\054\362\342\266\323\211\260\232\074\113\316\211
\113\306\306\313\072\111\140\017\106\274\155\116\172\234\311\233
\205\173\012\266\260\107\302\210\343\324\321\243\102\060\100\060
\035\006\003\125\035\016\004\026\004\024\055\116\214\247\302\043
\262\127\251\006\153\076\153\053\211\363\303\136\107\316\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145
\002\061\000\222\235\032\131\143\105\130\216\033\026\344\175\172
\154\066\110\060\037\053\162\347\220\063\064\375\044\242\306\006
\214\157\073\062\127\132\370\376\306\111\022\123\232\331\020\262
\231\121\162\002\060\005\045\052\063\041\374\223\346\042\242\314
\160\125\050\065\126\242\007\304\041\204\043\032\114\114\231\120
\231\222\024\313\112\334\126\373\365\323\217\152\054\365\161\072
\370\213\073\003\236

END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Sectigo Public Email Protection Root E46"
Issuer: CN=Sectigo Public Email Protection Root E46,O=Sectigo Limited,C=GB
Serial Number:6e:f5:d3:a7:41:8e:a0:59:40:a7:30:6b:d2:40:65:56
Subject: CN=Sectigo Public Email Protection Root E46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not
Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
22:D9:59:92:34:D6:0F:1D:4B:C7:C7:E9:6F:43:FA:55:5B:07:30:1F:D4:75:17:50:89:DA:FB:8C:25:E4:77:B3
Fingerprint (SHA1): 3A:C5:C3:78:34:5B:E1:82:92:46:ED:17:86:B3:93:91:7B:51:F2:14
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Email Protection Root E46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\072\305\303\170\064\133\341\202\222\106\355\027\206\263\223\221
\173\121\362\024
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\271\032\257\054\211\226\100\140\047\006\073\241\177\335\211\323
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\105\064\066
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\156\365\323\247\101\216\240\131\100\247\060\153\322\100
\145\126
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Sectigo Public Email Protection Root R46"

#
Issuer: CN=Sectigo Public Email Protection Root R46,O=Sectigo Limited,C=GB
Serial Number:1d:44:9e:b9:0d:83:91:74:ae:dd:f2:eb:88:b7:a6:a3
Subject: CN=Sectigo Public Email Protection Root R46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
D5:91:7A:77:91:EB:7C:F2:0A:2E:57:EB:98:28:4A:67:B2:8A:57:E8:91:82:DA:53:D5:46:67:8C:9F:DE:2B:4F
Fingerprint (SHA1): D3:7B:8B:0A:E8:42:44:FB:6B:80:38:EE:AE:91:80:26:1A:48:70:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Email Protection Root R46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\122\064\066
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\035\104\236\271\015\203\221\164\256\335\362\353\210\267
\246\243
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\200\060\202\003\150\240\003\002\001\002\002\020\035
\104\236\271\015\203\221\164\256\335\362\353\210\267\246\243\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\132
\061\013\060\011\006\003\125\004\006\023\002\107\102\061\030\060
\026\006\003\125\004\012\023\017\123\145\143\164\151\147\157\040
\114\151\155\151\164\145\144\061\061\060\057\006\003\125\004\003
\023\050\123\145\143\164\151\147\157\040\120\165\142\154\151\143
\040\105\155\141\151\154\040\120\162\157\164\145\143\164\151\157
\156\040\122\157\157\164\040\122\064\066\060\036\027\015\062\061

\060\063\062\062\060\060\060\060\060\060\132\027\015\064\066\060
\063\062\061\062\063\065\071\065\071\132\060\132\061\013\060\011
\006\003\125\004\006\023\002\107\102\061\030\060\026\006\003\125
\004\012\023\017\123\145\143\164\151\147\157\040\114\151\155\151
\164\145\144\061\061\060\057\006\003\125\004\003\023\050\123\145
\143\164\151\147\157\040\120\165\142\154\151\143\040\105\155\141
\151\154\040\120\162\157\164\145\143\164\151\157\156\040\122\157
\157\164\040\122\064\066\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\221\345\033\372\252\155\067\053\165
\307\056\137\024\245\333\054\227\266\054\106\217\151\331\354\226
\055\363\035\132\276\323\035\043\346\150\011\377\112\021\163\032
\256\147\237\166\232\322\347\354\270\331\137\053\371\046\126\121
\257\166\235\251\374\027\357\062\012\320\043\074\272\054\117\107
\203\354\235\005\150\102\136\006\340\325\350\053\150\110\227\262
\372\363\244\161\065\175\064\233\027\213\177\115\015\333\334\117
\005\114\224\142\277\065\372\057\310\247\034\146\331\161\137\345
\346\132\125\312\253\364\270\167\031\105\120\105\116\112\253\333
\236\146\301\031\267\067\102\310\126\245\100\022\371\063\350\070
\105\072\306\204\243\002\216\057\044\260\303\101\205\007\111\234
\317\334\321\362\046\157\355\063\034\063\147\052\105\067\331\205
\145\042\032\261\265\020\122\011\153\003\306\037\160\075\221\304
\175\220\075\355\146\370\220\377\045\340\355\222\242\213\061\051
\255\234\022\146\170\143\235\127\354\373\013\336\216\334\213\313
\072\251\167\364\272\345\354\070\214\213\346\023\146\247\151\130
\303\202\032\032\315\361\237\330\123\222\116\111\175\251\105\347
\361\103\041\132\267\076\100\315\143\211\317\331\277\307\120\013
\341\274\347\210\226\255\236\324\027\332\135\317\340\221\375\246
\020\324\271\003\201\233\151\254\373\204\250\201\065\353\033\353
\150\154\174\140\076\303\337\311\264\256\164\035\110\255\335\156
\021\206\341\052\152\066\026\256\310\316\274\333\130\374\100\223
\100\330\216\123\227\302\254\042\070\345\210\061\263\056\241\357
\354\340\102\015\352\377\223\126\112\006\244\233\114\002\150\144
\217\126\120\301\201\005\375\313\333\305\327\025\362\153\265\166
\303\243\371\062\316\312\265\112\251\033\175\031\334\177\307\152
\176\225\354\266\270\215\375\225\112\234\243\053\155\213\361\160
\345\107\053\000\134\344\271\236\324\370\331\130\051\320\313\340
\050\142\154\256\234\142\342\314\274\066\223\101\365\357\376\106
\142\225\260\127\112\164\054\107\122\051\235\335\242\241\117\102
\302\222\316\055\120\122\136\214\012\241\367\330\235\305\370\375
\066\207\116\127\375\150\241\137\231\203\034\360\265\335\350\222
\323\145\100\125\312\226\205\002\003\001\000\001\243\102\060\100
\060\035\006\003\125\035\016\004\026\004\024\247\327\225\167\353
\112\303\047\315\223\276\067\114\046\204\041\024\175\135\230\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003
\202\002\001\000\064\322\361\025\363\223\001\324\162\213\360\253

\010\037\023\074\163\264\260\253\350\170\331\154\272\232\257\046
\354\020\200\345\015\123\061\335\343\372\214\121\042\044\063\067
\270\030\176\072\372\130\350\064\345\214\340\241\037\011\101\322
\067\077\314\313\011\065\102\210\351\374\021\327\317\102\252\244
\160\266\161\301\123\275\305\164\257\304\042\044\143\317\142\202
\175\311\313\121\301\210\220\155\133\134\276\373\231\250\272\266
\206\260\351\146\013\345\033\153\257\352\053\206\247\337\250\043
\114\226\077\117\127\102\030\025\203\103\361\206\046\267\052\003
\316\013\235\350\245\150\036\214\157\275\205\343\033\121\217\347
\027\057\053\320\326\170\302\055\335\162\210\324\145\236\372\231
\324\176\347\227\012\222\001\232\245\251\204\072\014\052\164\075
\063\030\310\207\367\350\244\365\206\102\071\375\153\165\051\374
\000\006\254\242\245\032\124\216\351\120\111\027\146\257\113\004
\055\233\224\200\245\124\253\214\127\027\104\237\017\326\150\144
\162\264\113\036\001\307\331\233\224\331\203\231\257\022\005\021
\243\230\042\322\362\127\312\044\371\272\070\025\022\110\272\143
\073\374\213\225\170\326\162\007\126\314\315\374\235\034\320\305
\144\073\143\064\317\004\231\212\267\060\171\172\266\362\306\325
\331\124\172\207\013\176\116\367\204\354\024\363\210\026\022\361
\325\256\012\032\011\356\206\255\345\253\375\256\303\051\171\164
\303\001\137\021\233\337\165\231\306\112\367\233\217\154\111\354
\041\057\264\002\131\263\055\320\162\220\272\013\024\164\170\113
\317\301\137\125\162\216\124\053\023\316\372\130\014\323\273\054
\331\251\221\141\370\370\361\266\173\336\274\251\314\222\004\314
\113\153\137\163\200\266\041\355\120\117\327\166\207\156\316\337
\322\267\275\142\241\175\130\142\150\105\122\266\077\336\022\333
\355\004\151\236\166\210\252\001\155\332\206\307\140\033\303\122
\254\067\354\120\161\200\162\052\041\105\012\123\107\074\031\353
\215\322\131\004\336\045\260\353\037\065\157\140\175\327\265\306
\273\013\047\215\340\115\124\345\317\035\046\001\156\073\065\310
\040\022\211\203\360\322\355\130\073\064\235\273\061\365\062\375
\061\363\126\032
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Trust for "Sectigo Public Email Protection Root R46"
Issuer: CN=Sectigo Public Email Protection Root R46,O=Sectigo Limited,C=GB
Serial Number:1d:44:9e:b9:0d:83:91:74:ae:dd:f2:eb:88:b7:a6:a3
Subject: CN=Sectigo Public Email Protection Root R46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
D5:91:7A:77:91:EB:7C:F2:0A:2E:57:EB:98:28:4A:67:B2:8A:57:E8:91:82:DA:53:D5:46:67:8C:9F:DE:2B:4F
Fingerprint (SHA1): D3:7B:8B:0A:E8:42:44:FB:6B:80:38:EE:AE:91:80:26:1A:48:70:66

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Email Protection Root R46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\323\173\213\012\350\102\104\373\153\200\070\356\256\221\200\046
\032\110\160\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\047\005\220\034\246\300\373\242\015\375\337\142\211\335\133
END
CKA_ISSUER
MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\061\060\057\006\003\125
\004\003\023\050\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\105\155\141\151\154\040\120\162\157\164\145\143\164
\151\157\156\040\122\157\157\164\040\122\064\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\035\104\236\271\015\203\221\164\256\335\362\353\210\267
\246\243
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Sectigo Public Server Authentication Root E46"
#
Issuer: CN=Sectigo Public Server Authentication Root E46,O=Sectigo Limited,C=GB
Serial Number:42:f2:cc:da:1b:69:37:44:5f:15:fe:75:28:10:b8:f4
Subject: CN=Sectigo
Public Server Authentication Root E46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
C9:0F:26:F0:FB:1B:40:18:B2:22:27:51:9B:5C:A2:B5:3E:2C:A5:B3:BE:5C:F1:8E:FE:1B:EF:47:38:0C:53:83
Fingerprint (SHA1): EC:8A:39:6C:40:F0:2E:BC:42:75:D4:9F:AB:1C:1A:5B:67:BE:D2:9A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Server Authentication Root E46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\105\064
\066
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\105\064
\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\102\362\314\332\033\151\067\104\137\025\376\165\050\020
\270\364
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\072\060\202\001\301\240\003\002\001\002\002\020\102
\362\314\332\033\151\067\104\137\025\376\165\050\020\270\364\060
\012\006\010\052\206\110\316\075\004\003\003\060\137\061\013\060
\011\006\003\125\004\006\023\002\107\102\061\030\060\026\006\003
\125\004\012\023\017\123\145\143\164\151\147\157\040\114\151\155
\151\164\145\144\061\066\060\064\006\003\125\004\003\023\055\123
\145\143\164\151\147\157\040\120\165\142\154\151\143\040\123\145
\162\166\145\162\040\101\165\164\150\145\156\164\151\143\141\164
\151\157\156\040\122\157\157\164\040\105\064\066\060\036\027\015
\062\061\060\063\062\062\060\060\060\060\060\060\132\027\015\064
\066\060\063\062\061\062\063\065\071\065\071\132\060\137\061\013
\060\011\006\003\125\004\006\023\002\107\102\061\030\060\026\006
\003\125\004\012\023\017\123\145\143\164\151\147\157\040\114\151
\155\151\164\145\144\061\066\060\064\006\003\125\004\003\023\055
\123\145\143\164\151\147\157\040\120\165\142\154\151\143\040\123
\145\162\166\145\162\040\101\165\164\150\145\156\164\151\143\141
\164\151\157\156\040\122\157\157\164\040\105\064\066\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\166\372\231\251\156\040\355\371\327\167\343
\007\073\250\333\075\137\070\350\253\125\246\126\117\326\110\352
\354\177\055\252\303\262\305\171\354\231\141\177\020\171\307\002
\132\371\004\067\365\064\065\053\167\316\177\040\217\122\243\000
\211\354\325\247\242\155\133\343\113\222\223\240\200\365\001\224

\334\360\150\007\036\315\356\376\045\122\265\040\103\034\033\376
\353\031\316\103\243\243\102\060\100\060\035\006\003\125\035\016
\004\026\004\024\321\042\332\114\131\361\113\137\046\070\252\235
\326\356\353\015\303\373\251\141\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\012\006\010\052\206\110
\316\075\004\003\003\003\147\000\060\144\002\060\047\356\244\132
\250\041\273\351\107\227\224\211\245\164\040\155\171\117\310\275
\223\136\130\030\373\055\032\000\152\311\270\075\320\244\117\104
\107\224\001\126\242\370\063\045\014\102\337\252\002\060\035\352
\341\056\210\056\341\371\247\035\002\062\116\362\237\154\125\164
\343\256\256\373\245\032\356\355\322\374\302\003\021\353\105\134
\140\020\075\134\177\231\003\133\155\124\110\001\212\163
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Sectigo Public Server Authentication Root E46"
Issuer: CN=Sectigo Public Server Authentication Root E46,O=Sectigo Limited,C=GB
Serial Number:42:f2:cc:da:1b:69:37:44:5f:15:fe:75:28:10:b8:f4
Subject: CN=Sectigo Public Server Authentication Root E46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
C9:0F:26:F0:FB:1B:40:18:B2:22:27:51:9B:5C:A2:B5:3E:2C:A5:B3:BE:5C:F1:8E:FE:1B:EF:47:38:0C:53:83
Fingerprint (SHA1): EC:8A:39:6C:40:F0:2E:BC:42:75:D4:9F:AB:1C:1A:5B:67:BE:D2:9A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Server Authentication Root E46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\212\071\154\100\360\056\274\102\165\324\237\253\034\032\133
\147\276\322\232
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\050\043\370\262\230\134\067\026\073\076\106\023\116\260\263\001
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156

\164\151\143\141\164\151\157\156\040\122\157\157\164\040\105\064
\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\102\362\314\332\033\151\067\104\137\025\376\165\050\020
\270\364
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Sectigo Public Server Authentication Root R46"
#
Issuer: CN=Sectigo Public Server Authentication Root R46,O=Sectigo Limited,C=GB
Serial
 Number:75:8d:fd:8b:ae:7c:07:00:fa:a9:25:a7:e1:c7:ad:14
Subject: CN=Sectigo Public Server Authentication Root R46,O=Sectigo Limited,C=GB
Not Valid Before: Mon Mar 22 00:00:00 2021
Not Valid After : Wed Mar 21 23:59:59 2046
Fingerprint (SHA-256):
7B:B6:47:A6:2A:EE:AC:88:BF:25:7A:A5:22:D0:1F:FE:A3:95:E0:AB:45:C7:3F:93:F6:56:54:EC:38:F2:5A:06
Fingerprint (SHA1): AD:98:F9:F3:E4:7D:75:3B:65:D4:82:B3:A4:52:17:BB:6E:F5:E4:38
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Server Authentication Root R46"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\122\064
\066
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\122\064

\066
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\165\215\375\213\256\174\007\000\372\251\045\247\341\307
\255\024
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\212\060\202\003\162\240\003\002\001\002\002\020\165
\215\375\213\256\174\007\000\372\251\045\247\341\307\255\024\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\137
\061\013\060\011\006\003\125\004\006\023\002\107\102\061\030\060
\026\006\003\125\004\012\023\017\123\145\143\164\151\147\157\040
\114\151\155\151\164\145\144\061\066\060\064\006\003\125\004\003
\023\055\123\145\143\164\151\147\157\040\120\165\142\154\151\143
\040\123\145\162\166\145\162\040\101\165\164\150\145\156\164\151
\143\141\164\151\157\156\040\122\157\157\164\040\122\064\066\060
\036\027\015\062\061\060\063\062\062\060\060\060\060\060\060\132
\027\015\064\066\060\063\062\061\062\063\065\071\065\071\132\060
\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061\030
\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147\157
\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125\004
\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154\151
\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156\164
\151\143\141\164\151\157\156\040\122\157\157\164\040\122\064\066
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\223\276\325\066\122\165\330\001\043\240\034\107\102\111\356
\143\266\267\041\375\304\225\325\110\053\046\174\024\123\020\332
\171\375\053\267\055\244\324\054\372\352\062\335\111\302\271\275
\017\110\075\173\132\230\124\257\236\135\061\164\117\007\374\120
\041\335\244\317\150\117\033\022\143\155\045\231\114\052\231\363
\110\060\141\372\201\174\036\247\010\112\334\076\053\034\037\030
\114\161\252\065\214\255\370\156\350\073\112\331\345\224\002\326
\211\204\023\252\155\310\117\063\314\120\226\067\222\063\334\137
\210\347\237\124\331\110\360\230\103\326\146\375\237\027\070\103
\305\001\121\013\327\343\043\017\024\135\133\024\347\113\276\335
\364\310\332\003\067\321\326\071\241\041\121\060\203\260\155\327
\060\116\226\133\221\360\160\044\253\277\105\201\144\103\015\275
\041\072\057\074\351\236\015\313\040\265\102\047\314\332\157\233
\356\144\060\220\071\315\223\145\201\041\061\265\043\120\063\067
\042\343\070\355\370\061\060\314\105\376\142\371\321\135\062\171
\102\207\337\152\314\126\031\100\115\316\252\273\371\265\166\111
\224\361\047\370\221\245\203\345\006\263\143\016\200\334\340\022
\125\200\246\073\146\264\071\207\055\310\360\320\321\024\351\344
\015\115\016\366\135\127\162\305\073\034\107\126\235\342\325\373
\201\141\214\314\115\200\220\064\133\267\327\024\165\334\330\004
\110\237\300\301\050\210\264\351\034\312\247\261\361\126\267\173
\111\114\131\345\040\025\250\204\002\051\372\070\224\151\232\111

\006\217\315\037\171\024\027\022\014\203\172\336\037\261\227\356
\371\227\170\050\244\310\104\222\351\175\046\005\246\130\162\233
\171\023\330\021\137\256\305\070\142\064\150\262\206\060\216\370
\220\141\236\062\154\365\007\066\315\242\114\156\354\212\066\355
\362\346\231\025\104\160\303\174\274\234\071\300\264\341\153\367
\203\045\043\127\331\022\200\345\111\360\165\017\357\215\353\034
\233\124\050\264\041\074\374\174\012\377\357\173\153\165\377\213
\035\240\031\005\253\372\370\053\201\102\350\070\272\273\373\252
\375\075\340\363\312\337\116\227\227\051\355\363\030\126\351\245
\226\254\275\303\220\230\262\340\371\242\324\246\107\103\174\155
\317\002\003\001\000\001\243\102\060\100\060\035\006\003\125\035
\016\004\026\004\024\126\163\130\144\225\371\222\032\260\022\052
\004\142\171\241\100\025\210\041\111\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\003\202\002\001\000\057\134
\231\074\374\006\136\214\224\056\160\352\322\062\061\215\264\360
\121\325\274\012\363\144\237\007\136\325\301\163\150\144\172\242
\271\016\350\371\135\205\055\250\067\105\252\050\364\226\005\120
\140\251\111\176\237\342\231\066\051\023\104\107\152\235\125\040
\074\330\233\361\003\062\272\332\100\241\163\352\203\241\267\104
\246\016\231\001\233\344\274\177\276\023\224\176\312\246\036\166
\200\066\075\204\006\213\063\046\145\155\312\176\236\376\037\214
\130\070\173\032\203\261\017\274\027\021\273\346\006\314\143\372
\201\362\201\114\332\013\020\153\241\372\325\050\245\317\006\100
\026\377\173\175\030\136\071\022\244\123\236\176\062\102\020\246
\041\221\251\034\116\027\174\204\274\237\214\321\350\337\346\121
\271\066\107\077\220\271\307\274\002\334\133\034\117\016\110\301
\045\203\234\012\077\236\261\003\063\022\032\047\254\367\042\154
\044\321\001\101\370\130\003\376\045\150\042\037\232\132\074\174
\154\236\165\110\363\201\361\146\147\156\114\202\300\356\272\127
\016\030\357\056\232\367\022\330\240\153\351\005\245\241\351\150
\370\274\114\077\022\036\105\350\122\300\243\277\022\047\171\271
\314\061\074\303\366\072\042\026\003\240\311\217\146\244\133\242
\115\326\201\045\006\351\166\244\000\012\076\313\315\065\233\340
\341\070\313\140\123\206\050\102\101\034\104\127\350\250\255\253
\105\343\045\020\274\333\076\145\101\373\033\246\227\017\353\271
\164\171\371\036\274\035\127\015\107\257\303\057\237\207\106\247
\353\046\132\017\126\143\265\142\140\156\000\373\343\047\021\042
\347\376\231\217\064\365\271\350\303\221\162\275\330\303\036\271
\056\362\221\104\121\320\127\315\014\064\325\110\041\277\333\023
\361\146\045\103\122\322\160\042\066\315\237\304\034\165\040\255
\143\162\143\006\017\016\047\316\322\152\015\274\265\071\032\351
\321\166\172\321\134\344\347\111\111\055\125\067\150\360\032\072
\230\076\124\027\207\124\351\246\047\120\211\173\040\057\077\377
\277\241\213\112\107\230\377\053\173\111\076\303\051\106\140\030
\102\253\063\051\272\300\051\271\023\211\323\210\212\071\101\073
\311\375\246\355\037\364\140\143\337\322\055\125\001\213

```
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "Sectigo Public Server Authentication Root R46"
# Issuer: CN=Sectigo Public Server Authentication Root R46,O=Sectigo Limited,C=GB
# Serial Number:75:8d:fd:8b:ae:7c:07:00:fa:a9:25:a7:e1:c7:ad:14
# Subject: CN=Sectigo Public Server Authentication Root R46,O=Sectigo Limited,C=GB
# Not Valid Before: Mon Mar 22 00:00:00 2021
# Not Valid After : Wed Mar 21 23:59:59 2046
# Fingerprint
 (SHA-256):
7B:B6:47:A6:2A:EE:AC:88:BF:25:7A:A5:22:D0:1F:FE:A3:95:E0:AB:45:C7:3F:93:F6:56:54:EC:38:F2:5A:06
# Fingerprint (SHA1): AD:98:F9:F3:E4:7D:75:3B:65:D4:82:B3:A4:52:17:BB:6E:F5:E4:38
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sectigo Public Server Authentication Root R46"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\255\230\371\363\344\175\165\073\145\324\202\263\244\122\027\273
\156\365\344\070
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\062\020\011\122\000\325\176\154\103\337\025\300\261\026\223\345
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\013\060\011\006\003\125\004\006\023\002\107\102\061
\030\060\026\006\003\125\004\012\023\017\123\145\143\164\151\147
\157\040\114\151\155\151\164\145\144\061\066\060\064\006\003\125
\004\003\023\055\123\145\143\164\151\147\157\040\120\165\142\154
\151\143\040\123\145\162\166\145\162\040\101\165\164\150\145\156
\164\151\143\141\164\151\157\156\040\122\157\157\164\040\122\064
\066
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\165\215\375\213\256\174\007\000\372\251\045\247\341\307
\255\024
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
```

```
# Certificate "SSL.com TLS RSA Root CA 2022"
#
# Issuer: CN=SSL.com TLS RSA Root CA 2022,O=SSL Corporation,C=US
# Serial Number:6f:be:da:ad:73:bd:08:40:e2:8b:4d:be:d4:f7:5b:91
# Subject: CN=SSL.com TLS RSA Root CA 2022,O=SSL Corporation,C=US
# Not Valid Before: Thu Aug 25 16:34:22 2022
# Not Valid After : Sun Aug 19 16:34:21 2046
# Fingerprint (SHA-256):
8F:AF:7D:2E:2C:B4:70:9B:B8:E0:B3:36:66:BF:75:A5:DD:45:B5:DE:48:0F:8E:A8:D4:BF:E6:BE:BC:17:F2:ED
# Fingerprint (SHA1): EC:2C:83:40:72:AF:26:95:10:FF:0E:F2:03:EE:31:70:F6:78:9D:CA
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com TLS RSA Root CA 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\157\276\332\255\163\275\010\100\342\213\115\276\324\367
\133\221
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\211\060\202\003\161\240\003\002\001\002\002\020\157
\276\332\255\163\275\010\100\342\213\115\276\324\367\133\221\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\116
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\045\060\043\006\003\125\004\003
\014\034\123\123\114\056\143\157\155\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\062\060\036
\027\015\062\062\060\070\062\065\061\066\063\064\062\062\132\027
\015\064\066\060\070\061\071\061\066\063\064\062\061\132\060\116
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\030\060
```

\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\045\060\043\006\003\125\004\003
\014\034\123\123\114\056\143\157\155\040\124\114\123\040\122\123
\101\040\122\157\157\164\040\103\101\040\062\060\062\062\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\320
\244\011\162\117\100\210\022\141\076\065\043\236\356\366\164\317
\057\173\130\075\316\074\015\020\050\220\057\227\367\214\110\330
\240\330\045\261\114\260\021\114\027\163\120\320\042\112\143\273
\201\323\051\156\325\265\011\076\046\030\177\262\022\177\223\230
\267\257\360\066\277\362\356\030\236\234\073\122\305\107\031\135
\164\363\144\146\325\135\307\150\264\277\033\034\006\243\274\217
\100\043\266\036\306\204\275\121\304\033\071\301\225\322\051\354
\113\256\173\055\277\071\375\264\142\336\226\173\101\306\234\240
\340\006\162\373\360\007\227\011\071\201\164\257\367\064\131\021
\127\012\302\133\301\044\364\061\163\060\202\306\235\272\002\367
\076\174\104\137\203\015\363\361\335\040\151\026\011\120\342\324
\125\266\340\200\162\166\156\114\107\267\165\125\131\264\123\164
\331\224\306\101\255\130\212\061\146\017\036\242\033\051\100\116
\057\337\173\346\026\054\055\374\277\354\363\264\372\276\030\366
\233\111\324\356\005\156\331\064\363\234\361\354\001\213\321\040
\306\017\240\265\274\027\116\110\173\121\302\374\351\134\151\067
\107\146\263\150\370\025\050\360\271\323\244\025\314\132\117\272
\122\160\243\022\105\335\306\272\116\373\302\320\367\250\122\047
\155\156\171\265\214\374\173\214\301\026\114\356\200\177\276\360
\166\276\101\123\022\063\256\132\070\102\253\327\017\076\101\215
\166\007\062\325\253\211\366\116\147\331\261\102\165\043\156\363
\315\102\262\374\125\365\123\207\027\073\300\063\130\361\122\322
\371\200\244\360\350\360\073\213\070\314\244\306\220\177\017\234
\375\213\321\243\317\332\203\247\151\311\120\066\325\134\005\322
\012\101\164\333\143\021\067\301\245\240\226\113\036\214\026\022
\167\256\224\064\173\036\177\302\146\000\344\252\203\352\212\220
\255\316\066\104\115\321\121\351\274\037\363\152\005\375\300\164
\037\045\031\100\121\156\352\202\121\100\337\233\271\010\052\006
\002\325\043\034\023\326\351\333\333\306\260\172\313\173\047\233
\373\340\325\106\044\355\020\113\143\113\245\005\217\272\270\035
\053\246\372\221\342\222\122\275\354\353\147\227\155\232\055\237
\201\062\005\147\062\373\110\010\077\331\045\270\004\045\057\002
\003\001\000\001\243\143\060\141\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043
\004\030\060\026\200\024\373\056\067\356\343\204\172\047\056\315
\031\065\261\063\174\377\324\104\102\271\060\035\006\003\125\035
\016\004\026\004\024\373\056\067\356\343\204\172\047\056\315\031
\065\261\063\174\377\324\104\102\271\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\206\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\215\211\155
\204\105\030\361\117\263\240\357\150\244\300\035\254\060\274\147
\146\260\232\315\266\253\042\031\146\323\073\101\265\020\235\020

\272\162\156\051\044\040\034\001\231\142\323\226\340\342\373\014
\102\327\341\132\304\226\115\124\315\217\312\103\123\375\052\270
\352\370\145\312\001\302\255\140\150\006\237\071\032\121\331\340
\215\046\371\013\116\245\123\045\172\043\244\034\316\010\033\337
\107\210\262\255\076\340\047\207\213\111\214\037\251\107\130\173
\226\362\210\035\030\256\263\321\246\012\224\372\333\323\345\070
\012\153\171\022\063\373\112\131\067\026\100\016\273\336\365\211
\014\361\154\323\367\121\153\136\065\365\333\300\046\352\022\163
\116\251\221\220\246\027\303\154\057\070\324\243\162\224\103\054
\142\341\116\134\062\075\275\114\175\031\107\242\303\111\347\226
\077\217\232\323\073\344\021\330\213\003\334\366\266\140\125\030
\246\201\121\363\341\250\025\152\353\340\013\360\024\061\326\271
\214\105\072\250\020\330\360\271\047\353\367\313\172\357\005\162
\226\265\304\217\226\163\304\350\126\163\234\274\151\121\143\274
\357\147\034\103\032\137\167\031\037\030\370\034\045\051\371\111
\231\051\266\222\075\242\203\067\261\040\221\250\233\060\351\152
\154\264\043\223\145\004\253\021\363\016\035\123\044\111\123\035
\241\077\235\110\222\021\342\175\015\117\365\327\275\242\130\076
\170\235\036\037\053\376\041\273\032\023\266\261\050\144\375\260
\002\000\307\154\200\242\275\026\120\040\017\162\201\137\314\224
\377\273\231\346\272\220\313\352\371\306\014\302\256\305\031\316
\063\241\153\134\273\176\174\064\127\027\255\360\077\256\315\352
\257\231\354\054\124\176\214\316\056\022\126\110\357\027\073\077
\112\136\140\322\334\164\066\274\245\103\143\313\017\133\243\002
\126\011\236\044\054\341\206\201\214\376\253\027\054\372\310\342
\062\032\072\377\205\010\311\203\237\362\112\110\020\124\167\067
\355\242\274\100\276\344\020\164\367\344\133\273\271\363\211\371
\217\101\330\307\344\120\220\065\200\076\034\270\115\220\323\324
\367\303\260\241\176\204\312\167\222\061\054\270\220\261\202\172
\164\116\233\023\046\264\325\120\146\124\170\256\140
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com TLS RSA Root CA 2022"
Issuer: CN=SSL.com TLS RSA Root CA 2022,O=SSL
Corporation,C=US
Serial Number:6f:be:da:ad:73:bd:08:40:e2:8b:4d:be:d4:f7:5b:91
Subject: CN=SSL.com TLS RSA Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:34:22 2022
Not Valid After : Sun Aug 19 16:34:21 2046
Fingerprint (SHA-256):
8F:AF:7D:2E:2C:B4:70:9B:B8:E0:B3:36:66:BF:75:A5:DD:45:B5:DE:48:0F:8E:A8:D4:BF:E6:BE:BC:17:F2:ED
Fingerprint (SHA1): EC:2C:83:40:72:AF:26:95:10:FF:0E:F2:03:EE:31:70:F6:78:9D:CA
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com TLS RSA Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\054\203\100\162\257\046\225\020\377\016\362\003\356\061\160
\366\170\235\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\330\116\306\131\060\330\376\240\326\172\132\054\054\151\170\332
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\157\276\332\255\163\275\010\100\342\213\115\276\324\367
\133\221
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com TLS ECC Root CA 2022"
#
Issuer: CN=SSL.com TLS ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:14:03:f5:ab:fb:37:8b:17:40:5b:e2:43:b2:a5:d1:c4
Subject: CN=SSL.com TLS ECC Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:33:48 2022
Not Valid After : Sun Aug 19 16:33:47 2046
Fingerprint (SHA-256):
C3:2F:FD:9F:46:F9:36:D1:6C:36:73:99:09:59:43:4B:9A:D6:0A:AF:BB:9E:7C:F3:36:54:F1:44:CC:1B:A1:43
Fingerprint
(SHA1): 9F:5F:D9:1A:54:6D:F5:0C:71:F0:EE:7A:BD:17:49:98:84:73:E2:39
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com TLS ECC Root CA 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157

\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\024\003\365\253\373\067\213\027\100\133\342\103\262\245
\321\304
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\072\060\202\001\300\240\003\002\001\002\002\020\024
\003\365\253\373\067\213\027\100\133\342\103\262\245\321\304\060
\012\006\010\052\206\110\316\075\004\003\003\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\030\060\026\006\003
\125\004\012\014\017\123\123\114\040\103\157\162\160\157\162\141
\164\151\157\156\061\045\060\043\006\003\125\004\003\014\034\123
\123\114\056\143\157\155\040\124\114\123\040\105\103\103\040\122
\157\157\164\040\103\101\040\062\060\062\062\060\036\027\015\062
\062\060\070\062\065\061\066\063\063\064\070\132\027\015\064\066
\060\070\061\071\061\066\063\063\064\067\132\060\116\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\030\060\026\006\003
\125\004\012\014\017\123\123\114\040\103\157\162\160\157\162\141
\164\151\157\156\061\045\060\043\006\003\125\004\003\014\034\123
\123\114\056\143\157\155\040\124\114\123\040\105\103\103\040\122
\157\157\164\040\103\101\040\062\060\062\062\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\105\051\065\163\372\302\270\043\316\024\175\250\261
\115\240\133\066\356\052\054\123\303\140\011\065\262\044\146\046
\151\300\263\225\326\135\222\100\031\016\306\245\023\160\364\357
\022\121\050\135\347\314\275\371\074\205\301\317\224\220\311\053
\316\222\102\130\131\147\375\224\047\020\144\214\117\004\261\115
\111\344\173\117\233\365\347\010\370\003\210\367\247\303\222\113
\031\124\201\243\143\060\141\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043\004
\030\060\026\200\024\211\217\057\243\350\053\240\024\124\173\363
\126\270\046\137\147\070\013\234\320\060\035\006\003\125\035\016
\004\026\004\024\211\217\057\243\350\053\240\024\124\173\363\126
\270\046\137\147\070\013\234\320\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\206\060\012\006\010\052\206\110\316
\075\004\003\003\003\150\000\060\145\002\060\125\343\042\126\351

\327\222\044\130\117\036\224\062\017\014\002\066\302\375\254\164
\062\116\341\373\034\200\210\243\314\373\327\353\053\377\067\175
\360\355\327\236\165\152\065\166\122\105\340\002\061\000\307\215
\157\102\040\217\276\266\115\131\355\167\115\051\304\040\040\105
\144\206\072\120\306\304\255\055\223\365\030\175\162\355\251\317
\304\254\127\066\050\010\145\337\074\171\146\176\240\352
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com TLS ECC Root CA 2022"
Issuer: CN=SSL.com TLS ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:14:03:f5:ab:fb:37:8b:17:40:5b:e2:43:b2:a5:d1:c4
Subject: CN=SSL.com TLS ECC Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:33:48 2022
Not Valid After : Sun Aug 19 16:33:47 2046
Fingerprint (SHA-256):
C3:2F:FD:9F:46:F9:36:D1:6C:36:73:99:09:59:43:4B:9A:D6:0A:AF:BB:9E:7C:F3:36:54:F1:44:CC:1B:A1:43
Fingerprint (SHA1): 9F:5F:D9:1A:54:6D:F5:0C:71:F0:EE:7A:BD:17:49:98:84:73:E2:39
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com TLS ECC Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\237\137\331\032\124\155\365\014\161\360\356\172\275\027\111\230
\204\163\342\071
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\231\327\134\361\121\066\314\351\316\331\031\056\167\161\126\305
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\045\060\043\006\003\125
\004\003\014\034\123\123\114\056\143\157\155\040\124\114\123\040
\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\024\003\365\253\373\067\213\027\100\133\342\103\262\245
\321\304
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Client ECC Root CA 2022"
#
Issuer: CN=SSL.com Client ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:76:f8:48:1e:ae:f0:3c:70:1f:e0:3f:25:54:01:83:d5
Subject: CN=SSL.com Client ECC Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:30:32 2022
Not Valid After : Sun Aug 19 16:30:31 2046
Fingerprint (SHA-256):
AD:7D:D5:8D:03:AE:DB:22:A3:0B:50:84:39:49:20:CE:12:23:0C:2D:80:17:AD:9B:81:AB:04:07:9B:DD:02:6B
Fingerprint (SHA1): 80:7B:1D:9D:65:72:3D:C7:56:F9:EC:C5:00:83:49:F6:F2:AC:F4:86
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Client ECC Root CA 2022"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125
\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\105\103\103\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125
\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\105\103\103\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\370\110\036\256\360\074\160\037\340\077\045\124\001
\203\325
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\100\060\202\001\306\240\003\002\001\002\002\020\166
\370\110\036\256\360\074\160\037\340\077\045\124\001\203\325\060
\012\006\010\052\206\110\316\075\004\003\003\060\121\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\030\060\026\006\003
\125\004\012\014\017\123\123\114\040\103\157\162\160\157\162\141
\164\151\157\156\061\050\060\046\006\003\125\004\003\014\037\123

\123\114\056\143\157\155\040\103\154\151\145\156\164\040\105\103
\103\040\122\157\157\164\040\103\101\040\062\060\062\062\060\036
\027\015\062\062\060\070\062\065\061\066\063\060\063\062\132\027
\015\064\066\060\070\061\071\061\066\063\060\063\061\132\060\121
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\050\060\046\006\003\125\004\003
\014\037\123\123\114\056\143\157\155\040\103\154\151\145\156\164
\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060\062
\062\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\055\123\176\237\213\076\263
\066\272\120\342\314\353\334\272\046\212\323\214\006\077\147\017
\357\365\027\345\324\256\232\106\052\101\001\007\151\347\147\161
\361\302\003\066\306\360\053\122\216\317\024\222\150\244\076\160
\121\022\151\215\170\242\202\312\051\024\300\344\224\042\262\104
\222\140\157\310\004\244\147\325\242\320\363\320\327\352\216\074
\017\272\322\100\107\220\064\356\175\243\143\060\141\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\037
\006\003\125\035\043\004\030\060\026\200\024\267\376\055\142\305
\201\123\315\122\032\057\135\140\240\303\135\373\262\034\034\060
\035\006\003\125\035\016\004\026\004\024\267\376\055\142\305\201
\123\315\122\032\057\135\140\240\303\135\373\262\034\034\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\012
\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145\002
\060\115\007\021\055\021\373\271\046\303\041\335\162\341\027\374
\301\317\024\352\111\316\161\207\216\326\123\334\021\315\135\124
\212\257\331\055\364\214\121\352\274\146\107\342\177\225\203\140
\145\002\061\000\214\041\114\117\273\345\260\120\337\220\142\111
\346\314\221\333\370\077\135\161\221\010\216\117\222\311\177\246
\134\352\023\176\355\155\304\350\303\052\157\134\021\341\245\363
\152\132\232\115
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Client ECC Root CA 2022"
Issuer: CN=SSL.com Client ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:76:f8:48:1e:ae:f0:3c:70:1f:e0:3f:25:54:01:83:d5
Subject: CN=SSL.com Client ECC Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:30:32 2022
Not Valid After : Sun Aug 19 16:30:31 2046
Fingerprint (SHA-256):
AD:7D:D5:8D:03:AE:DB:22:A3:0B:50:84:39:49:20:CE:12:23:0C:2D:80:17:AD:9B:81:AB:04:07:9B:DD:02:6B
Fingerprint (SHA1): 80:7B:1D:9D:65:72:3D:C7:56:F9:EC:C5:00:83:49:F6:F2:AC:F4:86
CKA_CLASS CK_OBJECT_CLASS

CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Client ECC Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\173\035\235\145\162\075\307\126\371\354\305\000\203\111\366
\362\254\364\206
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\063\271\151\231\022\166\125\274\337\257\101\334\042\213\167\200
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125
\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\105\103\103\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\370\110\036\256\360\074\160\037\340\077\045\124\001
\203\325
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "SSL.com Client RSA Root CA 2022"
#
Issuer: CN=SSL.com Client RSA Root CA 2022,O=SSL Corporation,C=US
Serial Number:76:af:ee:88:93:15:45:b6:50:53:9b:80:9c:a4:df:9a
Subject: CN=SSL.com Client RSA Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:31:07 2022
Not Valid After : Sun Aug 19 16:31:06 2046
Fingerprint (SHA-256):
1D:4C:A4:A2:AB:21:D0:09:36:59:80:4F:C0:EB:21:75:A6:17:27:9B:56:A2:47:52:45:C9:51:7A:FE:B5:91:53
Fingerprint (SHA1): AA:59:70:E5:20:32:9F:CB:D0:D5:79:9F:FB:1B:82:1D:FD:1F:79:65
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Client RSA Root CA 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125
\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\122\123\101\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125
\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\122\123\101\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\257\356\210\223\025\105\266\120\123\233\200\234\244
\337\232
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\217\060\202\003\167\240\003\002\001\002\002\020\166
\257\356\210\223\025\105\266\120\123\233\200\234\244\337\232\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\121
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\050\060\046\006\003\125\004\003
\014\037\123\123\114\056\143\157\155\040\103\154\151\145\156\164
\040\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062
\062\060\036\027\015\062\062\060\070\062\065\061\066\063\061\060
\067\132\027\015\064\066\060\070\061\071\061\066\063\061\060\066
\132\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103
\157\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003
\125\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151
\145\156\164\040\122\123\101\040\122\157\157\164\040\103\101\040
\062\060\062\062\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\270\130\333\106\060\373\311\077\343\310\360
\001\063\064\342\332\110\250\030\351\040\156\232\327\001\341\325
\051\217\060\264\043\152\344\313\142\260\276\342\237\040\275\076
\124\240\071\150\307\206\067\146\164\006\006\357\164\053\332\334
\237\204\251\122\057\220\322\356\176\174\373\245\042\255\157\160
\106\147\226\075\051\324\243\273\126\173\024\004\131\301\041\143
\104\036\262\037\022\134\220\207\145\015\210\366\036\210\042\342
\143\124\273\363\066\370\326\177\334\332\377\051\065\251\306\156
\016\151\133\077\330\276\202\207\025\160\135\260\307\134\022\017

\143\246\070\315\317\163\271\303\016\211\046\067\033\077\142\034
\062\151\321\233\331\377\125\220\061\336\261\143\335\317\305\164
\167\374\357\210\041\123\277\000\061\032\046\054\000\060\245\137
\154\343\344\366\000\212\312\230\207\234\164\003\172\213\146\354
\176\375\243\217\065\045\134\170\245\263\244\373\075\155\251\212
\360\154\210\202\213\375\112\320\157\344\327\243\264\216\064\111
\070\276\316\105\345\322\034\312\136\302\067\024\213\315\146\126
\063\067\235\345\153\354\103\222\144\240\102\332\165\157\300\025
\354\371\151\275\064\271\212\173\372\026\373\125\376\122\040\350
\004\004\126\126\145\365\067\104\230\310\212\106\351\267\254\270
\350\276\142\216\124\066\133\367\073\160\277\135\356\055\272\137
\336\102\031\206\360\177\213\353\010\313\330\276\352\016\102\102
\240\066\163\127\027\355\062\352\320\215\350\007\033\233\231\350
\304\232\142\004\016\110\367\074\022\272\367\130\301\232\214\351
\307\260\043\066\126\064\035\313\154\332\272\007\204\035\375\321
\254\237\346\302\211\357\303\271\154\030\263\151\207\127\137\265
\014\070\133\247\041\044\052\073\247\064\221\236\264\124\352\050
\117\323\301\243\213\344\346\053\325\362\235\277\233\141\000\042
\335\326\113\104\037\077\135\126\376\336\234\170\314\231\133\252
\344\275\272\333\103\113\255\114\046\114\243\115\064\212\154\164
\066\023\333\142\374\233\262\005\201\377\256\077\014\315\366\033
\242\364\071\347\312\365\114\134\373\124\167\065\200\132\300\022
\241\023\001\063\147\075\235\201\241\251\365\205\044\130\210\170
\347\364\343\150\125\002\003\001\000\001\243\143\060\141\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\037\006\003\125\035\043\004\030\060\026\200\024\360\070\102\224
\064\251\074\000\177\122\356\071\245\367\113\015\274\152\175\043
\060\035\006\003\125\035\016\004\026\004\024\360\070\102\224\064
\251\074\000\177\122\356\071\245\367\113\015\274\152\175\043\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202
\002\001\000\231\117\333\360\352\326\021\372\052\375\310\253\155
\344\016\163\142\322\102\237\025\376\174\160\122\077\144\207\202
\061\077\105\100\056\341\042\237\006\146\051\374\226\323\055\215
\266\070\307\331\363\047\301\131\051\240\214\366\163\044\017\050
\042\327\116\141\335\023\335\333\237\062\122\223\373\117\314\352
\070\074\230\152\003\253\026\257\041\321\102\256\175\105\053\352
\304\317\212\131\237\202\160\166\072\370\142\046\311\020\227\130
\100\044\244\055\271\057\051\200\047\341\211\153\162\312\111\010
\161\067\123\005\361\200\316\323\102\002\322\374\302\321\224\006
\356\007\342\366\203\342\177\237\347\273\126\303\133\277\335\225
\223\011\036\044\301\317\046\315\255\244\256\302\264\151\347\252
\265\355\067\224\351\335\321\143\205\153\232\172\112\126\166\334
\031\205\050\324\344\306\244\330\270\226\101\167\320\264\131\361
\106\005\207\207\002\037\151\271\202\030\320\103\331\046\332\032
\147\250\326\165\166\352\362\155\016\102\377\210\046\242\156\204
\376\176\142\033\360\306\075\355\300\034\152\307\221\326\270\000
\067\111\233\271\204\005\241\315\156\061\326\104\352\123\213\272

\123\230\035\241\220\212\351\205\370\033\362\223\130\303\310\334
\232\046\117\076\040\317\117\103\363\020\214\177\020\141\172\066
\312\252\013\175\314\237\107\104\131\256\245\225\306\231\123\343
\007\153\075\111\020\260\030\377\135\016\205\103\024\113\347\153
\323\112\265\262\140\141\334\151\111\002\043\135\350\222\161\303
\234\237\105\147\171\036\334\062\206\272\252\125\074\144\157\062
\265\020\100\025\336\162\100\170\340\156\160\273\156\353\011\350
\071\331\254\272\222\165\335\103\312\272\001\225\255\032\201\053
\072\360\343\305\057\014\030\115\020\306\256\300\355\376\005\122
\177\031\005\313\251\257\065\010\014\070\042\344\376\126\345\123
\076\277\344\326\263\331\010\303\075\325\063\062\201\044\305\251
\341\145\021\270\062\063\060\161\030\111\035\032\105\306\232\024
\212\130\071\050\156\363\313\121\271\111\046\144\170\003\307\221
\021\203\251\271\220\064\266\157\252\005\236\205\050\127\231\276
\177\047\006\111\142\115\241\374\011\341\053\106\011\114\024\233
\126\217\105
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "SSL.com Client RSA Root CA 2022"
Issuer: CN=SSL.com Client RSA Root CA 2022,O=SSL Corporation,C=US
Serial Number:76:af:ee:88:93:15:45:b6:50:53:9b:80:9c:a4:df:9a
Subject: CN=SSL.com Client RSA Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:31:07 2022
Not Valid
After : Sun Aug 19 16:31:06 2046
Fingerprint (SHA-256):
1D:4C:A4:A2:AB:21:D0:09:36:59:80:4F:C0:EB:21:75:A6:17:27:9B:56:A2:47:52:45:C9:51:7A:FE:B5:91:53
Fingerprint (SHA1): AA:59:70:E5:20:32:9F:CB:D0:D5:79:9F:FB:1B:82:1D:FD:1F:79:65
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Client RSA Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\252\131\160\345\040\062\237\313\320\325\171\237\373\033\202\035
\375\037\171\145
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\011\215\322\312\256\154\024\276\276\014\224\157\067\027\040\316
END
CKA_ISSUER MULTILINE_OCTAL
\060\121\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\050\060\046\006\003\125

\004\003\014\037\123\123\114\056\143\157\155\040\103\154\151\145
\156\164\040\122\123\101\040\122\157\157\164\040\103\101\040\062
\060\062\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\166\257\356\210\223\025\105\266\120\123\233\200\234\244
\337\232
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot Root CA ECC G2 2020"
#
Issuer: CN=Atos TrustedRoot Root CA ECC G2 2020,O=Atos,C=DE
Serial Number:0b:73:28:11:18:74:30:1c:ef:6f:08:84
Subject: CN=Atos TrustedRoot Root CA ECC G2 2020,O=Atos,C=DE
Not Valid Before: Tue Dec 15 08:39:10 2020
Not Valid After : Mon Dec 10 08:39:09 2040
Fingerprint (SHA-256):
E3:86:55:F4:B0:19:0C:84:D3:B3:89:3D:84:0A:68:7E:19:0A:25:6D:98:05:2F:15:9E:6D:4A:39:F5:89:A6:EB
Fingerprint (SHA1): 61:25:56:DA:62:94:E5:AE:B3:3C:F8:11:BD:B1:DC:F8:A5:D8:B3:E4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
 UTF8 "Atos TrustedRoot Root CA ECC G2 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055
\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\105\103\103\040\107\062\040\062\060\062\060
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055
\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\105\103\103\040\107\062\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\014\013\163\050\021\030\164\060\034\357\157\010\204
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\061\060\202\001\266\240\003\002\001\002\002\014\013
\163\050\021\030\164\060\034\357\157\010\204\060\012\006\010\052
\206\110\316\075\004\003\003\060\113\061\013\060\011\006\003\125
\004\006\023\002\104\105\061\015\060\013\006\003\125\004\012\014
\004\101\164\157\163\061\055\060\053\006\003\125\004\003\014\044
\101\164\157\163\040\124\162\165\163\164\145\144\122\157\157\164
\040\122\157\157\164\040\103\101\040\105\103\103\040\107\062\040
\062\060\062\060\060\036\027\015\062\060\061\062\061\065\060\070
\063\071\061\060\132\027\015\064\060\061\062\061\060\060\070\063
\071\060\071\132\060\113\061\013\060\011\006\003\125\004\006\023
\002\104\105\061\015\060\013\006\003\125\004\012\014\004\101\164
\157\163\061\055\060\053\006\003\125\004\003\014\044\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\105\103\103\040\107\062\040\062\060\062
\060\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\310\134\200\312\116\302\050
\037\127\277\070\346\141\043\374\320\251\133\226\026\026\303\014
\136\025\245\220\011\377\070\050\264\172\036\012\326\123\052\301
\273\220\100\164\067\351\201\350\215\057\150\001\065\174\122\056
\330\364\130\263\021\034\133\331\207\030\223\221\055\354\235\332
\154\236\155\204\110\374\302\211\005\353\230\023\002\001\154\123
\036\016\111\143\130\107\261\257\302\243\143\060\141\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\037
\006\003\125\035\043\004\030\060\026\200\024\133\037\304\161\154
\262\033\237\276\134\037\214\375\263\266\373\263\016\011\207\060
\035\006\003\125\035\016\004\026\004\024\133\037\304\161\154\262
\033\237\276\134\037\214\375\263\266\373\263\016\011\207\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\012
\006\010\052\206\110\316\075\004\003\003\003\151\000\060\146\002
\061\000\354\340\231\375\335\344\124\301\313\037\350\076\050\327
\025\131\112\202\312\123\060\354\353\066\245\271\310\316\223\107
\126\310\141\246\341\155\222\123\225\217\366\343\125\123\360\335
\172\347\002\061\000\260\207\325\033\263\140\374\221\215\200\312
\242\033\121\113\070\124\313\252\036\173\327\345\104\225\026\057
\074\104\170\056\045\272\352\220\344\354\122\356\127\354\003\204
\363\136\333\026\015
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Atos TrustedRoot Root CA ECC G2 2020"
Issuer: CN=Atos TrustedRoot Root CA ECC G2 2020,O=Atos,C=DE
Serial Number:0b:73:28:11:18:74:30:1c:ef:6f:08:84

```
# Subject: CN=Atos TrustedRoot Root CA ECC G2 2020,O=Atos,C=DE
# Not Valid Before: Tue Dec 15 08:39:10 2020
# Not Valid After : Mon Dec 10 08:39:09 2040
# Fingerprint (SHA-256):
E3:86:55:F4:B0:19:0C:84:D3:B3:89:3D:84:0A:68:7E:19:0A:25:6D:98:05:2F:15:9E:6D:4A:39:F5:89:A6:EB
# Fingerprint (SHA1): 61:25:56:DA:62:94:E5:AE:B3:3C:F8:11:BD:B1:DC:F8:A5:D8:B3:E4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA ECC G2 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\045\126\332\142\224\345\256\263\074\370\021\275\261\334\370
\245\330\263\344
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\225\320\233\116\332\275\252\035\225\265\242\302\135\337\210\214
END
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055
\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\105\103\103\040\107\062\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\013\163\050\021\030\164\060\034\357\157\010\204
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
# Certificate "Atos TrustedRoot
 Root CA RSA G2 2020"
#
# Issuer: CN=Atos TrustedRoot Root CA RSA G2 2020,O=Atos,C=DE
# Serial Number:47:ba:29:46:55:3e:16:92:97:b0:ab:40
# Subject: CN=Atos TrustedRoot Root CA RSA G2 2020,O=Atos,C=DE
# Not Valid Before: Tue Dec 15 08:41:23 2020
# Not Valid After : Mon Dec 10 08:41:22 2040
# Fingerprint (SHA-256):
78:83:3A:78:3B:B2:98:6C:25:4B:93:70:D3:C2:0E:5E:BA:8F:A7:84:0C:BF:63:FE:17:29:7A:0B:01:19:68:5E
# Fingerprint (SHA1): 32:D1:27:FA:93:B1:C1:4C:99:E2:4A:40:BC:7F:94:41:1B:5A:AC:A4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
```

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA RSA G2 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055
\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\122\123\101\040\107\062\040\062\060\062\060
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055
\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\122\123\101\040\107\062\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\107\272\051\106\125\076\026\222\227\260\253\100
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\177\060\202\003\147\240\003\002\001\002\002\014\107
\272\051\106\125\076\026\222\227\260\253\100\060\015\006\011\052
\206\110\206\367\015\001\001\014\005\000\060\113\061\013\060\011
\006\003\125\004\006\023\002\104\105\061\015\060\013\006\003\125
\004\012\014\004\101\164\157\163\061\055\060\053\006\003\125\004
\003\014\044\101\164\157\163\040\124\162\165\163\164\145\144\122
\157\157\164\040\122\157\157\164\040\103\101\040\122\123\101\040
\107\062\040\062\060\062\060\060\036\027\015\062\060\061\062\061
\065\060\070\064\061\062\063\132\027\015\064\060\061\062\061\060
\060\070\064\061\062\062\132\060\113\061\013\060\011\006\003\125
\004\006\023\002\104\105\061\015\060\013\006\003\125\004\012\014
\004\101\164\157\163\061\055\060\053\006\003\125\004\003\014\044
\101\164\157\163\040\124\162\165\163\164\145\144\122\157\157\164
\040\122\157\157\164\040\103\101\040\122\123\101\040\107\062\040
\062\060\062\060\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\226\061\205\112\252\017\062\376\171\341\103
\207\234\373\043\267\216\177\015\124\275\307\142\223\167\344\034
\065\004\166\243\003\213\042\356\304\204\335\245\223\156\156\262
\216\011\003\353\121\026\061\027\252\151\025\030\016\147\164\043
\136\352\232\175\265\071\076\075\202\251\153\341\376\251\034\260
\255\132\115\114\170\203\101\213\317\362\035\142\232\230\004\234
\143\351\253\145\376\110\035\044\145\007\107\076\271\221\056\351
\235\233\177\032\065\251\064\260\267\345\160\063\357\112\162\121

\266\007\277\140\077\052\237\235\124\337\363\327\224\111\121\003
\132\100\251\150\335\021\131\134\370\166\246\274\120\122\020\355
\254\354\225\340\324\203\153\111\332\012\117\231\203\336\062\203
\110\203\147\225\262\176\347\201\205\075\315\202\367\312\002\355
\155\210\135\010\215\270\065\277\052\151\060\231\273\113\321\101
\333\105\240\223\231\121\201\220\066\010\252\212\266\350\217\263
\313\356\345\106\015\162\165\365\111\154\341\242\177\057\274\355
\204\246\067\356\336\302\117\071\116\366\236\360\311\321\233\060
\235\111\155\341\332\377\022\020\214\326\345\231\173\005\266\175
\260\011\307\244\370\262\034\071\225\071\063\364\065\316\045\142
\173\260\137\040\363\313\155\370\154\122\024\144\104\217\323\310
\251\166\007\345\257\161\231\055\055\004\045\110\166\257\303\347
\314\103\362\007\274\112\044\044\067\335\372\156\224\011\157\114
\136\001\264\376\124\354\043\226\245\136\335\206\377\351\106\052
\361\350\334\354\245\075\257\157\252\016\017\264\165\372\076\010
\271\046\105\117\146\206\114\274\031\270\341\325\065\356\202\204
\310\323\253\022\347\315\163\063\142\167\364\027\313\275\064\166
\052\005\316\225\345\170\171\113\236\260\215\371\074\130\070\221
\352\136\207\070\300\267\102\375\252\114\207\043\255\004\040\261
\176\166\102\332\273\266\026\272\127\310\216\023\372\165\325\010
\114\257\070\221\252\357\217\372\237\111\056\124\174\012\126\261
\172\372\304\116\057\324\243\372\026\212\320\225\345\227\246\377
\303\374\174\016\107\130\363\177\007\173\022\334\127\077\055\343
\241\115\133\122\114\063\207\231\250\011\173\154\176\016\362\317
\126\102\236\353\005\002\003\001\000\001\243\143\060\141\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\037\006\003\125\035\043\004\030\060\026\200\024\040\045\363\007
\375\247\157\361\226\356\221\020\151\314\232\357\175\310\150\170
\060\035\006\003\125\035\016\004\026\004\024\040\045\363\007\375
\247\157\361\226\356\221\020\151\314\232\357\175\310\150\170\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202
\002\001\000\044\053\116\230\362\035\027\355\331\166\046\266\060
\063\350\151\105\241\121\113\122\330\172\072\060\266\344\022\352
\277\237\114\340\004\244\366\065\306\376\241\060\367\123\205\222
\255\124\005\127\137\222\345\052\336\066\047\236\173\023\107\311
\152\165\257\374\363\067\347\014\365\075\001\163\265\151\121\370
\275\131\321\272\013\370\272\272\144\047\103\263\174\203\225\212
\347\236\023\226\327\157\112\226\101\111\213\016\040\255\026\306
\367\246\207\133\210\022\211\213\211\312\022\322\126\257\042\001
\041\106\351\253\230\077\247\210\336\344\313\052\232\165\031\372
\071\136\011\005\327\003\062\032\270\027\121\010\307\000\100\175
\364\276\370\014\131\364\151\166\156\323\244\130\133\136\046\163
\344\102\125\006\136\170\100\017\323\070\237\357\046\121\160\164
\221\361\167\142\001\350\331\313\353\241\337\071\062\035\273\153
\375\161\376\353\317\245\346\024\375\000\200\023\306\232\000\110
\260\231\005\351\256\200\110\373\011\077\121\024\265\271\347\140
\115\115\312\057\201\041\356\122\014\145\172\334\365\211\111\114

\060\222\064\130\200\062\131\261\015\377\044\141\017\347\012\102
\320\173\274\370\216\047\107\077\160\235\047\331\266\006\075\245
\273\313\136\217\256\016\123\307\234\152\157\073\114\017\243\100
\160\250\232\007\316\324\156\133\007\242\322\342\124\266\275\157
\063\162\143\255\121\230\341\217\166\361\152\007\070\045\376\366
\142\316\137\333\143\302\156\231\357\006\334\271\336\031\032\350
\124\075\175\322\166\165\331\136\076\062\110\247\214\362\236\162
\014\370\270\130\270\027\043\245\024\207\165\130\172\000\201\007
\042\071\152\114\224\240\265\242\333\247\054\301\260\361\243\233
\300\114\367\155\160\352\061\237\361\256\175\076\163\050\331\241
\337\372\223\360\233\260\360\342\315\045\040\165\357\342\175\062
\005\311\233\166\356\313\275\061\036\371\224\230\113\044\130\126
\110\300\336\006\114\275\246\064\135\355\026\141\143\163\373\031
\342\372\133\330\227\165\324\155\236\140\071\136\224\213\002\054
\353\231\316\140\052\156\033\214\247\113\274\375\066\346\230\037
\145\362\177\361\343\217\114\200\106\066\130\266\241\145\313\316
\034\104\165
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Atos TrustedRoot Root CA RSA G2 2020"
Issuer: CN=Atos TrustedRoot Root CA RSA G2 2020,O=Atos,C=DE
Serial Number:47:ba:29:46:55:3e:16:92:97:b0:ab:40
Subject: CN=Atos TrustedRoot Root CA RSA G2 2020,O=Atos,C=DE
Not Valid Before: Tue Dec 15 08:41:23 2020
Not Valid After : Mon Dec 10 08:41:22 2040
Fingerprint (SHA-256):
78:83:3A:78:3B:B2:98:6C:25:4B:93:70:D3:C2:0E:5E:BA:8F:A7:84:0C:BF:63:FE:17:29:7A:0B:01:19:68:5E
Fingerprint (SHA1): 32:D1:27:FA:93:B1:C1:4C:99:E2:4A:40:BC:7F:94:41:1B:5A:AC:A4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA RSA G2 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\062\321\047\372\223\261\301\114\231\342\112\100\274\177\224\101
\033\132\254\244
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\333\077\351\043\365\264\214\335\350\263\076\250\265\137\146\066
END
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061\055

\060\053\006\003\125\004\003\014\044\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\122\123\101\040\107\062\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\014\107\272\051\106\125\076\026\222\227\260\253\100
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot Root CA ECC TLS 2021"
#
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot Root CA ECC TLS 2021
Serial Number:3d:98:3b:a6:66:3d:90:63:f7:7e:26:57:38:04:ef:00
Subject: C=DE,O=Atos,CN=Atos TrustedRoot Root CA ECC TLS 2021
Not Valid Before: Thu Apr 22 09:26:23 2021
Not Valid After : Wed Apr 17 09:26:22 2041
Fingerprint (SHA-256):
B2:FA:E5:3E:14:CC:D7:AB:92:12:06:47:01:AE:27:9C:1D:89:88:FA:CB:77:5F:A8:A0:08:91:4E:66:39:88:A8
Fingerprint (SHA1): 9E:BC:75:10:42:B3:02:F3:81:F4:F7:30:62:D4:8F:C3:A7:51:B2:DD
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA ECC TLS 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\105\103\103\040\124\114\123\040\062\060
\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\105\103\103\040\124\114\123\040\062\060
\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\075\230\073\246\146\075\220\143\367\176\046\127\070\004

\357\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\025\060\202\001\233\240\003\002\001\002\002\020\075
\230\073\246\146\075\220\143\367\176\046\127\070\004\357\000\060
\012\006\010\052\206\110\316\075\004\003\003\060\114\061\056\060
\054\006\003\125\004\003\014\045\101\164\157\163\040\124\162\165
\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103\101
\040\105\103\103\040\124\114\123\040\062\060\062\061\061\015\060
\013\006\003\125\004\012\014\004\101\164\157\163\061\013\060\011
\006\003\125\004\006\023\002\104\105\060\036\027\015\062\061\060
\064\062\062\060\071\062\066\062\063\132\027\015\064\061\060\064
\061\067\060\071\062\066\062\062\132\060\114\061\056\060\054\006
\003\125\004\003\014\045\101\164\157\163\040\124\162\165\163\164
\145\144\122\157\157\164\040\122\157\157\164\040\103\101\040\105
\103\103\040\124\114\123\040\062\060\062\061\061\015\060\013\006
\003\125\004\012\014\004\101\164\157\163\061\013\060\011\006\003
\125\004\006\023\002\104\105\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\226
\206\130\050\067\012\147\320\240\336\044\031\031\341\344\005\007
\037\227\355\350\144\202\271\366\304\161\120\316\212\014\377\327
\265\166\273\241\154\223\154\203\242\150\156\245\331\276\054\210
\225\101\315\135\335\261\312\203\143\203\314\300\276\164\331\340
\235\244\356\112\116\126\340\230\051\101\223\122\020\325\044\070
\002\062\147\361\224\022\157\357\327\305\336\056\375\031\200\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\166
\050\045\326\175\340\146\232\172\011\262\152\073\216\063\327\066
\323\117\242\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\012\006\010\052\206\110\316\075\004\003\003\003
\150\000\060\145\002\060\133\231\051\363\234\061\266\211\153\154
\326\275\167\341\174\347\121\176\270\072\315\243\066\137\174\367
\074\167\076\344\120\255\250\347\322\131\014\046\216\060\073\156
\010\052\302\247\132\310\002\061\000\231\343\014\347\243\303\257
\323\111\056\106\202\043\146\135\311\000\024\022\375\070\364\341
\230\153\167\051\172\333\044\317\145\100\277\322\334\214\021\350
\364\175\177\040\204\251\102\344\050
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Atos TrustedRoot
 Root CA ECC TLS 2021"
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot Root CA ECC TLS 2021
Serial Number:3d:98:3b:a6:66:3d:90:63:f7:7e:26:57:38:04:ef:00
Subject: C=DE,O=Atos,CN=Atos TrustedRoot Root CA ECC TLS 2021

Not Valid Before: Thu Apr 22 09:26:23 2021
Not Valid After : Wed Apr 17 09:26:22 2041
Fingerprint (SHA-256):
B2:FA:E5:3E:14:CC:D7:AB:92:12:06:47:01:AE:27:9C:1D:89:88:FA:CB:77:5F:A8:A0:08:91:4E:66:39:88:A8
Fingerprint (SHA1): 9E:BC:75:10:42:B3:02:F3:81:F4:F7:30:62:D4:8F:C3:A7:51:B2:DD
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA ECC TLS 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\236\274\165\020\102\263\002\363\201\364\367\060\142\324\217\303
\247\121\262\335
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\026\237\255\361\160\255\171\326\355\051\264\321\305\171\160\250
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\105\103\103\040\124\114\123\040\062\060
\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\075\230\073\246\146\075\220\143\367\176\046\127\070\004
\357\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Atos TrustedRoot Root CA RSA TLS 2021"
#
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot Root CA RSA TLS 2021
Serial Number:53:d5:cf:e6:19:93:0b:fb:2b:05:12:d8:c2:2a:a2:a4
Subject: C=DE,O=Atos,CN=Atos TrustedRoot Root CA RSA TLS 2021
Not Valid Before: Thu Apr 22 09:21:10 2021
Not Valid After : Wed Apr 17 09:21:09 2041
Fingerprint (SHA-256):
81:A9:08:8E:A5:9F:B3:64:C5:48:A6:F8:55:59:09:9B:6F:04:05:EF:BF:18:E5:32:4E:C9:F4:57:BA:00:11:2F
#
 Fingerprint (SHA1): 18:52:3B:0D:06:37:E4:D6:3A:DF:23:E4:98:FB:5B:16:FB:86:74:48
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA RSA TLS 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\122\123\101\040\124\114\123\040\062\060
\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\122\123\101\040\124\114\123\040\062\060
\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\123\325\317\346\031\223\013\373\053\005\022\330\302\052
\242\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\144\060\202\003\114\240\003\002\001\002\002\020\123
\325\317\346\031\223\013\373\053\005\022\330\302\052\242\244\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\114
\061\056\060\054\006\003\125\004\003\014\045\101\164\157\163\040
\124\162\165\163\164\145\144\122\157\157\164\040\122\157\157\164
\040\103\101\040\122\123\101\040\124\114\123\040\062\060\062\061
\061\015\060\013\006\003\125\004\012\014\004\101\164\157\163\061
\013\060\011\006\003\125\004\006\023\002\104\105\060\036\027\015
\062\061\060\064\062\062\060\071\062\061\061\060\132\027\015\064
\061\060\064\061\067\060\071\062\061\060\071\132\060\114\061\056
\060\054\006\003\125\004\003\014\045\101\164\157\163\040\124\162
\165\163\164\145\144\122\157\157\164\040\122\157\157\164\040\103
\101\040\122\123\101\040\124\114\123\040\062\060\062\061\061\015
\060\013\006\003\125\004\012\014\004\101\164\157\163\061\013\060
\011\006\003\125\004\006\023\002\104\105\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\266\200\016\304\171
\275\005\214\175\260\243\235\115\042\115\313\360\101\227\115\131
\340\321\376\126\214\227\362\327\275\217\154\267\043\217\137\325
\304\330\101\313\362\002\036\161\345\351\366\136\313\010\052\136
\060\362\055\146\307\204\033\144\127\070\235\165\055\126\306\057
\141\357\226\374\040\106\275\353\324\173\077\077\174\107\070\004
\251\033\252\122\337\023\067\323\025\025\116\275\137\174\257\255

\143\307\171\334\010\173\325\240\345\367\133\165\254\200\125\231
\222\141\233\315\052\027\175\333\217\364\265\152\352\027\112\144
\050\146\025\051\154\002\361\153\325\272\243\063\334\132\147\247
\005\342\277\145\266\026\260\020\355\315\120\063\311\160\120\354
\031\216\260\307\362\164\133\153\104\306\175\226\271\230\010\131
\146\336\051\001\233\364\052\155\323\025\072\220\152\147\361\264
\153\146\331\041\353\312\331\142\174\106\020\134\336\165\111\147
\236\102\371\376\165\251\243\255\377\166\012\147\100\343\305\367
\215\307\205\232\131\236\142\232\152\355\105\207\230\147\262\325
\112\074\327\264\073\000\015\300\217\037\341\100\304\256\154\041
\334\111\176\176\312\262\215\155\266\277\223\057\241\134\076\217
\312\355\200\216\130\341\333\127\317\205\066\070\262\161\244\011
\214\222\211\010\210\110\361\100\143\030\262\133\214\132\343\303
\323\027\252\253\031\243\054\033\344\325\306\342\146\172\327\202
\031\246\073\026\054\057\161\207\137\105\236\225\163\223\302\102
\201\041\023\226\327\235\273\223\150\025\372\235\244\035\214\362
\201\340\130\006\275\311\266\343\366\211\135\211\371\254\104\241
\313\153\372\026\361\307\120\075\044\332\367\303\344\207\325\126
\361\117\220\060\372\105\011\131\332\064\316\340\023\034\004\174
\000\324\233\206\244\100\274\331\334\114\127\176\256\267\063\266
\136\166\341\145\213\146\337\215\312\327\230\257\316\066\230\214
\234\203\231\003\160\363\257\164\355\306\016\066\347\275\354\301
\163\247\224\132\313\222\144\202\246\000\301\160\241\156\054\051
\341\130\127\354\132\174\231\153\045\244\220\072\200\364\040\235
\232\316\307\055\371\262\113\051\225\203\351\065\215\247\111\110
\247\017\114\031\221\320\365\277\020\340\161\002\003\001\000\001
\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\164\111\231\321\377\264\172\150\105\165\303\176\264\334\314\316
\071\063\332\010\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001
\014\005\000\003\202\002\001\000\043\103\123\044\142\134\155\375
\076\302\317\125\000\154\305\126\210\271\016\335\072\342\045\015
\225\112\227\312\200\211\356\052\315\145\370\333\026\340\011\222
\340\030\307\170\230\273\363\354\102\122\373\251\244\202\327\115
\330\212\374\344\116\375\253\220\304\070\165\062\204\237\377\263
\260\053\002\063\066\300\020\220\157\035\234\257\341\151\223\354
\243\105\057\024\237\365\114\052\145\103\162\014\367\303\370\225
\213\024\363\205\040\142\335\124\123\335\054\334\030\225\151\117
\203\107\160\100\063\130\167\022\014\242\353\122\061\036\114\311
\250\316\305\357\303\321\255\340\153\003\000\064\046\264\124\041
\065\227\001\334\137\033\361\174\347\125\372\055\150\167\173\323
\151\314\323\016\153\272\115\166\104\326\302\025\232\046\354\260
\305\365\273\321\172\164\302\154\315\305\265\136\366\114\346\133
\055\201\333\263\267\072\227\236\355\317\106\262\120\075\204\140
\231\161\265\063\265\127\105\346\102\107\165\152\016\260\010\014
\256\275\336\367\273\017\130\075\217\003\061\350\075\202\120\312
\057\136\014\135\264\227\276\040\064\007\364\304\022\341\356\327

\260\331\131\055\151\367\061\004\364\362\371\253\371\023\061\370
\001\167\016\075\102\043\046\314\232\162\147\121\041\172\314\074
\205\250\352\041\152\073\333\132\074\245\064\236\232\300\054\337
\200\234\051\340\337\167\224\321\242\200\102\377\152\114\133\021
\320\365\315\242\276\256\314\121\134\303\325\124\173\014\256\326
\271\006\167\200\342\357\007\032\150\314\131\121\255\176\134\147
\153\271\333\342\007\102\133\270\001\005\130\071\115\344\273\230
\243\261\062\354\331\243\326\157\224\043\377\073\267\051\145\346
\007\351\357\266\031\352\347\302\070\035\062\210\220\074\023\053
\156\314\357\253\167\006\064\167\204\117\162\344\201\204\371\271
\164\064\336\166\117\222\052\123\261\045\071\333\074\377\345\076
\246\016\345\153\236\377\333\354\057\164\203\337\216\264\263\251
\336\024\115\377\061\243\105\163\044\372\225\051\314\022\227\004
\242\070\266\215\260\360\067\374\310\041\177\077\263\044\033\075
\213\156\314\115\260\026\015\226\035\203\037\106\300\233\275\103
\231\347\304\226\056\316\137\311
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

#
Trust for "Atos TrustedRoot Root CA RSA TLS 2021"
Issuer: C=DE,O=Atos,CN=Atos TrustedRoot Root CA RSA TLS 2021
Serial Number:53:d5:cf:e6:19:93:0b:fb:2b:05:12:d8:c2:2a:a2:a4
Subject: C=DE,O=Atos,CN=Atos TrustedRoot Root CA RSA TLS 2021
Not Valid Before: Thu Apr 22 09:21:10 2021
Not Valid After : Wed Apr 17 09:21:09 2041
Fingerprint (SHA-256):
81:A9:08:8E:A5:9F:B3:64:C5:48:A6:F8:55:59:09:9B:6F:04:05:EF:BF:18:E5:32:4E:C9:F4:57:BA:00:11:2F
Fingerprint (SHA1): 18:52:3B:0D:06:37:E4:D6:3A:DF:23:E4:98:FB:5B:16:FB:86:74:48
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Atos TrustedRoot Root CA RSA TLS 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\030\122\073\015\006\067\344\326\072\337\043\344\230\373\133\026
\373\206\164\110
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\324\323\106\270\232\300\234\166\135\236\072\303\271\231\061\322
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\056\060\054\006\003\125\004\003\014\045\101\164\157
\163\040\124\162\165\163\164\145\144\122\157\157\164\040\122\157
\157\164\040\103\101\040\122\123\101\040\124\114\123\040\062\060

\062\061\061\015\060\013\006\003\125\004\012\014\004\101\164\157
\163\061\013\060\011\006\003\125\004\006\023\002\104\105
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\123\325\317\346\031\223\013\373\053\005\022\330\302\052
\242\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "TrustAsia Global Root CA G3"
#
Issuer: CN=TrustAsia Global Root CA G3,O="TrustAsia Technologies, Inc.",C=CN
Serial Number:64:f6:0e:65:77:61:6a:ab:3b:b4:ea:85:84:bb:b1:89:b8:71:93:0f
Subject: CN=TrustAsia Global Root CA G3,O="TrustAsia Technologies, Inc.",C=CN
Not Valid Before: Thu May 20 02:10:19 2021
Not Valid After : Sat May 19 02:10:19
2046
Fingerprint (SHA-256):
E0:D3:22:6A:EB:11:63:C2:E4:8F:F9:BE:3B:50:B4:C6:43:1B:E7:BB:1E:AC:C5:C3:6B:5D:5E:C5:09:03:9A:08
Fingerprint (SHA1): 63:CF:B6:C1:27:2B:56:E4:88:8E:1C:23:9A:B6:2E:81:47:24:C3:C7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustAsia Global Root CA G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\063
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\144\366\016\145\167\141\152\253\073\264\352\205\204\273
\261\211\270\161\223\017
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\245\060\202\003\215\240\003\002\001\002\002\024\144
\366\016\145\167\141\152\253\073\264\352\205\204\273\261\211\270
\161\223\017\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\045\060\043\006\003\125\004\012\014\034\124\162\165\163
\164\101\163\151\141\040\124\145\143\150\156\157\154\157\147\151
\145\163\054\040\111\156\143\056\061\044\060\042\006\003\125\004
\003\014\033\124\162\165\163\164\101\163\151\141\040\107\154\157
\142\141\154\040\122\157\157\164\040\103\101\040\107\063\060\036
\027\015\062\061\060\065\062\060\060\062\061\060\061\071\132\027
\015\064\066\060\065\061\071\060\062\061\060\061\071\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\045\060
\043\006\003\125\004\012\014\034\124\162\165\163\164\101\163\151
\141\040\124\145\143\150\156\157\154\157\147\151\145\163\054\040
\111\156\143\056\061\044\060\042\006\003\125\004\003\014\033\124
\162\165\163\164\101\163\151\141\040\107\154\157\142\141\154\040
\122\157\157\164\040\103\101\040\107\063\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\300\061\202\141\222
\344\224\033\012\052\145\320\276\006\251\207\073\121\022\352\160
\101\256\342\373\164\352\012\215\271\263\114\334\217\267\023\122
\117\124\030\341\054\163\225\221\305\146\073\152\317\254\143\155
\207\123\360\367\361\071\267\240\103\143\260\304\003\135\127\251
\347\104\316\304\241\203\145\366\120\076\261\176\026\270\072\212
\002\320\226\037\000\315\005\041\357\006\155\335\041\234\031\103
\105\241\305\350\200\312\302\255\100\142\027\006\306\252\274\363
\326\346\374\120\176\146\102\037\074\213\246\171\171\206\100\065
\237\040\357\077\353\213\107\037\217\216\305\324\216\266\054\311
\104\004\343\324\103\165\077\325\077\257\034\314\176\106\137\254
\337\144\020\212\357\106\360\220\360\017\055\364\210\013\261\051
\252\257\205\252\111\130\250\277\143\240\070\221\346\263\346\167
\150\304\371\052\031\204\273\016\341\365\257\211\354\245\057\120
\040\164\036\022\101\163\036\044\331\312\316\054\241\131\065\300
\310\035\106\047\141\132\217\371\115\323\162\171\146\036\237\025
\220\041\055\375\355\213\126\160\003\112\111\076\177\151\061\022
\151\307\036\134\312\172\023\213\350\346\365\140\017\314\223\054
\204\177\361\374\152\374\233\107\235\333\255\210\075\363\166\165
\063\327\113\244\310\213\371\365\103\130\117\313\310\003\124\217
\245\205\170\004\032\363\163\362\327\207\035\101\237\347\330\027
\316\032\234\017\112\374\334\104\150\124\150\342\101\074\376\054
\204\206\067\074\315\077\057\242\333\347\367\124\003\137\131\323
\367\221\170\307\213\167\152\026\345\111\205\220\105\162\160\057

\221\135\370\076\145\100\013\031\231\311\046\040\132\150\301\065
\277\117\247\121\361\330\021\053\133\340\232\236\050\073\012\072
\012\037\301\201\345\056\360\246\271\151\245\210\224\346\153\023
\177\321\144\077\075\234\160\106\345\242\205\173\130\204\047\334
\304\200\076\147\232\232\307\232\061\016\060\354\346\027\100\225
\331\105\355\001\226\252\277\014\363\113\321\143\367\023\130\300
\270\363\372\147\335\233\175\155\112\377\062\114\265\045\073\377
\034\147\017\205\042\131\005\221\221\101\167\201\320\205\114\207
\020\161\377\236\103\033\256\225\165\055\201\002\003\001\000\001
\243\143\060\141\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\037\006\003\125\035\043\004\030\060\026
\200\024\100\344\344\362\043\357\070\312\260\256\127\177\362\041
\060\026\064\333\274\222\060\035\006\003\125\035\016\004\026\004
\024\100\344\344\362\043\357\070\312\260\256\127\177\362\041\060
\026\064\333\274\222\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001
\001\014\005\000\003\202\002\001\000\046\073\121\341\115\070\363
\062\030\264\264\136\341\145\136\304\224\117\324\247\141\243\370
\300\317\063\001\002\351\303\252\065\017\361\224\023\167\167\065
\236\055\126\121\104\156\341\306\056\050\036\377\332\354\107\315
\227\104\027\367\340\114\302\341\174\174\062\172\146\310\132\266
\134\123\105\127\132\105\324\005\231\057\056\043\125\356\143\150
\337\323\033\170\247\022\224\006\000\165\015\162\204\351\056\274
\132\152\325\336\057\131\307\243\354\322\207\146\333\267\124\265
\044\253\364\103\170\333\113\004\304\157\335\346\076\146\076\051
\362\113\150\161\042\207\240\370\261\063\143\166\343\015\205\162
\104\042\125\077\034\174\351\374\270\025\350\122\372\252\076\243
\041\071\065\164\211\246\152\302\071\372\170\317\266\254\347\347
\326\126\377\043\222\056\120\013\251\265\007\063\364\070\137\244
\111\246\313\145\160\166\350\012\205\200\113\066\075\063\367\225
\124\165\045\332\254\304\163\202\145\351\122\365\134\375\070\225
\002\152\151\060\305\034\012\127\007\256\042\244\054\371\305\101
\267\270\354\237\117\110\000\371\001\004\125\314\254\371\062\061
\304\165\225\006\240\177\321\215\047\335\263\251\244\162\207\376
\131\213\232\172\164\026\335\026\245\142\051\353\072\226\334\213
\247\150\131\323\353\167\221\071\370\327\313\331\217\137\132\047
\001\175\135\150\031\142\330\310\315\364\267\162\107\276\133\227
\316\362\255\242\231\223\255\224\313\223\366\022\011\225\266\253
\327\073\320\077\021\313\060\026\056\171\200\344\147\201\055\135
\355\160\170\266\140\131\254\341\135\105\143\217\310\337\162\150
\133\352\035\270\001\361\176\373\347\212\263\343\124\240\070\011
\340\074\336\102\362\302\355\056\233\363\037\065\266\066\330\343
\200\241\213\315\231\144\017\302\252\253\261\312\365\157\236\103
\215\204\124\231\263\156\300\022\146\330\160\020\361\006\065\063
\103\250\234\056\272\024\061\316\020\177\034\206\343\217\322\325
\370\167\354\233\253\361\057\143\331\102\137\340\147\201\144\221
\361\227\057\374\156\046\366\063\370\323\265\370\304\142\253\061
\121\045\002\172\370\335\153\145\325\155\115\060\310\145\272\150

\024\145\254\047\013\164\212\362\207
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustAsia Global Root CA G3"
Issuer: CN=TrustAsia Global Root CA G3,O="TrustAsia Technologies, Inc.",C=CN
Serial Number:64:f6:0e:65:77:61:6a:ab:3b:b4:ea:85:84:bb:b1:89:b8:71:93:0f
Subject: CN=TrustAsia Global Root CA G3,O="TrustAsia Technologies, Inc.",C=CN
Not Valid Before: Thu May 20 02:10:19 2021
Not Valid After : Sat May 19 02:10:19 2046
Fingerprint (SHA-256):
E0:D3:22:6A:EB:11:63:C2:E4:8F:F9:BE:3B:50:B4:C6:43:1B:E7:BB:1E:AC:C5:C3:6B:5D:5E:C5:09:03:9A:08
Fingerprint (SHA1): 63:CF:B6:C1:27:2B:56:E4:88:8E:1C:23:9A:B6:2E:81:47:24:C3:C7
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustAsia Global Root CA G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\143\317\266\301\047\053\126\344\210\216\034\043\232\266\056\201
\107\044\303\307
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\060\102\033\267\273\201\165\065\344\026\117\123\322\224\336\004
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\144\366\016\145\167\141\152\253\073\264\352\205\204\273
\261\211\270\161\223\017
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#

```
# Certificate "TrustAsia Global Root CA G4"
#
# Issuer: CN=TrustAsia Global Root CA G4,O="TrustAsia Technologies, Inc.",C=CN
# Serial Number:4f:23:64:b8:8e:97:63:9e:c6:53:81:c1:76:4e:cb:2a:74:15:d6:d7
# Subject: CN=TrustAsia Global Root CA G4,O="TrustAsia Technologies, Inc.",C=CN
# Not Valid Before: Thu May 20 02:10:22 2021
# Not Valid After : Sat May 19 02:10:22 2046
# Fingerprint (SHA-256):
BE:4B:56:CB:50:56:C0:13:6A:52:6D:F4:44:50:8D:AA:36:A0:B5:4F:42:E4:AC:38:F7:2A:F4:70:E4:79:65:4C
# Fingerprint (SHA1): 57:73:A5:61:5D:80:B2:E6:AC:38:82:FC:68:07:31:AC:9F:B5:92:5A
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustAsia Global Root CA G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\064
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\117\043\144\270\216\227\143\236\306\123\201\301\166\116
\313\052\164\025\326\327
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\125\060\202\001\334\240\003\002\001\002\002\024\117
\043\144\270\216\227\143\236\306\123\201\301\166\116\313\052\164
\025\326\327\060\012\006\010\052\206\110\316\075\004\003\003\060
\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061\045
\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101\163
\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163\054
\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014\033
\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141\154
\040\122\157\157\164\040\103\101\040\107\064\060\036\027\015\062
```

\061\060\065\062\060\060\062\061\060\062\062\132\027\015\064\066
\060\065\061\071\060\062\061\060\062\062\132\060\132\061\013\060
\011\006\003\125\004\006\023\002\103\116\061\045\060\043\006\003
\125\004\012\014\034\124\162\165\163\164\101\163\151\141\040\124
\145\143\150\156\157\154\157\147\151\145\163\054\040\111\156\143
\056\061\044\060\042\006\003\125\004\003\014\033\124\162\165\163
\164\101\163\151\141\040\107\154\157\142\141\154\040\122\157\157
\164\040\103\101\040\107\064\060\166\060\020\006\007\052\206\110
\316\075\002\001\006\005\053\201\004\000\042\003\142\000\004\361
\263\315\070\344\045\103\345\336\031\011\273\201\171\242\025\137
\025\143\001\336\302\253\335\263\246\033\147\113\200\203\257\231
\313\254\027\333\053\226\312\174\122\125\342\032\341\075\126\360
\057\026\010\372\025\274\233\273\107\346\077\356\250\341\114\214
\365\323\066\371\070\135\253\160\232\107\015\342\201\101\006\353
\111\371\260\051\335\063\354\120\245\177\171\051\270\040\230\243
\143\060\141\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\037\006\003\125\035\043\004\030\060\026\200
\024\245\273\112\227\316\263\053\177\244\061\336\227\203\131\203
\246\157\161\313\336\060\035\006\003\125\035\016\004\026\004\024
\245\273\112\227\316\263\053\177\244\061\336\227\203\131\203\246
\157\161\313\336\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\012\006\010\052\206\110\316\075\004\003\003
\003\147\000\060\144\002\060\136\362\353\006\314\111\061\237\100
\000\155\267\176\066\360\115\021\117\363\313\211\072\054\170\221
\120\243\133\300\312\165\046\362\277\220\135\013\202\214\140\050
\237\306\160\232\150\344\361\002\060\134\130\016\126\166\317\130
\303\327\020\214\272\216\256\343\274\144\165\107\305\125\220\343
\375\272\125\353\007\304\123\253\067\251\356\041\262\041\133\140
\217\075\062\361\325\043\224\326\130
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "TrustAsia Global Root CA G4"
Issuer: CN=TrustAsia Global Root CA G4,O="TrustAsia Technologies, Inc.",C=CN
Serial Number:4f:23:64:b8:8e:97:63:9e:c6:53:81:c1:76:4e:cb:2a:74:15:d6:d7
Subject: CN=TrustAsia Global Root CA G4,O="TrustAsia Technologies, Inc.",C=CN
Not Valid Before: Thu May 20 02:10:22 2021
Not Valid After : Sat May 19 02:10:22 2046
Fingerprint (SHA-256):
BE:4B:56:CB:50:56:C0:13:6A:52:6D:F4:44:50:8D:AA:36:A0:B5:4F:42:E4:AC:38:F7:2A:F4:70:E4:79:65:4C
#
Fingerprint (SHA1): 57:73:A5:61:5D:80:B2:E6:AC:38:82:FC:68:07:31:AC:9F:B5:92:5A
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TrustAsia Global Root CA G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\127\163\245\141\135\200\262\346\254\070\202\374\150\007\061\254
\237\265\222\132
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\124\335\262\327\137\330\076\355\174\340\013\056\314\355\353\353
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\045\060\043\006\003\125\004\012\014\034\124\162\165\163\164\101
\163\151\141\040\124\145\143\150\156\157\154\157\147\151\145\163
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\014
\033\124\162\165\163\164\101\163\151\141\040\107\154\157\142\141
\154\040\122\157\157\164\040\103\101\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\117\043\144\270\216\227\143\236\306\123\201\301\166\116
\313\052\164\025\326\327
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CommScope Public Trust ECC Root-01"
#
Issuer: CN=CommScope Public Trust ECC Root-01,O=CommScope,C=US
Serial Number:43:70:82:77:cf:4d:5d:34:f1:ca:ae:32:2f:37:f7:f4:7f:75:a0:9e
Subject: CN=CommScope Public Trust ECC Root-01,O=CommScope,C=US
Not Valid Before: Wed Apr 28 17:35:43 2021
Not Valid After : Sat Apr 28 17:35:42 2046
Fingerprint (SHA-256):
11:43:7C:DA:7B:B4:5E:41:36:5F:45:B3:9A:38:98:6B:0D:E0:0D:EF:34:8E:0C:7B:B0:87:36:33:80:0B:C3:8B
Fingerprint (SHA1): 07:86:C0:D8:DD:8E:C0:80:98:06:98:D0:58:7A:EF:DE:A6:CC:A2:5D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust ECC Root-01"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143

\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\160\202\167\317\115\135\064\361\312\256\062\057\067
\367\364\177\165\240\236
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\035\060\202\001\243\240\003\002\001\002\002\024\103
\160\202\167\317\115\135\064\361\312\256\062\057\067\367\364\177
\165\240\236\060\012\006\010\052\206\110\316\075\004\003\003\060
\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143\157
\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157\155
\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124\162
\165\163\164\040\105\103\103\040\122\157\157\164\055\060\061\060
\036\027\015\062\061\060\064\062\070\061\067\063\065\064\063\132
\027\015\064\066\060\064\062\070\061\067\063\065\064\062\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143\157
\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157\155
\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124\162
\165\163\164\040\105\103\103\040\122\157\157\164\055\060\061\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\113\066\351\256\127\136\250\160\327
\320\217\164\142\167\303\136\172\252\345\266\242\361\170\375\002
\176\127\335\221\171\234\154\271\122\210\124\274\057\004\276\270
\315\366\020\321\051\354\265\320\240\303\360\211\160\031\273\121
\145\305\103\234\303\233\143\235\040\203\076\006\013\246\102\104
\205\021\247\112\072\055\351\326\150\057\110\116\123\053\007\077
\115\275\271\254\167\071\127\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\216\007\142\300\120\335\306\031\006
\000\106\164\004\367\363\256\175\165\115\060\060\012\006\010\052
\206\110\316\075\004\003\003\003\150\000\060\145\002\061\000\234
\063\337\101\343\043\250\102\066\046\227\065\134\173\353\333\113
\370\252\213\163\125\025\134\254\170\051\017\272\041\330\304\240
\330\321\003\335\155\321\071\075\304\223\140\322\343\162\262\002

\060\174\305\176\210\323\120\365\036\045\350\372\116\165\346\130
\226\244\065\137\033\145\352\141\232\160\043\265\015\243\233\222
\122\157\151\240\214\215\112\320\356\213\016\313\107\216\320\215
\021
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CommScope Public Trust ECC Root-01"
Issuer: CN=CommScope Public Trust ECC Root-01,O=CommScope,C=US
Serial Number:43:70:82:77:cf:4d:5d:34:f1:ca:ae:32:2f:37:f7:f4:7f:75:a0:9e
Subject: CN=CommScope Public Trust ECC Root-01,O=CommScope,C=US
Not Valid Before: Wed Apr 28 17:35:43 2021
Not Valid After : Sat Apr 28 17:35:42 2046
Fingerprint (SHA-256):
11:43:7C:DA:7B:B4:5E:41:36:5F:45:B3:9A:38:98:6B:0D:E0:0D:EF:34:8E:0C:7B:B0:87:36:33:80:0B:C3:8B
Fingerprint (SHA1): 07:86:C0:D8:DD:8E:C0:80:98:06:98:D0:58:7A:EF:DE:A6:CC:A2:5D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope
 Public Trust ECC Root-01"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\007\206\300\330\335\216\300\200\230\006\230\320\130\172\357\336
\246\314\242\135
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\072\100\247\374\003\214\234\070\171\057\072\242\154\266\012\026
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\103\160\202\167\317\115\135\064\361\312\256\062\057\067
\367\364\177\165\240\236
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
#
# Certificate "CommScope Public Trust
 ECC Root-02"
#
# Issuer: CN=CommScope Public Trust ECC Root-02,O=CommScope,C=US
# Serial Number:28:fd:99:60:41:47:a6:01:3a:ca:14:7b:1f:ef:f9:68:08:83:5d:7d
# Subject: CN=CommScope Public Trust ECC Root-02,O=CommScope,C=US
# Not Valid Before: Wed Apr 28 17:44:54 2021
# Not Valid After : Sat Apr 28 17:44:53 2046
# Fingerprint (SHA-256):
2F:FB:7F:81:3B:BB:B3:C8:9A:B4:E8:16:2D:0F:16:D7:15:09:A8:30:CC:9D:73:C2:62:E5:14:08:75:D1:AD:4A
# Fingerprint (SHA1): 3C:3F:EF:57:0F:FE:65:93:86:9E:A0:FE:B0:F6:ED:8E:D1:13:C7:E5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust ECC Root-02"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\050\375\231\140\101\107\246\001\072\312\024\173\037\357
\371\150\010\203\135\175
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\034\060\202\001\243\240\003\002\001\002\002\024\050
\375\231\140\101\107\246\001\072\312\024\173\037\357\371\150\010
\203\135\175\060\012\006\010\052\206\110\316\075\004\003\003\060
\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143\157
\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157\155
\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124\162
\165\163\164\040\105\103\103\040\122\157\157\164\055\060\062\060
\036\027\015\062\061\060\064\062\070\061\067\064\064\065\064\132
```

\027\015\064\066\060\064\062\070\061\067\064\064\065\063\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061\022
\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143\157
\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157\155
\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124\162
\165\163\164\040\105\103\103\040\122\157\157\164\055\060\062\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\170\060\201\350\143\036\345\353\161
\121\017\367\007\007\312\071\231\174\116\325\017\314\060\060\013
\217\146\223\076\317\275\305\206\275\371\261\267\264\076\264\007
\310\363\226\061\363\355\244\117\370\243\116\215\051\025\130\270
\325\157\177\356\154\042\265\260\257\110\105\012\275\250\111\224
\277\204\103\260\333\204\112\003\043\031\147\152\157\301\156\274
\006\071\067\321\210\042\367\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\346\030\165\377\357\140\336\204\244
\365\106\307\336\112\125\343\062\066\171\365\060\012\006\010\052
\206\110\316\075\004\003\003\003\147\000\060\144\002\060\046\163
\111\172\266\253\346\111\364\175\122\077\324\101\004\256\200\103
\203\145\165\271\205\200\070\073\326\157\344\223\206\253\217\347
\211\310\177\233\176\153\012\022\125\141\252\021\340\171\002\060
\167\350\061\161\254\074\161\003\326\204\046\036\024\270\363\073
\073\336\355\131\374\153\114\060\177\131\316\105\351\163\140\025
\232\114\360\346\136\045\042\025\155\302\207\131\320\262\216\152
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for
"CommScope Public Trust ECC Root-02"
Issuer: CN=CommScope Public Trust ECC Root-02,O=CommScope,C=US
Serial Number:28:fd:99:60:41:47:a6:01:3a:ca:14:7b:1f:ef:f9:68:08:83:5d:7d
Subject: CN=CommScope Public Trust ECC Root-02,O=CommScope,C=US
Not Valid Before: Wed Apr 28 17:44:54 2021
Not Valid After : Sat Apr 28 17:44:53 2046
Fingerprint (SHA-256):
2F:FB:7F:81:3B:BB:B3:C8:9A:B4:E8:16:2D:0F:16:D7:15:09:A8:30:CC:9D:73:C2:62:E5:14:08:75:D1:AD:4A
Fingerprint (SHA1): 3C:3F:EF:57:0F:FE:65:93:86:9E:A0:FE:B0:F6:ED:8E:D1:13:C7:E5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust ECC Root-02"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\074\077\357\127\017\376\145\223\206\236\240\376\260\366\355\216

\321\023\307\345
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\131\260\104\325\145\115\270\134\125\031\222\002\266\321\224\262
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\105\103\103\040\122\157\157\164\055\060\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\050\375\231\140\101\107\246\001\072\312\024\173\037\357
\371\150\010\203\135\175
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CommScope Public Trust RSA Root-01"
#
Issuer: CN=CommScope Public Trust RSA Root-01,O=CommScope,C=US
Serial Number:3e:03:49:81:75:16:74:31:8e:4c:ab:d5:c5:90:29:96:c5:39:10:dd
Subject: CN=CommScope Public Trust RSA Root-01,O=CommScope,C=US
Not Valid Before: Wed Apr 28 16:45:54 2021
Not Valid After : Sat Apr 28 16:45:53 2046
#
Fingerprint (SHA-256):
02:BD:F9:6E:2A:45:DD:9B:F1:8F:C7:E1:DB:DF:21:A0:37:9B:A3:C9:C2:61:03:44:CF:D8:D6:06:FE:C1:ED:81
Fingerprint (SHA1): 6D:0A:5F:F7:B4:23:06:B4:85:B3:B7:97:64:FC:AC:75:F5:33:F2:93
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust RSA Root-01"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\061
END
CKA_ID UTF8 "0"

CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\076\003\111\201\165\026\164\061\216\114\253\325\305\220
\051\226\305\071\020\335
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\154\060\202\003\124\240\003\002\001\002\002\024\076
\003\111\201\165\026\164\061\216\114\253\325\305\220\051\226\305
\071\020\335\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\022\060\020\006\003\125\004\012\014\011\103\157\155\155
\123\143\157\160\145\061\053\060\051\006\003\125\004\003\014\042
\103\157\155\155\123\143\157\160\145\040\120\165\142\154\151\143
\040\124\162\165\163\164\040\122\123\101\040\122\157\157\164\055
\060\061\060\036\027\015\062\061\060\064\062\070\061\066\064\065
\065\064\132\027\015\064\066\060\064\062\070\061\066\064\065\065
\063\132\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\022\060\020\006\003\125\004\012\014\011\103\157\155\155
\123\143\157\160\145\061\053\060\051\006\003\125\004\003\014\042
\103\157\155\155\123\143\157\160\145\040\120\165\142\154\151\143
\040\124\162\165\163\164\040\122\123\101\040\122\157\157\164\055
\060\061\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\260\110\145\243\015\035\102\343\221\155\235\204\244
\141\226\022\302\355\303\332\043\064\031\166\366\352\375\125\132
\366\125\001\123\017\362\314\214\227\117\271\120\313\263\001\104
\126\226\375\233\050\354\173\164\013\347\102\153\125\316\311\141
\262\350\255\100\074\272\271\101\012\005\117\033\046\205\217\103
\265\100\265\205\321\324\161\334\203\101\363\366\105\307\200\242
\204\120\227\106\316\240\014\304\140\126\004\035\007\133\106\245
\016\262\113\244\016\245\174\356\370\324\142\003\271\223\152\212
\024\270\160\370\056\202\106\070\043\016\164\307\153\101\267\320
\051\243\235\200\260\176\167\223\143\102\373\064\203\073\163\243
\132\041\066\353\107\372\030\027\331\272\146\302\223\244\217\374
\135\244\255\374\120\152\225\254\274\044\063\321\275\210\177\206
\365\365\262\163\052\217\174\257\010\362\032\230\077\251\201\145
\077\301\214\211\305\226\060\232\012\317\364\324\310\064\355\235
\057\274\215\070\206\123\356\227\237\251\262\143\224\027\215\017
\334\146\052\174\122\121\165\313\231\216\350\075\134\277\236\073
\050\215\203\002\017\251\237\162\342\054\053\263\334\146\227\000
\100\320\244\124\216\233\135\173\105\066\046\326\162\103\353\317

\300\352\015\334\316\022\346\175\070\237\005\047\250\227\076\351
\121\306\154\005\050\301\002\017\351\030\155\354\275\234\006\324
\247\111\364\124\005\153\154\060\361\353\003\325\352\075\152\166
\302\313\032\050\111\115\177\144\340\372\053\332\163\203\201\377
\221\003\275\224\273\344\270\216\234\062\143\315\237\273\150\201
\261\204\133\257\066\277\167\356\035\177\367\111\233\122\354\322
\167\132\175\221\235\115\302\071\055\344\272\202\370\157\362\116
\036\017\116\346\077\131\245\043\334\075\207\250\050\130\050\321
\361\033\066\333\117\304\377\341\214\133\162\214\307\046\003\047
\243\071\012\001\252\300\262\061\140\203\042\241\117\022\011\001
\021\257\064\324\317\327\256\142\323\005\007\264\061\165\340\015
\155\127\117\151\207\371\127\251\272\025\366\310\122\155\241\313
\234\037\345\374\170\250\065\232\237\101\024\316\245\264\316\224
\010\034\011\255\126\345\332\266\111\232\112\352\143\030\123\234
\054\056\303\002\003\001\000\001\243\102\060\100\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\067\135\246\232\164\062\302\302
\371\307\246\025\020\131\270\344\375\345\270\155\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000
\257\247\317\336\377\340\275\102\215\115\345\042\226\337\150\352
\175\115\052\175\320\255\075\026\134\103\347\175\300\206\350\172
\065\143\361\314\201\310\306\013\350\056\122\065\244\246\111\220
\143\121\254\064\254\005\073\127\000\351\323\142\323\331\051\325
\124\276\034\020\221\234\262\155\376\131\375\171\367\352\126\320
\236\150\124\102\217\046\122\342\114\337\057\227\246\057\322\007
\230\250\363\140\135\113\232\130\127\210\357\202\345\372\257\154
\201\113\222\217\100\232\223\106\131\313\137\170\026\261\147\076
\102\013\337\050\331\260\255\230\040\276\103\174\321\136\032\011
\027\044\215\173\135\225\351\253\301\140\253\133\030\144\200\373
\255\340\006\175\035\312\131\270\363\170\051\147\306\126\035\257
\266\265\164\052\166\241\077\373\165\060\237\224\136\073\245\140
\363\313\134\014\342\016\311\140\370\311\037\026\212\046\335\347
\047\177\353\045\246\212\275\270\055\066\020\232\261\130\115\232
\150\117\140\124\345\366\106\023\216\210\254\274\041\102\022\255
\306\112\211\175\233\301\330\055\351\226\003\364\242\164\014\274
\000\035\277\326\067\045\147\264\162\213\257\205\275\352\052\003
\217\314\373\074\104\044\202\342\001\245\013\131\266\064\215\062
\013\022\015\353\047\302\375\101\327\100\074\162\106\051\300\214
\352\272\017\361\006\223\056\367\234\250\364\140\076\243\361\070
\136\216\023\301\263\072\227\207\077\222\312\170\251\034\257\320
\260\033\046\036\276\160\354\172\365\063\230\352\134\377\053\013
\004\116\103\335\143\176\016\247\116\170\003\225\076\324\055\060
\225\021\020\050\056\277\240\002\076\377\136\131\323\005\016\225
\137\123\105\357\153\207\325\110\315\026\246\226\203\341\337\263
\006\363\301\024\333\247\354\034\213\135\220\220\015\162\121\347
\141\371\024\312\257\203\217\277\257\261\012\131\135\334\134\327
\344\226\255\133\140\035\332\256\227\262\071\331\006\365\166\000

\023\370\150\114\041\260\065\304\334\125\262\311\301\101\132\034
\211\300\214\157\164\240\153\063\115\265\001\050\375\255\255\211
\027\073\246\232\204\274\353\214\352\304\161\044\250\272\051\371
\010\262\047\126\065\062\137\352\071\373\061\232\325\031\314\360
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CommScope Public Trust RSA Root-01"
Issuer: CN=CommScope Public Trust RSA Root-01,O=CommScope,C=US
Serial Number:3e:03:49:81:75:16:74:31:8e:4c:ab:d5:c5:90:29:96:c5:39:10:dd
Subject: CN=CommScope Public Trust RSA Root-01,O=CommScope,C=US
Not Valid Before: Wed Apr 28 16:45:54 2021
Not Valid After : Sat Apr 28 16:45:53 2046
Fingerprint (SHA-256):
02:BD:F9:6E:2A:45:DD:9B:F1:8F:C7:E1:DB:DF:21:A0:37:9B:A3:C9:C2:61:03:44:CF:D8:D6:06:FE:C1:ED:81
Fingerprint (SHA1): 6D:0A:5F:F7:B4:23:06:B4:85:B3:B7:97:64:FC:AC:75:F5:33:F2:93
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust RSA Root-01"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\155\012\137\367\264\043\006\264\205\263\267\227\144\374\254\165
\365\063\362\223
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\264\025\274\207\143\135\135\002\163\324\046\070\150\163\330
END
CKA_ISSUER
MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\076\003\111\201\165\026\164\061\216\114\253\325\305\220
\051\226\305\071\020\335
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "CommScope Public Trust RSA Root-02"
#
Issuer: CN=CommScope Public Trust RSA Root-02,O=CommScope,C=US
Serial Number:54:16:bf:3b:7e:39:95:71:8d:d1:aa:00:a5:86:0d:2b:8f:7a:05:4e
Subject: CN=CommScope
Public Trust RSA Root-02,O=CommScope,C=US
Not Valid Before: Wed Apr 28 17:16:43 2021
Not Valid After : Sat Apr 28 17:16:42 2046
Fingerprint (SHA-256):
FF:E9:43:D7:93:42:4B:4F:7C:44:0C:1C:3D:64:8D:53:63:F3:4B:82:DC:87:AA:7A:9F:11:8F:C5:DE:E1:01:F1
Fingerprint (SHA1): EA:B0:E2:52:1B:89:93:4C:11:68:F2:D8:9A:AC:22:4C:A3:8A:57:AE
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust RSA Root-02"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\124\026\277\073\176\071\225\161\215\321\252\000\245\206
\015\053\217\172\005\116
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\154\060\202\003\124\240\003\002\001\002\002\024\124
\026\277\073\176\071\225\161\215\321\252\000\245\206\015\053\217
\172\005\116\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\022\060\020\006\003\125\004\012\014\011\103\157\155\155
\123\143\157\160\145\061\053\060\051\006\003\125\004\003\014\042
\103\157\155\155\123\143\157\160\145\040\120\165\142\154\151\143
\040\124\162\165\163\164\040\122\123\101\040\122\157\157\164\055
\060\062\060\036\027\015\062\061\060\064\062\070\061\067\061\066

\064\063\132\027\015\064\066\060\064\062\070\061\067\061\066\064
\062\132\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\022\060\020\006\003\125\004\012\014\011\103\157\155\155
\123\143\157\160\145\061\053\060\051\006\003\125\004\003\014\042
\103\157\155\155\123\143\157\160\145\040\120\165\142\154\151\143
\040\124\162\165\163\164\040\122\123\101\040\122\157\157\164\055
\060\062\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\341\372\016\373\150\000\022\310\115\325\254\042\304
\065\001\073\305\124\345\131\166\143\245\177\353\301\304\152\230
\275\062\215\027\200\353\135\272\321\142\075\045\043\031\065\024
\351\177\211\247\033\142\074\326\120\347\064\225\003\062\261\264
\223\042\075\247\342\261\355\346\173\116\056\207\233\015\063\165
\012\336\252\065\347\176\345\066\230\242\256\045\236\225\263\062
\226\244\053\130\036\357\077\376\142\064\110\121\321\264\215\102
\255\140\332\111\152\225\160\335\322\000\342\314\127\143\002\173
\226\335\111\227\133\222\116\225\323\371\313\051\037\030\112\370
\001\052\322\143\011\156\044\351\211\322\345\307\042\114\334\163
\206\107\000\252\015\210\216\256\205\175\112\351\273\063\117\016
\122\160\235\225\343\174\155\226\133\055\075\137\241\203\106\135
\266\343\045\270\174\247\031\200\034\352\145\103\334\221\171\066
\054\164\174\362\147\006\311\211\311\333\277\332\150\277\043\355
\334\153\255\050\203\171\057\354\070\245\015\067\001\147\047\232
\351\063\331\063\137\067\241\305\360\253\075\372\170\260\347\054
\237\366\076\237\140\340\357\110\351\220\105\036\005\121\170\032
\054\022\054\134\050\254\015\242\043\236\064\217\005\346\242\063
\316\021\167\023\324\016\244\036\102\037\206\315\160\376\331\056
\025\075\035\273\270\362\123\127\333\314\306\164\051\234\030\263
\066\165\070\056\017\124\241\370\222\037\211\226\117\273\324\356
\235\351\073\066\102\265\012\073\052\324\144\171\066\020\341\371
\221\003\053\173\040\124\315\015\031\032\310\101\062\064\321\260
\231\341\220\036\001\100\066\265\267\372\251\345\167\165\244\042
\201\135\260\213\344\047\022\017\124\210\306\333\205\164\346\267
\300\327\246\051\372\333\336\363\223\227\047\004\125\057\012\157
\067\305\075\023\257\012\000\251\054\213\034\201\050\327\357\206
\061\251\256\362\156\270\312\152\054\124\107\330\052\210\056\257
\301\007\020\170\254\021\242\057\102\360\067\305\362\270\126\335
\016\142\055\316\055\126\176\125\362\247\104\366\053\062\364\043
\250\107\350\324\052\001\170\317\152\303\067\250\236\145\322\054
\345\372\272\063\301\006\104\366\346\317\245\015\247\146\010\064
\212\054\363\002\003\001\000\001\243\102\060\100\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\107\320\347\261\042\377\235\054
\365\331\127\140\263\261\261\160\225\357\141\172\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000
\206\151\261\115\057\351\237\117\042\223\150\216\344\041\231\243
\316\105\123\033\163\104\123\000\201\141\315\061\343\010\272\201

\050\050\172\222\271\266\250\310\103\236\307\023\046\115\302\330
\345\125\234\222\135\120\330\302\053\333\376\346\250\227\317\122
\072\044\303\145\144\134\107\061\243\145\065\023\303\223\271\367
\371\121\227\273\244\360\142\207\305\326\006\323\227\203\040\251
\176\273\266\041\302\245\015\204\000\341\362\047\020\203\272\335
\003\201\325\335\150\303\146\020\310\321\166\264\263\157\051\236
\000\371\302\051\365\261\223\031\122\151\032\054\114\240\213\340
\025\232\061\057\323\210\225\131\156\345\304\263\120\310\024\010
\112\233\213\023\203\261\244\162\262\073\166\063\101\334\334\252
\246\007\157\035\044\022\237\310\166\275\057\331\216\364\054\356
\267\322\070\020\044\066\121\057\343\134\135\201\041\247\332\273
\116\377\346\007\250\376\271\015\047\154\273\160\132\125\172\023
\351\361\052\111\151\307\137\207\127\114\103\171\155\072\145\351
\060\134\101\356\353\167\245\163\022\210\350\277\175\256\345\304
\250\037\015\216\034\155\120\002\117\046\030\103\336\217\125\205
\261\013\067\005\140\311\125\071\022\004\241\052\317\161\026\237
\066\121\111\277\160\073\236\147\234\373\173\171\311\071\034\170
\254\167\221\124\232\270\165\012\201\122\227\343\146\141\153\355
\076\070\036\226\141\125\341\221\124\214\355\214\044\037\201\311
\020\232\163\231\053\026\116\162\000\077\124\033\370\215\272\213
\347\024\326\266\105\117\140\354\226\256\303\057\002\116\135\235
\226\111\162\000\262\253\165\134\017\150\133\035\145\302\137\063
\017\036\017\360\073\206\365\260\116\273\234\367\352\045\005\334
\255\242\233\113\027\001\276\102\337\065\041\035\255\253\256\364
\277\256\037\033\323\342\073\374\263\162\163\034\233\050\220\211
\023\075\035\301\000\107\011\226\232\070\033\335\261\317\015\302
\264\104\363\226\225\316\062\072\217\064\234\340\027\307\136\316
\256\015\333\207\070\345\077\133\375\233\031\341\061\101\172\160
\252\043\153\001\341\105\114\315\224\316\073\236\055\347\210\002
\042\364\156\350\310\354\326\074\363\271\262\327\167\172\254\173
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "CommScope Public Trust RSA Root-02"
Issuer: CN=CommScope Public Trust RSA Root-02,O=CommScope,C=US
Serial Number:54:16:bf:3b:7e:39:95:71:8d:d1:aa:00:a5:86:0d:2b:8f:7a:05:4e
Subject: CN=CommScope Public Trust RSA Root-02,O=CommScope,C=US
Not Valid Before: Wed Apr 28 17:16:43 2021
Not Valid After : Sat Apr 28 17:16:42 2046
Fingerprint (SHA-256):
FF:E9:43:D7:93:42:4B:4F:7C:44:0C:1C:3D:64:8D:53:63:F3:4B:82:DC:87:AA:7A:9F:11:8F:C5:DE:E1:01:F1
Fingerprint (SHA1): EA:B0:E2:52:1B:89:93:4C:11:68:F2:D8:9A:AC:22:4C:A3:8A:57:AE
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CommScope Public Trust RSA Root-02"
CKA_CERT_SHA1_HASH
MULTILINE_OCTAL
\352\260\342\122\033\211\223\114\021\150\362\330\232\254\042\114
\243\212\127\256
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\341\051\371\142\173\166\342\226\155\363\324\327\017\256\037\252
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\022\060\020\006\003\125\004\012\014\011\103\157\155\155\123\143
\157\160\145\061\053\060\051\006\003\125\004\003\014\042\103\157
\155\155\123\143\157\160\145\040\120\165\142\154\151\143\040\124
\162\165\163\164\040\122\123\101\040\122\157\157\164\055\060\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\124\026\277\073\176\071\225\161\215\321\252\000\245\206
\015\053\217\172\005\116
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-Trust SBR Root CA 1 2022"
#
Issuer: CN=D-Trust SBR Root CA 1 2022,O=D-Trust
GmbH,C=DE
Serial Number:52:cf:e4:8c:6d:a0:4a:f7:3f:82:97:0c:80:09:8c:95
Subject: CN=D-Trust SBR Root CA 1 2022,O=D-Trust GmbH,C=DE
Not Valid Before: Wed Jul 06 11:30:00 2022
Not Valid After : Mon Jul 06 11:29:59 2037
Fingerprint (SHA-256):
D9:2C:17:1F:5C:F8:90:BA:42:80:19:29:29:27:FE:22:F3:20:7F:D2:B5:44:49:CB:6F:67:5A:F4:92:21:46:E2
Fingerprint (SHA1): 0F:52:3A:6B:4E:7D:1D:18:05:A5:48:F9:4D:CD:E4:C3:1E:1B:E9:E6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-Trust SBR Root CA 1 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023

\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\061\040\062\060\062\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023
\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\061\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\122\317\344\214\155\240\112\367\077\202\227\014\200\011
\214\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\136\060\202\001\343\240\003\002\001\002\002\020\122
\317\344\214\155\240\112\367\077\202\227\014\200\011\214\225\060
\012\006\010\052\206\110\316\075\004\003\003\060\111\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\025\060\023\006\003
\125\004\012\023\014\104\055\124\162\165\163\164\040\107\155\142
\110\061\043\060\041\006\003\125\004\003\023\032\104\055\124\162
\165\163\164\040\123\102\122\040\122\157\157\164\040\103\101\040
\061\040\062\060\062\062\060\036\027\015\062\062\060\067\060\066
\061\061\063\060\060\060\132\027\015\063\067\060\067\060\066\061
\061\062\071\065\071\132\060\111\061\013\060\011\006\003\125\004
\006\023\002\104\105\061\025\060\023\006\003\125\004\012\023\014
\104\055\124\162\165\163\164\040\107\155\142\110\061\043\060\041
\006\003\125\004\003\023\032\104\055\124\162\165\163\164\040\123
\102\122\040\122\157\157\164\040\103\101\040\061\040\062\060\062
\062\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\131\223\071\366\214\111\146
\050\327\141\014\310\253\177\014\243\055\337\242\244\174\222\053
\150\325\056\176\036\100\313\264\150\111\177\022\241\253\177\127
\237\031\056\143\056\133\376\146\161\014\063\017\271\336\153\304
\210\303\261\357\354\071\100\343\226\253\333\345\173\256\037\334
\371\257\106\232\152\106\006\057\307\067\144\213\027\142\376\226
\303\242\356\204\340\260\227\071\274\243\201\217\060\201\214\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\361\051\243\036\001
\022\035\075\165\126\115\307\120\174\305\031\252\017\030\267\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\112\006\003\125\035\037\004\103\060\101\060\077\240\075\240\073
\206\071\150\164\164\160\072\057\057\143\162\154\056\144\055\164
\162\165\163\164\056\156\145\164\057\143\162\154\057\144\055\164
\162\165\163\164\137\163\142\162\137\162\157\157\164\137\143\141
\137\061\137\062\060\062\062\056\143\162\154\060\012\006\010\052

\206\110\316\075\004\003\003\003\151\000\060\146\002\061\000\227
\371\336\256\113\217\230\265\036\100\177\062\175\115\124\103\332
\211\315\302\252\222\074\321\202\036\163\317\372\114\222\040\373
\143\047\305\365\163\075\011\075\367\247\141\206\214\363\152\002
\061\000\347\057\174\270\365\045\214\073\071\037\066\253\215\365
\206\242\056\341\172\144\332\147\071\002\376\376\063\077\331\163
\266\130\133\072\374\262\244\331\140\170\167\314\171\247\246\256
\125\275
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-Trust SBR Root CA 1 2022"
Issuer: CN=D-Trust SBR Root CA 1 2022,O=D-Trust GmbH,C=DE
Serial Number:52:cf:e4:8c:6d:a0:4a:f7:3f:82:97:0c:80:09:8c:95
Subject: CN=D-Trust SBR Root CA 1 2022,O=D-Trust GmbH,C=DE
Not Valid Before: Wed Jul 06 11:30:00 2022
Not Valid After : Mon Jul 06 11:29:59 2037
Fingerprint (SHA-256):
D9:2C:17:1F:5C:F8:90:BA:42:80:19:29:29:27:FE:22:F3:20:7F:D2:B5:44:49:CB:6F:67:5A:F4:92:21:46:E2
Fingerprint (SHA1): 0F:52:3A:6B:4E:7D:1D:18:05:A5:48:F9:4D:CD:E4:C3:1E:1B:E9:E6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-Trust SBR Root CA 1 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\017\122\072\153\116\175\035\030\005\245\110\371\115\315\344\303
\036\033\351\346
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\023\074\033\202\352\156\352\355\144\142\351\132\171\005\151\004
END
CKA_ISSUER
MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023
\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\061\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\122\317\344\214\155\240\112\367\077\202\227\014\200\011
\214\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "D-Trust SBR Root CA 2 2022"
#
Issuer: CN=D-Trust SBR Root CA 2 2022,O=D-Trust GmbH,C=DE
Serial Number:54:d5:a3:95:1e:3d:95:ba:72:1b:9a:d0:31:21:4a:ba
Subject: CN=D-Trust SBR Root CA 2 2022,O=D-Trust GmbH,C=DE
Not Valid Before: Thu Jul 07 07:30:00 2022
Not Valid After
 : Tue Jul 07 07:29:59 2037
Fingerprint (SHA-256):
DB:A8:4D:D7:EF:62:2D:48:54:63:A9:01:37:EA:4D:57:4D:F8:55:09:28:F6:AF:A0:3B:4D:8B:11:41:E6:36:CC
Fingerprint (SHA1): 27:FF:63:B9:EF:34:29:31:03:38:1A:D8:60:60:DA:CC:60:28:35:E1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-Trust SBR Root CA 2 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023
\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\062\040\062\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023
\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\062\040\062\060\062\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\124\325\243\225\036\075\225\272\162\033\232\320\061\041
\112\272
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\254\060\202\003\224\240\003\002\001\002\002\020\124
\325\243\225\036\075\225\272\162\033\232\320\061\041\112\272\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060\111
\061\013\060\011\006\003\125\004\006\023\002\104\105\061\025\060
\023\006\003\125\004\012\023\014\104\055\124\162\165\163\164\040

\107\155\142\110\061\043\060\041\006\003\125\004\003\023\032\104
\055\124\162\165\163\164\040\123\102\122\040\122\157\157\164\040
\103\101\040\062\040\062\060\062\062\060\036\027\015\062\062\060
\067\060\067\060\067\063\060\060\060\132\027\015\063\067\060\067
\060\067\060\067\062\071\065\071\132\060\111\061\013\060\011\006
\003\125\004\006\023\002\104\105\061\025\060\023\006\003\125\004
\012\023\014\104\055\124\162\165\163\164\040\107\155\142\110\061
\043\060\041\006\003\125\004\003\023\032\104\055\124\162\165\163
\164\040\123\102\122\040\122\157\157\164\040\103\101\040\062\040
\062\060\062\062\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\257\054\274\216\066\214\353\144\257\121\152
\326\156\074\136\221\072\352\232\303\312\154\373\252\047\236\144
\042\251\100\337\271\050\105\132\354\123\141\026\050\230\302\212
\244\165\170\120\204\335\372\040\110\222\007\145\101\065\146\121
\022\164\141\235\007\006\205\071\061\127\173\050\077\325\234\245
\354\132\351\034\113\047\237\316\047\006\363\067\365\122\330\021
\063\026\101\072\037\365\143\170\145\143\206\311\277\310\001\004
\037\156\356\342\354\254\014\356\202\222\342\366\032\015\077\071
\371\235\145\223\255\370\271\005\301\075\370\067\201\126\303\240
\376\005\354\340\224\026\072\043\026\004\332\246\012\223\205\162
\155\141\073\241\215\105\326\343\177\276\025\275\066\204\010\366
\013\203\153\046\252\242\275\340\260\347\252\340\256\147\304\323
\202\245\014\251\244\360\063\171\015\120\077\360\357\220\075\044
\271\177\322\040\154\352\227\363\277\234\334\107\336\011\141\275
\224\171\225\132\002\166\065\140\304\107\042\015\367\166\143\003
\323\306\373\203\306\135\253\255\355\151\045\053\003\133\115\045
\000\101\343\214\207\027\122\250\340\005\053\103\115\024\023\312
\347\077\103\042\274\067\244\165\361\366\277\072\357\062\036\256
\356\130\206\220\162\272\004\254\100\110\357\134\304\170\247\251
\217\047\132\313\172\354\130\362\302\010\130\220\155\115\003\205
\171\161\025\005\016\116\076\371\337\017\005\367\137\024\110\126
\041\015\063\222\261\254\214\345\030\376\277\017\356\340\004\252
\275\041\362\130\266\134\211\012\213\030\011\042\032\263\065\306
\146\302\365\063\025\231\200\340\010\371\226\057\023\214\356\332
\267\210\304\351\067\265\327\152\327\072\204\115\253\160\214\323
\116\024\125\240\242\020\374\144\332\147\350\361\313\063\335\311
\232\212\217\226\057\130\201\331\370\232\000\103\314\220\373\125
\166\373\206\343\067\001\050\014\157\364\351\131\115\025\167\121
\102\112\314\064\270\200\103\120\201\357\127\245\023\333\247\224
\171\017\113\312\176\027\175\257\243\041\144\350\161\125\126\217
\006\260\107\354\131\017\135\160\133\054\026\102\360\206\236\165
\336\153\115\110\230\204\342\127\030\266\234\202\231\145\072\213
\200\170\127\014\111\002\003\001\000\001\243\201\217\060\201\214
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\135\263\200\224
\033\345\206\277\150\272\024\064\244\366\356\155\362\335\337\347
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006

\060\112\006\003\125\035\037\004\103\060\101\060\077\240\075\240
\073\206\071\150\164\164\160\072\057\057\143\162\154\056\144\055
\164\162\165\163\164\056\156\145\164\057\143\162\154\057\144\055
\164\162\165\163\164\137\163\142\162\137\162\157\157\164\137\143
\141\137\062\137\062\060\062\062\056\143\162\154\060\015\006\011
\052\206\110\206\367\015\001\001\015\005\000\003\202\002\001\000
\064\124\056\130\030\126\315\112\275\227\323\365\175\053\334\257
\017\121\341\115\274\041\113\223\364\000\104\023\007\020\013\045
\030\076\110\131\226\367\241\341\223\220\170\146\032\075\043\353
\042\253\001\246\216\014\121\063\346\155\214\061\356\254\244\001
\160\071\110\336\307\146\054\153\015\313\163\237\207\222\351\076
\107\037\270\357\057\356\267\126\214\110\211\360\070\247\025\071
\262\356\300\077\027\244\163\002\010\234\274\006\212\244\302\267
\141\141\371\303\333\304\320\172\174\141\336\261\130\221\365\335
\145\114\057\013\370\353\075\265\355\212\276\167\034\272\131\002
\022\146\161\345\230\047\316\016\075\257\121\242\105\371\202\373
\132\245\224\160\367\213\204\303\114\145\045\233\173\342\037\060
\160\263\100\216\072\356\275\364\347\150\305\235\311\051\107\161
\016\223\310\265\110\116\365\146\273\007\210\161\151\153\173\110
\216\157\360\021\304\264\311\160\024\230\040\275\355\247\352\001
\332\156\245\233\022\376\076\104\060\263\360\353\165\122\300\364
\303\372\167\046\244\167\202\055\157\363\050\036\116\225\360\060
\367\211\370\054\242\120\133\362\276\062\176\154\124\333\162\311
\052\132\340\034\266\013\330\122\232\131\241\343\260\001\047\305
\240\026\120\146\334\353\256\155\364\233\133\075\204\155\133\207
\347\251\211\273\156\270\340\233\123\211\300\377\056\100\032\211
\104\056\030\103\147\070\344\174\162\137\331\243\051\045\101\101
\075\034\167\033\144\250\303\125\356\143\161\146\142\203\364\177
\046\231\240\124\073\241\022\155\160\142\316\323\371\270\275\042
\374\324\232\324\273\342\070\026\057\267\175\071\302\260\251\003
\351\234\317\176\030\215\166\334\137\021\273\353\102\354\120\011
\076\134\354\220\061\330\032\162\272\077\151\007\356\230\064\302
\064\244\326\332\023\326\251\204\362\000\206\300\124\272\036\021
\260\342\271\304\007\264\221\347\252\346\061\126\157\261\104\304
\052\142\274\311\260\145\234\064\374\014\032\123\337\041\027\273
\302\155\241\012\346\361\260\252\104\011\120\111\070\172\135\161
\342\061\056\031\260\337\225\102\004\175\204\210\316\012\043\147
\153\070\235\026\336\006\376\050\160\070\245\132\256\374\203\355
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "D-Trust SBR Root CA 2 2022"
Issuer: CN=D-Trust SBR Root CA 2 2022,O=D-Trust GmbH,C=DE
Serial Number:54:d5:a3:95:1e:3d:95:ba:72:1b:9a:d0:31:21:4a:ba
Subject: CN=D-Trust SBR Root CA 2 2022,O=D-Trust GmbH,C=DE

Not Valid Before: Thu Jul 07 07:30:00 2022
Not Valid After : Tue Jul 07 07:29:59 2037
Fingerprint (SHA-256):
DB:A8:4D:D7:EF:62:2D:48:54:63:A9:01:37:EA:4D:57:4D:F8:55:09:28:F6:AF:A0:3B:4D:8B:11:41:E6:36:CC
Fingerprint (SHA1): 27:FF:63:B9:EF:34:29:31:03:38:1A:D8:60:60:DA:CC:60:28:35:E1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "D-Trust SBR Root CA 2 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\047\377\143\271\357\064\051\061\003\070\032\330\140\140\332\314
\140\050\065\341
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\220\361\364\053\074\247\312\112\210\073\005\053\010\124\205\336
END
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\023\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\043\060\041\006\003\125\004\003\023
\032\104\055\124\162\165\163\164\040\123\102\122\040\122\157\157
\164\040\103\101\040\062\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\124\325\243\225\036\075\225\272\162\033\232\320\061\041
\112\272
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Telekom Security SMIME ECC Root 2021"
#
Issuer: CN=Telekom
Security SMIME ECC Root 2021,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:15:2a:dd:14:c9:18:d1:a4:56:40:86:a6:25:af:07:5f
Subject: CN=Telekom Security SMIME ECC Root 2021,O=Deutsche Telekom Security GmbH,C=DE
Not Valid Before: Thu Mar 18 11:08:30 2021
Not Valid After : Sat Mar 17 23:59:59 2046
Fingerprint (SHA-256):
3A:E6:DF:7E:0D:63:7A:65:A8:C8:16:12:EC:6F:9A:14:2F:85:A1:68:34:C1:02:80:D8:8E:70:70:28:51:87:55
Fingerprint (SHA1): B7:F9:1D:98:EC:25:93:F3:50:14:84:9A:A8:7E:22:10:3C:C4:39:27
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security SMIME ECC Root 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\105\103\103\040\122\157
\157\164\040\062\060\062\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\105\103\103\040\122\157
\157\164\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\052\335\024\311\030\321\244\126\100\206\246\045\257
\007\137
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\107\060\202\001\315\240\003\002\001\002\002\020\025
\052\335\024\311\030\321\244\126\100\206\246\045\257\007\137\060
\012\006\010\052\206\110\316\075\004\003\003\060\145\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\047\060\045\006\003
\125\004\012\014\036\104\145\165\164\163\143\150\145\040\124\145
\154\145\153\157\155\040\123\145\143\165\162\151\164\171\040\107
\155\142\110\061\055\060\053\006\003\125\004\003\014\044\124\145
\154\145\153\157\155\040\123\145\143\165\162\151\164\171\040\123
\115\111\115\105\040\105\103\103\040\122\157\157\164\040\062\060
\062\061\060\036\027\015\062\061\060\063\061\070\061\061\060\070
\063\060\132\027\015\064\066\060\063\061\067\062\063\065\071\065
\071\132\060\145\061\013\060\011\006\003\125\004\006\023\002\104
\105\061\047\060\045\006\003\125\004\012\014\036\104\145\165\164
\163\143\150\145\040\124\145\154\145\153\157\155\040\123\145\143
\165\162\151\164\171\040\107\155\142\110\061\055\060\053\006\003
\125\004\003\014\044\124\145\154\145\153\157\155\040\123\145\143
\165\162\151\164\171\040\123\115\111\115\105\040\105\103\103\040
\122\157\157\164\040\062\060\062\061\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000

\004\260\031\217\242\153\265\307\315\017\060\231\067\014\303\140
\133\361\361\047\040\125\075\300\222\213\253\127\241\157\163\203
\041\302\103\023\014\136\211\252\307\005\065\171\223\142\220\326
\135\023\037\321\172\240\274\236\020\247\146\174\106\012\260\127
\154\277\346\124\071\070\041\154\022\134\161\314\323\132\137\155
\267\247\206\337\263\337\356\302\347\211\101\226\065\366\057\112
\265\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024
\053\313\001\014\143\303\123\022\245\250\127\257\320\234\203\373
\275\220\072\113\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\012\006\010\052\206\110\316\075\004\003
\003\003\150\000\060\145\002\061\000\326\274\110\222\207\107\003
\307\160\073\045\266\037\256\106\147\163\164\000\047\113\344\245
\004\242\003\337\136\050\255\156\136\003\310\335\150\234\266\277
\224\020\110\225\057\017\377\030\213\002\060\001\100\063\236\227
\227\115\005\362\164\124\014\315\071\375\152\153\011\301\044\077
\141\216\070\241\267\350\327\104\025\021\142\377\016\141\067\107
\113\100\177\112\137\262\147\132\163\165\302
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telekom Security SMIME ECC Root 2021"
Issuer: CN=Telekom Security SMIME ECC Root 2021,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:15:2a:dd:14:c9:18:d1:a4:56:40:86:a6:25:af:07:5f
Subject: CN=Telekom Security SMIME ECC Root 2021,O=Deutsche Telekom Security GmbH,C=DE
Not Valid Before: Thu Mar 18 11:08:30 2021
Not Valid After : Sat Mar 17 23:59:59 2046
Fingerprint (SHA-256):
3A:E6:DF:7E:0D:63:7A:65:A8:C8:16:12:EC:6F:9A:14:2F:85:A1:68:34:C1:02:80:D8:8E:70:70:28:51:87:55
Fingerprint (SHA1): B7:F9:1D:98:EC:25:93:F3:50:14:84:9A:A8:7E:22:10:3C:C4:39:27
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security SMIME ECC Root 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\267\371\035\230\354\045\223\363\120\024\204\232\250\176\042\020
\074\304\071\047
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\165\275\136\355\174\015\146\076\007\244\233\274\002\007\330\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061

\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\105\103\103\040\122\157
\157\164\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\052\335\024\311\030\321\244\126\100\206\246\045\257
\007\137
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "Telekom Security TLS ECC Root 2020"
#
Issuer: CN=Telekom Security TLS ECC Root 2020,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:36:3a:96:8c:c9:5c:b2:58:cd:d0:01:5d:c5:e5:57:00
Subject: CN=Telekom Security TLS ECC Root 2020,O=Deutsche Telekom Security GmbH,C=DE
Not Valid Before: Tue Aug 25 07:48:20 2020
Not Valid After : Fri Aug 25 23:59:59 2045
Fingerprint (SHA-256):
57:8A:F4:DE:D0:85:3F:4E:59:98:DB:4A:EA:F9:CB:EA:8D:94:5F:60:B6:20:A3:8D:1A:3C:13:B2:BC:7B:A8:E1
Fingerprint (SHA1): C0:F8:96:C5:A9:3B:01:06:21:07:DA:18:42:48:BC:E9:9D:88:D5:EC
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security TLS ECC Root 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\105\103\103\040\122\157\157\164
\040\062\060\062\060
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143

\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\105\103\103\040\122\157\157\164
\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\066\072\226\214\311\134\262\130\315\320\001\135\305\345
\127\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\102\060\202\001\311\240\003\002\001\002\002\020\066
\072\226\214\311\134\262\130\315\320\001\135\305\345\127\000\060
\012\006\010\052\206\110\316\075\004\003\003\060\143\061\013\060
\011\006\003\125\004\006\023\002\104\105\061\047\060\045\006\003
\125\004\012\014\036\104\145\165\164\163\143\150\145\040\124\145
\154\145\153\157\155\040\123\145\143\165\162\151\164\171\040\107
\155\142\110\061\053\060\051\006\003\125\004\003\014\042\124\145
\154\145\153\157\155\040\123\145\143\165\162\151\164\171\040\124
\114\123\040\105\103\103\040\122\157\157\164\040\062\060\062\060
\060\036\027\015\062\060\060\070\062\065\060\067\064\070\062\060
\132\027\015\064\065\060\070\062\065\062\063\065\071\065\071\132
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\105\103\103\040\122\157\157\164
\040\062\060\062\060\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\316\277\376
\127\250\277\325\252\367\020\232\315\274\321\021\242\275\147\102
\314\220\353\025\030\220\331\242\315\014\052\045\353\076\117\316
\265\322\217\017\363\065\332\103\213\002\200\276\157\121\044\035
\017\153\053\312\237\302\157\120\062\345\067\040\266\040\377\210
\015\017\155\111\273\333\006\244\207\220\222\224\364\011\320\317
\177\310\200\013\301\227\263\273\065\047\311\302\033\243\102\060
\100\060\035\006\003\125\035\016\004\026\004\024\343\162\314\156
\225\231\107\261\346\263\141\114\321\313\253\343\272\315\336\237
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\012\006\010\052\206\110\316\075\004\003\003\003\147\000
\060\144\002\060\165\122\213\267\244\020\117\256\112\020\213\262
\204\133\102\341\346\052\066\002\332\240\156\031\077\045\277\332
\131\062\216\344\373\220\334\223\144\316\255\264\101\107\140\342
\317\247\313\036\002\060\067\101\214\146\337\101\153\326\203\000
\101\375\057\132\367\120\264\147\321\054\250\161\327\103\312\234
\047\044\221\203\110\015\317\315\367\124\201\257\354\177\344\147
\333\270\220\356\335\045

```
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Trust for "Telekom Security TLS ECC Root 2020"
# Issuer: CN=Telekom Security TLS ECC Root 2020,O=Deutsche Telekom Security GmbH,C=DE
# Serial Number:36:3a:96:8c:c9:5c:b2:58:cd:d0:01:5d:c5:e5:57:00
# Subject: CN=Telekom Security TLS ECC Root 2020,O=Deutsche Telekom Security GmbH,C=DE
# Not Valid Before: Tue Aug 25 07:48:20 2020
# Not Valid After : Fri Aug 25 23:59:59 2045
# Fingerprint (SHA-256):
57:8A:F4:DE:D0:85:3F:4E:59:98:DB:4A:EA:F9:CB:EA:8D:94:5F:60:B6:20:A3:8D:1A:3C:13:B2:BC:7B:A8:E1
# Fingerprint (SHA1):
 C0:F8:96:C5:A9:3B:01:06:21:07:DA:18:42:48:BC:E9:9D:88:D5:EC
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security TLS ECC Root 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\300\370\226\305\251\073\001\006\041\007\332\030\102\110\274\351
\235\210\325\354
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\301\253\376\152\020\054\003\215\274\034\042\062\300\205\247\375
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\105\103\103\040\122\157\157\164
\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\066\072\226\214\311\134\262\130\315\320\001\135\305\345
\127\000
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
```

```
# Certificate "Telekom Security SMIME RSA Root 2023"
#
# Issuer: CN=Telekom Security SMIME RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
# Serial Number:0c:7e:62:f5:79:73:3b:9d:43:8e:8b:63:ed:91:95:b8
# Subject: CN=Telekom Security SMIME RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
# Not Valid Before: Tue Mar 28 12:09:22 2023
# Not Valid After : Fri Mar 27 23:59:59 2048
# Fingerprint (SHA-256):
78:A6:56:34:4F:94:7E:9C:C0:F7:34:D9:05:3D:32:F6:74:20:86:B6:B9:CD:2C:AE:4F:AE:1A:2E:4E:FD:E0:48
# Fingerprint (SHA1): 89:3F:6F:1C:E2:4D:7F:FB:C3:D3:14:7A:05:80:A7:DE:E1:0A:5E:4D
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security
 SMIME RSA Root 2023"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\122\123\101\040\122\157
\157\164\040\062\060\062\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\122\123\101\040\122\157
\157\164\040\062\060\062\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\014\176\142\365\171\163\073\235\103\216\213\143\355\221
\225\270
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\267\060\202\003\237\240\003\002\001\002\002\020\014
\176\142\365\171\163\073\235\103\216\213\143\355\221\225\270\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\104\105\061\047\060
\045\006\003\125\004\012\014\036\104\145\165\164\163\143\150\145
\040\124\145\154\145\153\157\155\040\123\145\143\165\162\151\164
```

\171\040\107\155\142\110\061\055\060\053\006\003\125\004\003\014
\044\124\145\154\145\153\157\155\040\123\145\143\165\162\151\164
\171\040\123\115\111\115\105\040\122\123\101\040\122\157\157\164
\040\062\060\062\063\060\036\027\015\062\063\060\063\062\070\061
\062\060\071\062\062\132\027\015\064\070\060\063\062\067\062\063
\065\071\065\071\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\104\105\061\047\060\045\006\003\125\004\012\014\036\104
\145\165\164\163\143\150\145\040\124\145\154\145\153\157\155\040
\123\145\143\165\162\151\164\171\040\107\155\142\110\061\055\060
\053\006\003\125\004\003\014\044\124\145\154\145\153\157\155\040
\123\145\143\165\162\151\164\171\040\123\115\111\115\105\040\122
\123\101\040\122\157\157\164\040\062\060\062\063\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\357\305\016
\213\276\062\322\147\107\377\012\114\147\263\052\277\310\303\305
\221\353\265\307\036\221\341\146\250\210\213\125\040\200\037\121
\136\167\227\236\031\012\134\307\153\067\041\174\003\066\001\364
\210\045\331\250\056\101\252\374\330\046\340\226\100\142\171\256
\127\236\003\070\032\034\262\167\024\076\351\241\162\320\344\340
\067\321\027\106\355\120\134\172\130\305\370\053\367\165\057\317
\201\236\132\054\267\072\254\240\131\230\004\121\014\377\111\305
\120\375\036\323\107\205\113\063\117\242\067\265\257\004\232\047
\062\235\126\325\077\125\141\343\213\157\256\121\376\227\376\151
\007\372\142\133\046\346\024\171\025\245\023\070\256\137\067\276
\224\112\326\015\200\026\151\244\221\262\072\111\230\165\235\106
\020\212\134\172\177\204\245\350\257\036\307\253\263\132\106\265
\243\113\365\246\043\066\000\106\261\333\005\266\033\316\236\172
\062\134\232\325\162\303\235\206\115\053\204\323\036\265\210\332
\020\170\234\042\303\073\043\265\353\023\007\275\157\123\354\233
\354\233\323\145\365\007\011\343\135\247\231\265\176\206\216\325
\002\377\267\205\011\343\107\024\335\226\146\030\064\336\010\325
\337\313\030\231\142\013\053\354\000\135\122\104\323\306\226\374
\062\126\045\221\317\315\031\073\225\071\076\002\207\231\143\266
\325\076\064\172\017\021\165\201\274\175\004\312\140\264\050\165
\327\002\121\335\122\000\056\307\375\211\361\134\363\313\244\047
\022\070\217\273\373\211\360\344\304\070\054\276\202\240\161\141
\142\221\217\110\014\057\053\251\260\361\313\020\004\347\164\277
\067\220\357\117\052\103\065\227\022\306\052\160\015\336\054\125
\107\171\143\051\365\312\037\152\006\122\034\256\055\044\042\203
\042\257\320\252\060\267\052\037\377\145\043\130\145\223\310\216
\175\100\020\061\206\170\331\125\313\074\060\360\336\121\052\000
\066\322\047\105\137\330\350\241\041\075\176\106\126\073\051\105
\361\035\005\011\316\266\103\060\334\105\220\020\060\114\244\153
\206\213\077\075\057\061\221\161\357\046\271\366\276\235\260\154
\337\021\356\130\077\103\171\206\071\200\361\046\027\007\230\360
\231\252\060\054\103\131\024\316\355\342\100\023\205\002\003\001
\000\001\243\143\060\141\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004

\024\232\316\254\052\354\001\372\145\160\336\227\235\361\322\000
\214\245\243\144\273\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\037\006\003\125\035\043\004\030\060
\026\200\024\232\316\254\052\354\001\372\145\160\336\227\235\361
\322\000\214\245\243\144\273\060\015\006\011\052\206\110\206\367
\015\001\001\014\005\000\003\202\002\001\000\343\120\375\365\100
\026\042\011\226\072\015\251\357\201\347\056\062\360\241\361\111
\136\173\210\015\004\162\327\276\147\250\272\035\356\120\273\162
\156\172\321\273\014\162\060\106\310\325\327\002\022\026\231\116
\036\337\132\226\356\217\221\276\256\206\370\020\167\245\304\156
\107\141\300\362\046\331\117\141\150\005\110\165\010\025\245\241
\173\325\270\263\211\171\346\355\361\363\141\000\206\173\056\061
\376\243\134\370\171\075\264\133\210\173\340\043\273\015\241\027
\372\313\150\015\230\167\161\010\342\155\103\164\153\304\066\305
\224\101\244\000\326\127\055\231\212\213\040\022\025\002\062\016
\322\111\354\201\110\305\152\047\122\327\262\163\125\123\226\074
\236\117\114\265\240\320\117\127\320\147\050\110\144\276\306\270
\272\354\144\317\310\173\305\152\347\052\346\131\127\266\326\324
\326\300\147\134\331\236\050\011\100\277\363\251\065\061\145\140
\003\313\031\154\202\225\003\036\137\077\341\275\352\111\161\345
\133\267\013\107\026\033\040\211\155\224\231\014\176\210\154\035
\015\364\267\041\032\131\227\254\313\350\276\027\037\225\174\123
\233\257\120\122\252\215\013\056\257\132\327\140\362\052\151\052
\271\356\124\160\030\252\275\365\241\077\322\335\241\143\031\000
\370\247\014\353\243\171\362\160\131\243\370\242\022\003\354\023
\377\344\002\206\066\327\301\303\244\265\324\244\302\067\105\266
\224\160\075\305\275\353\243\025\035\343\066\172\025\151\052\126
\064\071\317\245\232\066\252\310\355\171\274\317\366\316\004\123
\013\332\262\120\043\174\274\076\046\255\360\016\103\273\046\313
\256\302\100\336\067\037\012\240\121\315\143\235\266\117\330\306
\107\174\274\330\264\355\236\213\363\021\342\250\265\076\354\256
\160\076\176\042\273\065\110\027\140\142\024\221\060\243\166\075
\246\121\066\213\037\015\335\152\061\034\245\355\335\226\243\156
\162\017\023\115\252\247\251\134\170\371\003\022\030\223\067\105
\022\211\075\370\276\312\275\331\276\014\331\030\144\247\310\101
\076\165\202\041\070\175\145\364\240\324\023\113\007\170\051\371
\235\176\314\207\077\304\332\056\210\335\343\013\334\132\121\132
\351\331\022\117\236\002\333\367\005\045\121
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telekom Security SMIME RSA Root 2023"
Issuer: CN=Telekom Security SMIME RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:0c:7e:62:f5:79:73:3b:9d:43:8e:8b:63:ed:91:95:b8
Subject: CN=Telekom Security SMIME RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE

Not Valid Before: Tue Mar 28 12:09:22 2023
Not Valid After : Fri Mar 27 23:59:59 2048
Fingerprint (SHA-256):
78:A6:56:34:4F:94:7E:9C:C0:F7:34:D9:05:3D:32:F6:74:20:86:B6:B9:CD:2C:AE:4F:AE:1A:2E:4E:FD:E0:48
Fingerprint (SHA1): 89:3F:6F:1C:E2:4D:7F:FB:C3:D3:14:7A:05:80:A7:DE:E1:0A:5E:4D
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security SMIME RSA Root 2023"
CKA_CERT_SHA1_HASH
MULTILINE_OCTAL
\211\077\157\034\342\115\177\373\303\323\024\172\005\200\247\336
\341\012\136\115
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\353\335\044\371\050\017\243\302\303\156\012\077\320\303\015\033
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\055\060\053\006\003\125\004
\003\014\044\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\123\115\111\115\105\040\122\123\101\040\122\157
\157\164\040\062\060\062\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\014\176\142\365\171\163\073\235\103\216\213\143\355\221
\225\270
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
CK_FALSE

#
Certificate "Telekom Security TLS RSA Root 2023"
#
Issuer: CN=Telekom Security TLS RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:21:9c:54:2d:e8:f6:ec:71:77:fa:4e:e8:c3:70:57:97
Subject: CN=Telekom Security TLS RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
Not Valid Before: Tue Mar 28 12:16:45 2023
Not Valid After : Fri Mar 27 23:59:59 2048
Fingerprint (SHA-256):
EF:C6:5C:AD:BB:59:AD:B6:EF:E8:4D:A2:23:11:B3:56:24:B7:1B:3B:1E:A0:DA:8B:66:55:17:4E:C8:97:86:46
Fingerprint (SHA1): 54:D3:AC:B3:BD:57:56:F6:85:9D:CE:E5:C3:21:E2:D4:AD:83:D0:93

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security TLS RSA Root 2023"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\122\123\101\040\122\157\157\164
\040\062\060\062\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\122\123\101\040\122\157\157\164
\040\062\060\062\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\234\124\055\350\366\354\161\167\372\116\350\303\160
\127\227
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\263\060\202\003\233\240\003\002\001\002\002\020\041
\234\124\055\350\366\354\161\167\372\116\350\303\160\127\227\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\143
\061\013\060\011\006\003\125\004\006\023\002\104\105\061\047\060
\045\006\003\125\004\012\014\036\104\145\165\164\163\143\150\145
\040\124\145\154\145\153\157\155\040\123\145\143\165\162\151\164
\171\040\107\155\142\110\061\053\060\051\006\003\125\004\003\014
\042\124\145\154\145\153\157\155\040\123\145\143\165\162\151\164
\171\040\124\114\123\040\122\123\101\040\122\157\157\164\040\062
\060\062\063\060\036\027\015\062\063\060\063\062\070\061\062\061
\066\064\065\132\027\015\064\070\060\063\062\067\062\063\065\071
\065\071\132\060\143\061\013\060\011\006\003\125\004\006\023\002
\104\105\061\047\060\045\006\003\125\004\012\014\036\104\145\165
\164\163\143\150\145\040\124\145\154\145\153\157\155\040\123\145
\143\165\162\151\164\171\040\107\155\142\110\061\053\060\051\006
\003\125\004\003\014\042\124\145\154\145\153\157\155\040\123\145
\143\165\162\151\164\171\040\124\114\123\040\122\123\101\040\122

\157\157\164\040\062\060\062\063\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\355\065\241\201\200\363\313
\112\151\133\302\373\121\203\256\046\375\341\156\363\201\022\175
\161\100\377\207\165\102\051\041\355\201\122\054\337\022\301\031
\204\211\301\275\305\050\325\325\113\154\104\326\114\333\007\226
\112\125\172\312\066\202\004\066\250\245\374\047\366\111\361\325
\162\236\221\371\043\326\160\173\273\365\233\301\354\223\317\031
\352\145\176\210\160\240\163\374\366\377\265\126\142\341\163\152
\064\230\076\202\270\254\225\123\364\001\240\047\007\162\243\000
\123\240\344\262\253\203\070\127\063\045\224\237\276\110\035\230
\341\243\272\236\134\315\004\161\121\175\165\170\253\363\131\252
\304\340\140\276\217\203\122\270\165\032\101\065\355\274\363\072
\143\351\251\024\105\327\346\122\321\156\322\336\274\343\365\013
\073\346\340\304\275\103\144\023\246\316\364\230\067\154\212\225
\250\227\310\107\017\360\136\020\213\347\035\034\376\261\073\240
\005\063\150\005\101\202\301\003\053\001\310\347\217\115\253\350
\265\366\315\153\104\265\347\335\213\354\352\045\264\000\042\127
\115\260\261\262\061\301\026\316\377\375\024\204\267\107\372\262
\361\160\336\333\213\154\066\130\244\174\263\021\321\303\167\177
\137\266\045\340\015\305\322\263\371\270\270\167\333\067\161\161
\107\343\140\030\117\044\266\165\067\170\271\243\142\257\275\311
\162\216\057\314\273\256\333\344\025\122\031\007\063\373\152\267
\055\113\220\050\202\163\376\030\213\065\215\333\247\004\152\276
\352\301\115\066\073\026\066\221\062\357\266\100\211\221\103\340
\362\242\253\004\056\346\362\114\016\026\064\040\254\207\301\055
\176\311\146\107\027\024\021\244\363\367\241\044\211\253\330\032
\310\241\134\261\243\367\214\155\310\001\311\117\311\354\304\374
\254\121\063\321\310\203\321\311\237\035\324\107\064\051\076\313
\260\016\372\203\013\050\130\345\051\334\077\174\250\237\311\266
\012\273\246\350\106\026\017\226\345\173\344\152\172\110\155\166
\230\005\245\334\155\036\102\036\102\332\032\340\122\367\265\203
\300\032\173\170\065\054\070\365\037\375\111\243\056\322\131\143
\277\200\260\214\223\163\313\065\246\231\225\042\141\145\003\140
\373\057\223\113\372\232\234\200\073\002\003\001\000\001\243\143
\060\141\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\266\247\227
\202\075\164\205\233\367\074\237\223\232\225\171\165\122\214\155
\107\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\266
\247\227\202\075\164\205\233\367\074\237\223\232\225\171\165\122
\214\155\107\060\015\006\011\052\206\110\206\367\015\001\001\014
\005\000\003\202\002\001\000\250\314\141\246\276\165\236\025\120
\244\153\373\250\160\105\174\272\176\261\132\374\133\043\372\012
\167\370\230\161\202\014\155\340\136\106\252\223\364\036\240\303
\341\223\333\113\255\262\246\135\253\260\324\142\313\136\273\146
\365\055\356\227\100\074\142\353\136\326\024\326\214\342\226\213
\101\151\223\065\346\271\231\153\142\264\241\027\146\064\246\153

\143\306\271\116\362\042\351\130\015\126\101\321\372\014\112\360
\063\315\073\273\155\041\072\256\216\162\265\303\112\373\351\175
\345\261\233\206\356\342\340\175\264\367\062\375\042\204\361\205
\311\067\171\351\265\077\277\134\344\164\262\217\021\142\000\335
\030\146\241\331\173\043\137\361\216\325\147\350\124\332\133\072
\153\066\157\371\201\261\063\107\063\167\100\371\122\252\335\324
\203\317\205\170\231\232\223\271\163\147\102\106\021\041\352\376
\012\251\033\032\145\151\263\217\256\026\266\366\113\126\262\055
\371\245\310\354\073\142\243\355\153\320\116\325\100\011\244\037
\230\327\072\245\222\131\040\344\260\175\315\133\163\150\275\155
\304\242\023\016\147\031\270\215\102\176\154\014\232\156\240\044
\055\325\105\033\334\304\002\024\376\205\133\145\227\312\116\220
\120\010\172\102\065\371\352\302\146\324\370\001\256\036\264\276
\303\250\357\376\166\232\242\246\037\106\366\204\355\374\333\316
\304\002\316\167\110\054\214\262\354\303\000\243\354\054\125\030
\301\176\031\356\341\057\362\255\203\233\236\253\031\337\306\212
\057\214\167\345\267\005\354\073\301\354\276\206\263\206\274\300
\367\334\347\352\133\256\262\314\265\065\206\113\320\342\077\266
\330\370\016\000\356\135\343\367\215\130\377\317\213\067\351\143
\137\156\367\011\161\066\302\022\135\127\362\310\264\315\363\356
\002\337\021\334\152\271\127\204\035\131\115\214\316\310\016\043
\302\267\046\232\020\024\161\376\223\262\212\270\200\360\016\020
\236\323\250\120\014\067\202\057\352\340\212\235\341\054\071\377
\265\264\163\000\344\367\110\246\163\254\277\262\336\167\004\207
\264\243\315\233\065\044\067\372\220\223\023\201\102\306\230\046
\165\067\146\101\020\254\273\365\224\343\302\061\053\255\347\043
\126\314\065\045\222\263\120
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "Telekom Security TLS RSA Root
2023"
Issuer: CN=Telekom Security TLS RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
Serial Number:21:9c:54:2d:e8:f6:ec:71:77:fa:4e:e8:c3:70:57:97
Subject: CN=Telekom Security TLS RSA Root 2023,O=Deutsche Telekom Security GmbH,C=DE
Not Valid Before: Tue Mar 28 12:16:45 2023
Not Valid After : Fri Mar 27 23:59:59 2048
Fingerprint (SHA-256):
EF:C6:5C:AD:BB:59:AD:B6:EF:E8:4D:A2:23:11:B3:56:24:B7:1B:3B:1E:A0:DA:8B:66:55:17:4E:C8:97:86:46
Fingerprint (SHA1): 54:D3:AC:B3:BD:57:56:F6:85:9D:CE:E5:C3:21:E2:D4:AD:83:D0:93
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Telekom Security TLS RSA Root 2023"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\124\323\254\263\275\127\126\366\205\235\316\345\303\041\342\324
\255\203\320\223
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\277\133\353\124\100\315\110\161\304\040\215\175\336\012\102\362
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\047\060\045\006\003\125\004\012\014\036\104\145\165\164\163\143
\150\145\040\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\107\155\142\110\061\053\060\051\006\003\125\004
\003\014\042\124\145\154\145\153\157\155\040\123\145\143\165\162
\151\164\171\040\124\114\123\040\122\123\101\040\122\157\157\164
\040\062\060\062\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\041\234\124\055\350\366\354\161\167\372\116\350\303\160
\127\227
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Certificate "FIRMAPROFESIONAL CA ROOT-A WEB"
#
Issuer: CN=FIRMAPROFESIONAL CA ROOT-A WEB,OID.2.5.4.97=VATES-A62634068,O=Firmaprofesional SA,C=ES
Serial Number:31:97:21:ed:af:89:42:7f:35:41:87:a1:67:56:4c:6d
Subject: CN=FIRMAPROFESIONAL CA ROOT-A WEB,OID.2.5.4.97=VATES-A62634068,O=Firmaprofesional
SA,C=ES
Not Valid Before: Wed Apr 06 09:01:36 2022
Not Valid After : Sun Mar 31 09:01:36 2047
Fingerprint (SHA-256):
BE:F2:56:DA:F2:6E:9C:69:BD:EC:16:02:35:97:98:F3:CA:F7:18:21:A0:3E:01:82:57:C5:3C:65:61:7F:3D:4A
Fingerprint (SHA1): A8:31:11:74:A6:14:15:0D:CA:77:DD:0E:E4:0C:5D:58:FC:A0:72:A5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "FIRMAPROFESIONAL CA ROOT-A WEB"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\105\123\061

\034\060\032\006\003\125\004\012\014\023\106\151\162\155\141\160
\162\157\146\145\163\151\157\156\141\154\040\123\101\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101\066
\062\066\063\064\060\066\070\061\047\060\045\006\003\125\004\003
\014\036\106\111\122\115\101\120\122\117\106\105\123\111\117\116
\101\114\040\103\101\040\122\117\117\124\055\101\040\127\105\102
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\034\060\032\006\003\125\004\012\014\023\106\151\162\155\141\160
\162\157\146\145\163\151\157\156\141\154\040\123\101\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101\066
\062\066\063\064\060\066\070\061\047\060\045\006\003\125\004\003
\014\036\106\111\122\115\101\120\122\117\106\105\123\111\117\116
\101\114\040\103\101\040\122\117\117\124\055\101\040\127\105\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\227\041\355\257\211\102\177\065\101\207\241\147\126
\114\155
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\172\060\202\002\000\240\003\002\001\002\002\020\061
\227\041\355\257\211\102\177\065\101\207\241\147\126\114\155\060
\012\006\010\052\206\110\316\075\004\003\003\060\156\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\034\060\032\006\003
\125\004\012\014\023\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\123\101\061\030\060\026\006\003\125\004
\141\014\017\126\101\124\105\123\055\101\066\062\066\063\064\060
\066\070\061\047\060\045\006\003\125\004\003\014\036\106\111\122
\115\101\120\122\117\106\105\123\111\117\116\101\114\040\103\101
\040\122\117\117\124\055\101\040\127\105\102\060\036\027\015\062
\062\060\064\060\066\060\071\060\061\063\066\132\027\015\064\067
\060\063\063\061\060\071\060\061\063\066\132\060\156\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\034\060\032\006\003
\125\004\012\014\023\106\151\162\155\141\160\162\157\146\145\163
\151\157\156\141\154\040\123\101\061\030\060\026\006\003\125\004
\141\014\017\126\101\124\105\123\055\101\066\062\066\063\064\060
\066\070\061\047\060\045\006\003\125\004\003\014\036\106\111\122
\115\101\120\122\117\106\105\123\111\117\116\101\114\040\103\101
\040\122\117\117\124\055\101\040\127\105\102\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\107\123\352\054\021\244\167\307\052\352\363\326\137
\173\323\004\221\134\372\210\306\042\271\203\020\142\167\204\063
\055\351\003\210\324\340\063\367\355\167\054\112\140\352\344\157
\255\155\264\370\114\212\244\344\037\312\352\117\070\112\056\202
\163\053\307\146\233\012\214\100\234\174\212\366\362\071\140\262

\336\313\354\270\344\157\352\233\135\267\123\220\030\062\125\305
\040\267\224\243\143\060\141\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043\004
\030\060\026\200\024\223\341\103\143\134\074\235\326\047\363\122
\354\027\262\251\257\054\367\166\370\060\035\006\003\125\035\016
\004\026\004\024\223\341\103\143\134\074\235\326\047\363\122\354
\027\262\251\257\054\367\166\370\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\012\006\010\052\206\110\316
\075\004\003\003\003\150\000\060\145\002\060\035\174\244\173\303
\211\165\063\341\073\251\105\277\106\351\351\241\335\311\042\026
\267\107\021\013\330\232\272\361\310\013\160\120\123\002\221\160
\205\131\251\036\244\346\352\043\061\240\000\002\061\000\375\342
\370\263\257\026\271\036\163\304\226\343\301\060\031\330\176\346
\303\227\336\034\117\270\211\057\063\353\110\017\031\367\207\106
\135\046\220\245\205\305\271\172\224\076\207\250\275\000
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_TRUE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Trust for "FIRMAPROFESIONAL CA ROOT-A WEB"
Issuer: CN=FIRMAPROFESIONAL CA ROOT-A WEB,OID.2.5.4.97=VATES-A62634068,O=Firmaprofesional SA,C=ES
Serial Number:31:97:21:ed:af:89:42:7f:35:41:87:a1:67:56:4c:6d
Subject: CN=FIRMAPROFESIONAL CA ROOT-A WEB,OID.2.5.4.97=VATES-A62634068,O=Firmaprofesional SA,C=ES
Not Valid Before: Wed Apr 06 09:01:36 2022
Not Valid After : Sun Mar 31 09:01:36 2047
Fingerprint (SHA-256): BE:F2:56:DA:F2:6E:9C:69:BD:EC:16:02:35:97:98:F3:CA:F7:18:21:A0:3E:01:82:57:C5:3C:65:61:7F:3D:4A
Fingerprint (SHA1): A8:31:11:74:A6:14:15:0D:CA:77:DD:0E:E4:0C:5D:58:FC:A0:72:A5
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "FIRMAPROFESIONAL CA ROOT-A WEB"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\250\061\021\164\246\024\025\015\312\167\335\016\344\014\135\130
\374\240\162\245
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\202\262\255\105\000\202\260\146\143\370\137\303\147\116\316\243
END
CKA_ISSUER MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\034\060\032\006\003\125\004\012\014\023\106\151\162\155\141\160

\162\157\146\145\163\151\157\156\141\154\040\123\101\061\030\060
\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101\066
\062\066\063\064\060\066\070\061\047\060\045\006\003\125\004\003
\014\036\106\111\122\115\101\120\122\117\106\105\123\111\117\116
\101\114\040\103\101\040\122\117\117\124\055\101\040\127\105\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\061\227\041\355\257\211\102\177\065\101\207\241\147\126
\114\155
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CAEDICOM Root"
Issuer: C=ES,O=EDICOM,CN=CAEDICOM Root
Serial Number:fb:71:26:58:ad:99:e5
Subject: C=ES,O=EDICOM,CN=CAEDICOM Root
Not Valid Before: Wed May 21 11:06:35 2014
Not Valid After: Sun May 21 10:20:00 2034
Fingerprint (MD5): cd:d5:a1:fe:28:31:9c:13:be:d5:c1:e8:cf:56:f0:76
Fingerprint (SHA1): 55:9b:ba:7b:0f:fe:80:d6:d3:82:9b:1f:d0:7a:a4:d3:22:19:47:90
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CAEDICOM Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\066\061\026\060\024\006\003\125\004\003\014\015\103\101\105
\104\111\103\117\115\040\122\157\157\164\061\017\060\015\006\003
\125\004\012\014\006\105\104\111\103\117\115\061\013\060\011\006
\003\125\004\006\023\002\105\123
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\066\061\026\060\024\006\003\125\004\003\014\015\103\101\105
\104\111\103\117\115\040\122\157\157\164\061\017\060\015\006\003
\125\004\012\014\006\105\104\111\103\117\115\061\013\060\011\006
\003\125\004\006\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\000\373\161\046\130\255\231\345
END

CKA_VALUE MULTILINE_OCTAL
\060\202\005\121\060\202\003\071\240\003\002\001\002\002\010\000
\373\161\046\130\255\231\345\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\066\061\026\060\024\006\003\125\004
\003\014\015\103\101\105\104\111\103\117\115\040\122\157\157\164
\061\017\060\015\006\003\125\004\012\014\006\105\104\111\103\117
\115\061\013\060\011\006\003\125\004\006\023\002\105\123\060\036
\027\015\061\064\060\065\062\061\061\061\060\066\063\065\132\027
\015\063\064\060\065\062\061\061\060\062\060\060\060\132\060\066
\061\026\060\024\006\003\125\004\003\014\015\103\101\105\104\111
\103\117\115\040\122\157\157\164\061\017\060\015\006\003\125\004
\012\014\006\105\104\111\103\117\115\061\013\060\011\006\003\125
\004\006\023\002\105\123\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\333\200\312\350\111\164\307\323\070
\056\361\305\043\142\374\066\214\057\036\176\071\013\351\006\364
\125\233\245\230\051\224\355\206\107\062\203\363\305\222\172\005
\327\051\002\076\026\303\050\177\065\144\051\172\171\273\241\342
\036\141\024\215\347\000\320\334\242\124\145\212\337\151\271\161
\107\177\070\070\026\106\247\151\061\021\065\114\341\052\177\377
\155\117\225\075\343\135\110\115\031\123\010\132\153\041\325\022
\060\151\227\220\257\055\301\365\177\101\137\111\066\217\115\270
\036\032\225\137\332\017\157\134\025\065\304\021\274\137\205\233
\275\255\073\125\136\273\337\316\273\257\134\231\140\335\037\151
\032\111\110\041\371\011\012\317\162\247\360\362\336\345\170\031
\276\022\335\315\207\171\101\316\057\105\327\013\221\020\021\004
\036\022\235\362\070\003\137\026\151\256\240\012\332\300\371\353
\240\015\030\017\171\136\221\235\344\037\024\234\064\023\031\002
\104\272\121\303\356\171\262\140\024\243\257\274\110\055\050\070
\150\001\103\144\312\016\206\203\142\320\212\031\246\047\361\053
\173\113\051\041\133\232\314\150\102\020\310\113\117\017\043\262
\210\174\304\134\156\027\160\305\167\257\225\300\045\244\042\012
\323\174\371\330\162\310\320\055\275\247\350\322\055\213\114\241
\156\012\374\264\100\063\273\232\153\374\244\352\311\376\340\064
\210\103\314\306\274\077\165\322\245\251\257\372\227\271\076\267
\316\124\240\115\300\135\056\301\050\330\143\124\162\270\254\132
\365\072\373\040\141\006\072\364\240\053\070\253\314\203\014\111
\324\156\076\155\017\076\163\057\066\346\363\117\263\300\000\321
\105\111\133\214\366\243\230\035\204\177\231\012\303\352\012\074
\303\323\044\170\110\147\365\033\073\016\035\016\103\261\004\165
\301\240\071\166\213\366\331\002\245\035\341\236\133\007\273\066
\127\112\041\115\371\211\151\264\154\017\327\257\240\025\044\231
\347\370\327\123\224\354\022\277\244\245\327\355\356\216\065\167
\167\334\246\177\040\124\222\326\143\326\162\236\115\052\266\217
\163\363\031\241\304\260\037\346\064\243\013\000\076\227\111\047
\141\252\252\004\101\063\070\265\120\121\314\066\025\333\037\377
\275\312\110\203\110\247\263\002\003\001\000\001\243\143\060\141
\060\035\006\003\125\035\016\004\026\004\024\024\315\052\131\170

\143\253\141\031\350\270\075\241\340\132\300\165\347\371\313\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\037\006\003\125\035\043\004\030\060\026\200\024\024\315\052
\131\170\143\253\141\031\350\270\075\241\340\132\300\165\347\371
\313\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\075\011\031\000\266\221\002\154\354\016\367
\341\342\142\260\277\063\015\375\125\022\364\010\232\367\053\055
\256\367\234\107\330\037\006\001\023\265\216\347\262\202\013\075
\204\131\103\324\007\330\053\134\020\172\044\054\312\215\350\325
\243\071\234\061\314\353\340\072\341\325\277\317\307\207\173\140
\377\107\071\327\243\104\326\010\046\133\317\132\124\354\210\323
\216\017\171\074\310\243\117\246\302\216\047\360\336\022\256\136
\031\255\347\042\126\212\130\062\340\371\006\320\251\052\264\065
\233\014\206\046\121\000\224\107\120\374\245\304\045\141\371\130
\360\105\160\056\111\166\177\021\326\157\265\371\051\005\341\015
\303\116\130\037\257\035\354\067\320\112\371\006\006\201\323\333
\240\226\270\016\221\060\171\346\120\337\210\270\013\251\134\324
\007\364\311\250\314\175\217\223\143\011\144\000\005\052\150\146
\103\273\242\273\376\225\256\371\304\245\012\210\142\110\170\045
\174\052\077\021\144\246\323\042\040\107\235\062\326\362\343\310
\244\141\164\347\202\302\104\272\240\321\135\137\274\361\104\016
\203\117\034\120\205\304\351\347\154\374\346\270\125\341\242\032
\200\267\220\104\247\204\042\227\107\042\336\253\070\067\317\265
\362\034\076\102\160\273\165\266\145\050\153\313\177\202\065\252
\366\363\040\170\050\163\007\226\060\160\245\052\161\134\241\171
\244\026\271\106\075\136\264\000\111\205\211\323\016\337\201\256
\130\215\130\326\341\305\104\170\056\034\040\273\242\107\227\277
\166\024\073\251\050\217\237\013\165\322\241\074\355\053\307\216
\220\241\172\242\231\060\142\374\205\035\065\163\073\363\265\131
\042\033\315\010\261\014\235\165\152\333\205\073\016\207\237\062
\117\222\000\001\001\114\111\150\202\200\101\154\371\375\161\275
\213\364\170\012\140\243\236\261\122\035\300\212\343\236\305\277
\053\031\152\230\247\261\336\025\120\237\252\224\045\217\251\200
\202\247\162\272\111\144\011\047\141\053\156\274\043\050\063\135
\236\156\360\271\275\040\062\214\335\240\013\231\273\264\204\004
\044\165\051\226\367\247\245\027\270\121\005\353\164\255\121\171
\226\374\273\373\337\011\055\010\222\104\316\300\322\263\030\307
\024\042\277\041\361
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CAEDICOM Root"
Issuer: C=ES,O=EDICOM,CN=CAEDICOM Root

Serial Number:fb:71:26:58:ad:99:e5
Subject: C=ES,O=EDICOM,CN=CAEDICOM Root
Not Valid Before: Wed May 21 11:06:35 2014
Not Valid After: Sun May 21 10:20:00 2034
Fingerprint (MD5): cd:d5:a1:fe:28:31:9c:13:be:d5:c1:e8:cf:56:f0:76
Fingerprint (SHA1): 55:9b:ba:7b:0f:fe:80:d6:d3:82:9b:1f:d0:7a:a4:d3:22:19:47:90
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CAEDICOM Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\125\233\272\173\017\376\200\326\323\202\233\037\320\172\244\323
\042\031\107\220
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\325\241\376\050\061\234\023\276\325\301\350\317\126\360\166
END
CKA_ISSUER
MULTILINE_OCTAL
\060\066\061\026\060\024\006\003\125\004\003\014\015\103\101\105
\104\111\103\117\115\040\122\157\157\164\061\017\060\015\006\003
\125\004\012\014\006\105\104\111\103\117\115\061\013\060\011\006
\003\125\004\006\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\000\373\161\046\130\255\231\345
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Symantec Enterprise Mobile Root for Microsoft"
Issuer: CN=Symantec Enterprise Mobile Root for Microsoft,O=Symantec Corporation,C=US
Serial Number:0f:6b:55:2f:9e:bf:90:7b:0f:66:29:a9:bd:f4:d8:ce
Subject: CN=Symantec Enterprise Mobile Root for Microsoft,O=Symantec Corporation,C=US
Not Valid Before: Thu Mar 15 00:00:00 2012
Not Valid
After: Sun Mar 14 23:59:59 2032
Fingerprint (MD5): 71:d0:a5:ff:2d:59:74:16:94:be:e3:7d:1e:5c:86:0b
Fingerprint (SHA1): 92:b4:6c:76:e1:30:54:e1:04:f2:30:51:7e:6e:50:4d:43:ab:10:b5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Enterprise Mobile Root for Microsoft"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164
\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061\066
\060\064\006\003\125\004\003\023\055\123\171\155\141\156\164\145
\143\040\105\156\164\145\162\160\162\151\163\145\040\115\157\142
\151\154\145\040\122\157\157\164\040\146\157\162\040\115\151\143
\162\157\163\157\146\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164
\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061\066
\060\064\006\003\125\004\003\023\055\123\171\155\141\156\164\145
\143\040\105\156\164\145\162\160\162\151\163\145\040\115\157\142
\151\154\145\040\122\157\157\164\040\146\157\162\040\115\151\143
\162\157\163\157\146\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\017\153\125\057\236\277\220\173\017\146\051\251\275\364
\330\316
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\275\060\202\002\245\240\003\002\001\002\002\020\017
\153\125\057\236\277\220\173\017\146\051\251\275\364\330\316\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\144
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035\060
\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145\143
\040\103\157\162\160\157\162\141\164\151\157\156\061\066\060\064
\006\003\125\004\003\023\055\123\171\155\141\156\164\145\143\040
\105\156\164\145\162\160\162\151\163\145\040\115\157\142\151\154
\145\040\122\157\157\164\040\146\157\162\040\115\151\143\162\157
\163\157\146\164\060\036\027\015\061\062\060\063\061\065\060\060
\060\060\060\060\132\027\015\063\062\060\063\061\064\062\063\065
\071\065\071\132\060\144\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\035\060\033\006\003\125\004\012\023\024\123\171
\155\141\156\164\145\143\040\103\157\162\160\157\162\141\164\151
\157\156\061\066\060\064\006\003\125\004\003\023\055\123\171\155
\141\156\164\145\143\040\105\156\164\145\162\160\162\151\163\145
\040\115\157\142\151\154\145\040\122\157\157\164\040\146\157\162
\040\115\151\143\162\157\163\157\146\164\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\265\075\260\162\356
\221\351\245\151\234\021\115\172\371\263\372\075\362\224\233\043
\267\246\003\354\142\030\374\205\022\042\376\301\161\175\124\223

\271\221\175\142\366\312\250\070\025\145\370\167\075\345\202\040
\072\324\265\321\156\215\006\111\275\337\202\016\044\205\347\357
\170\055\030\362\340\013\150\106\076\044\020\310\127\356\016\155
\161\246\323\261\126\034\327\051\325\262\352\124\005\012\250\074
\241\270\045\122\007\005\240\337\347\334\356\134\073\101\265\253
\134\063\062\322\316\353\351\226\370\100\364\012\272\063\035\370
\126\003\011\202\365\147\007\304\300\064\301\135\374\105\273\352
\074\232\325\164\161\155\325\206\323\302\374\205\274\124\353\243
\325\362\117\325\105\257\127\274\360\042\300\217\242\105\310\165
\064\167\336\241\155\067\162\263\163\215\014\153\123\272\131\341
\250\076\200\127\322\137\131\356\150\165\317\201\234\243\312\105
\214\067\333\005\162\064\034\062\002\370\325\371\054\015\332\130
\236\304\027\264\233\311\220\304\210\131\077\161\221\220\104\030
\276\042\213\171\222\056\102\260\213\227\133\002\003\001\000\001
\243\153\060\151\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\047\006\003\125\035\021\004\040\060\036
\244\034\060\032\061\030\060\026\006\003\125\004\003\023\017\115
\120\113\111\055\062\060\064\070\055\061\055\061\061\061\060\035
\006\003\125\035\016\004\026\004\024\115\354\337\046\006\334\044
\020\300\266\231\364\327\071\307\157\031\370\046\050\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001
\000\251\127\131\320\001\124\024\106\257\307\171\124\014\152\052
\133\330\072\035\201\344\210\243\061\264\361\363\065\361\106\163
\134\103\311\376\274\242\152\031\300\275\057\137\313\070\243\155
\156\350\024\136\362\170\176\105\172\341\273\364\056\233\105\353
\340\035\120\034\064\133\177\230\212\206\017\207\332\344\144\046
\167\374\011\337\043\101\117\016\237\372\016\372\104\205\360\051
\227\244\224\342\364\100\055\221\034\166\364\250\140\336\161\246
\260\005\342\117\151\331\031\013\211\072\340\372\253\053\372\361
\263\062\355\374\174\160\145\136\320\173\021\173\235\350\133\032
\112\166\244\173\121\071\254\175\251\014\164\070\350\273\125\337
\304\316\300\247\041\132\270\033\237\001\305\247\020\376\175\371
\152\010\231\001\321\366\065\120\070\344\366\103\344\030\330\200
\114\354\307\004\342\141\214\175\111\355\317\264\245\361\362\220
\222\011\010\065\163\240\043\062\312\351\234\236\034\276\013\007
\054\167\136\027\114\332\234\202\341\200\033\245\363\332\367\210
\277\277\071\047\370\044\376\261\113\310\227\355\344\022\024\045
\210
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Symantec Enterprise Mobile Root for Microsoft"
Issuer: CN=Symantec Enterprise Mobile Root for Microsoft,O=Symantec Corporation,C=US

Serial Number:0f:6b:55:2f:9e:bf:90:7b:0f:66:29:a9:bd:f4:d8:ce
Subject: CN=Symantec Enterprise Mobile Root for Microsoft,O=Symantec Corporation,C=US
Not Valid Before: Thu Mar 15 00:00:00 2012
Not Valid After: Sun Mar 14 23:59:59 2032
Fingerprint (MD5): 71:d0:a5:ff:2d:59:74:16:94:be:e3:7d:1e:5c:86:0b
#
Fingerprint (SHA1): 92:b4:6c:76:e1:30:54:e1:04:f2:30:51:7e:6e:50:4d:43:ab:10:b5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Enterprise Mobile Root for Microsoft"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\222\264\154\166\341\060\124\341\004\362\060\121\176\156\120\115
\103\253\020\265
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\161\320\245\377\055\131\164\026\224\276\343\175\036\134\206\013
END
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164
\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061\066
\060\064\006\003\125\004\003\023\055\123\171\155\141\156\164\145
\143\040\105\156\164\145\162\160\162\151\163\145\040\115\157\142
\151\154\145\040\122\157\157\164\040\146\157\162\040\115\151\143
\162\157\163\157\146\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\017\153\125\057\236\277\220\173\017\146\051\251\275\364
\330\316
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "I.CA Root CA/RSA"
Issuer: 2.5.4.5=NTRCZ-26439395,CN=I.CA Root CA/RSA,O=První certifikaní autorita\, a.s.,C=CZ
Serial Number:05:f5:e1:00
Subject: 2.5.4.5=NTRCZ-26439395,CN=I.CA Root CA/RSA,O=První certifikaní autorita\, a.s.,C=CZ
Not Valid Before: Wed May 27 12:20:00 2015
Not Valid After: Sun May 27 12:20:00 2040
Fingerprint (MD5): 34:ba:8d:c4:33:9a:b5:27:ee:bd:5b:7c:7d:82:97:7f
Fingerprint (SHA1): 9b:09:59:89:81:54:08:1b:f6:a9:0e:9b:9e:58:a4:69:0c:9b:a1:04
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA Root CA/RSA"
CKA_CERTIFICATE_TYPE
CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\055\060\053\006\003\125\004\012\014\044\120\162\166\156\303\255
\040\143\145\162\164\151\146\151\153\141\304\215\156\303\255\040
\141\165\164\157\162\151\164\141\054\040\141\056\163\056\061\031
\060\027\006\003\125\004\003\014\020\111\056\103\101\040\122\157
\157\164\040\103\101\057\122\123\101\061\027\060\025\006\003\125
\004\005\023\016\116\124\122\103\132\055\062\066\064\063\071\063
\071\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\055\060\053\006\003\125\004\012\014\044\120\162\166\156\303\255
\040\143\145\162\164\151\146\151\153\141\304\215\156\303\255\040
\141\165\164\157\162\151\164\141\054\040\141\056\163\056\061\031
\060\027\006\003\125\004\003\014\020\111\056\103\101\040\122\157
\157\164\040\103\101\057\122\123\101\061\027\060\025\006\003\125
\004\005\023\016\116\124\122\103\132\055\062\066\064\063\071\063
\071\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\005\365\341\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\176\060\202\004\146\240\003\002\001\002\002\004\005
\365\341\000\060\015\006\011\052\206\110\206\367\015\001\001\015
\005\000\060\160\061\013\060\011\006\003\125\004\006\023\002\103
\132\061\055\060\053\006\003\125\004\012\014\044\120\162\166\156
\303\255\040\143\145\162\164\151\146\151\153\141\304\215\156\303
\255\040\141\165\164\157\162\151\164\141\054\040\141\056\163\056
\061\031\060\027\006\003\125\004\003\014\020\111\056\103\101\040
\122\157\157\164\040\103\101\057\122\123\101\061\027\060\025\006
\003\125\004\005\023\016\116\124\122\103\132\055\062\066\064\063
\071\063\071\065\060\036\027\015\061\065\060\065\062\067\061\062
\062\060\060\060\132\027\015\064\060\060\065\062\067\061\062\062
\060\060\060\132\060\160\061\013\060\011\006\003\125\004\006\023
\002\103\132\061\055\060\053\006\003\125\004\012\014\044\120\162
\166\156\303\255\040\143\145\162\164\151\146\151\153\141\304\215
\156\303\255\040\141\165\164\157\162\151\164\141\054\040\141\056
\163\056\061\031\060\027\006\003\125\004\003\014\020\111\056\103

\101\040\122\157\157\164\040\103\101\057\122\123\101\061\027\060
\025\006\003\125\004\005\023\016\116\124\122\103\132\055\062\066
\064\063\071\063\071\065\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\252\077\125\265\211\257\166\024\006
\052\144\046\224\070\017\137\366\334\004\157\061\105\365\012\375
\073\177\233\162\157\370\100\174\376\135\375\064\231\005\070\224
\111\272\261\360\275\370\231\134\300\121\372\252\015\373\346\161
\025\205\143\021\052\167\006\221\222\006\210\263\374\024\341\231
\106\264\051\202\256\204\203\356\265\046\207\156\370\213\125\104
\235\100\330\377\052\132\252\350\177\322\145\341\024\107\302\174
\061\375\165\141\012\033\214\200\112\236\264\342\056\024\107\061
\356\274\005\121\256\246\176\317\021\270\305\110\275\005\124\302
\204\344\247\150\153\370\270\372\176\050\311\271\317\344\041\117
\145\311\210\150\240\070\331\165\245\021\073\114\034\156\113\036
\324\206\154\301\255\005\107\323\054\224\015\314\207\055\032\055
\303\326\314\336\204\376\354\153\300\341\043\023\241\323\234\030
\176\340\162\327\134\125\274\114\263\100\061\033\234\100\315\232
\353\200\016\161\256\327\142\156\132\026\117\037\366\145\105\321
\237\172\205\101\031\302\172\072\316\041\222\344\224\160\114\273
\250\101\306\304\273\065\315\365\072\236\143\251\215\240\152\321
\040\104\252\052\266\110\245\162\303\316\236\344\130\110\107\011
\177\002\101\363\015\034\155\011\170\360\327\024\321\240\125\374
\021\326\132\032\000\171\345\073\346\010\313\122\236\244\011\253
\153\347\154\234\052\057\042\175\373\271\120\262\336\120\323\057
\014\162\271\326\263\267\263\010\346\353\173\254\364\264\305\366
\301\062\037\247\031\041\365\334\136\067\252\307\037\123\233\103
\076\346\236\237\332\015\327\126\242\017\123\151\055\125\277\353
\206\170\021\277\246\327\132\115\363\016\223\163\352\377\016\320
\347\217\361\310\263\360\330\030\163\154\245\162\210\361\160\114
\107\124\266\233\132\321\274\046\067\215\030\337\233\153\056\333
\013\045\263\212\262\343\255\006\134\155\273\175\027\003\007\001
\212\060\227\211\164\155\112\224\167\056\353\356\317\260\036\265
\352\166\364\265\024\070\225\327\325\331\057\077\262\244\046\314
\115\243\134\215\011\363\136\014\205\062\316\126\154\002\010\361
\113\243\253\277\310\124\240\005\205\164\344\165\035\172\274\234
\073\140\075\152\375\031\221\002\003\001\000\001\243\202\001\036
\060\202\001\032\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024
\166\271\003\110\373\325\030\241\241\067\240\355\314\150\202\114
\122\064\066\015\060\201\327\006\003\125\035\040\004\201\317\060
\201\314\060\201\311\006\004\125\035\040\000\060\201\300\060\201
\275\006\010\053\006\001\005\005\007\002\002\060\201\260\032\201
\255\124\145\156\164\157\040\153\166\141\154\151\146\151\153\157
\166\141\156\171\040\163\171\163\164\145\155\157\166\171\040\143
\145\162\164\151\146\151\153\141\164\040\142\171\154\040\166\171
\144\141\156\040\160\157\144\154\145\040\172\141\153\157\156\141

\040\062\062\067\057\062\060\060\060\040\123\142\056\040\166\040
\160\154\141\164\156\145\155\040\172\156\145\156\151\057\124\150
\151\163\040\161\165\141\154\151\146\151\145\144\040\163\171\163
\164\145\155\040\143\145\162\164\151\146\151\143\141\164\145\040
\167\141\163\040\151\163\163\165\145\144\040\141\143\143\157\162
\144\151\156\147\040\164\157\040\101\143\164\040\116\157\056\040
\062\062\067\057\062\060\060\060\040\103\157\154\154\056\060\015
\006\011\052\206\110\206\367\015\001\001\015\005\000\003\202\002
\001\000\031\124\002\045\203\333\042\226\213\035\225\236\231\333
\064\316\223\320\037\056\173\134\140\044\152\014\327\205\104\170
\037\034\111\362\024\370\203\124\031\246\235\062\146\270\043\246
\073\206\052\237\066\374\027\374\120\017\140\306\067\375\044\250
\367\171\247\216\277\330\007\025\124\136\122\014\276\370\246\330
\310\101\104\361\366\023\334\203\031\133\257\335\144\367\063\026
\207\017\025\132\361\144\274\324\347\125\077\062\070\211\232\363
\314\110\305\154\061\161\222\232\046\027\302\174\107\002\155\065
\047\237\363\032\341\252\035\015\164\021\251\223\174\101\250\157
\273\216\234\305\001\344\163\366\272\120\056\346\020\324\274\157
\023\232\070\271\151\106\245\006\326\362\114\154\067\253\074\370
\333\032\306\125\360\310\370\035\041\156\057\000\152\261\342\155
\132\004\055\175\335\011\117\366\357\024\057\300\022\352\011\031
\053\032\312\240\161\233\261\072\062\274\377\103\030\363\175\057
\365\056\210\351\121\266\361\111\220\114\377\046\307\303\131\335
\164\137\301\120\135\070\134\235\150\125\151\152\264\100\167\311
\137\062\051\110\124\223\301\263\041\043\166\241\125\060\151\043
\077\061\111\304\241\315\073\166\131\225\132\202\264\255\161\265
\276\246\221\314\200\025\112\057\316\224\256\030\125\111\165\040
\104\270\363\001\233\301\170\054\216\020\114\247\144\255\255\072
\353\114\035\126\056\177\224\324\036\320\012\325\311\124\201\016
\036\376\367\224\371\141\072\077\065\356\323\140\311\373\110\262
\156\302\331\276\172\156\230\005\160\000\243\321\027\307\306\064
\257\154\365\115\217\135\122\014\335\200\233\172\155\347\230\343
\071\205\134\077\213\314\104\242\100\066\062\223\022\126\220\002
\236\076\131\150\002\037\126\210\036\257\301\376\017\173\125\215
\227\331\273\246\223\107\272\174\370\107\266\071\327\214\362\100
\154\207\234\014\376\055\335\334\161\374\016\221\010\244\103\075
\212\127\335\335\007\353\247\227\121\320\272\204\231\255\213\171
\376\311\004\220\203\023\053\351\227\015\145\211\362\021\055\067
\216\113\270\273\322\172\071\052\305\334\320\135\015\335\004\047
\230\237\130\375\216\206\273\005\177\360\355\067\222\220\335\234
\275\374
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
 CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "I.CA Root CA/RSA"
Issuer: 2.5.4.5=NTRCZ-26439395,CN=I.CA Root CA/RSA,O=První certifikaní autorita\, a.s.,C=CZ
Serial Number:05:f5:e1:00
Subject: 2.5.4.5=NTRCZ-26439395,CN=I.CA Root CA/RSA,O=První certifikaní autorita\, a.s.,C=CZ
Not Valid Before: Wed May 27 12:20:00 2015
Not Valid After: Sun May 27 12:20:00 2040
Fingerprint (MD5): 34:ba:8d:c4:33:9a:b5:27:ee:bd:5b:7c:7d:82:97:7f
Fingerprint (SHA1): 9b:09:59:89:81:54:08:1b:f6:a9:0e:9b:9e:58:a4:69:0c:9b:a1:04
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA Root CA/RSA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\233\011\131\211\201\124\010\033\366\251\016\233\236\130\244\151
\014\233\241\004
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\064\272\215\304\063\232\265\047\356\275\133\174\175\202\227\177
END
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\055\060\053\006\003\125\004\012\014\044\120\162\166\156\303\255
\040\143\145\162\164\151\146\151\153\141\304\215\156\303\255\040
\141\165\164\157\162\151\164\141\054\040\141\056\163\056\061\031
\060\027\006\003\125\004\003\014\020\111\056\103\101\040\122\157
\157\164\040\103\101\057\122\123\101\061\027\060\025\006\003\125
\004\005\023\016\116\124\122\103\132\055\062\066\064\063\071\063
\071\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\005\365\341\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "MULTICERT Root Certification Authority 01"
Issuer: CN=MULTICERT Root Certification Authority 01,O=MULTICERT - Serviços de Certificação Electrónica S.A.,C=PT
Serial Number:54:4d:a5:bc:40:35:56:5a
#
 Subject: CN=MULTICERT Root Certification Authority 01,O=MULTICERT - Serviços de Certificação Electrónica S.A.,C=PT

Not Valid Before: Fri Apr 04 08:59:47 2014
Not Valid After: Mon Apr 04 08:59:47 2039
Fingerprint (MD5): 30:b4:c2:a5:23:02:1d:2e:1b:c0:59:f2:ca:23:99:20
Fingerprint (SHA1): 46:af:7a:31:b5:99:46:0d:46:9d:60:41:14:5b:13:65:1d:f9:17:0a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "MULTICERT Root Certification Authority 01"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\120\124
\061\102\060\100\006\003\125\004\012\014\071\115\125\114\124\111
\103\105\122\124\040\055\040\123\145\162\166\151\303\247\157\163
\040\144\145\040\103\145\162\164\151\146\151\143\141\303\247\303
\243\157\040\105\154\145\143\164\162\303\263\156\151\143\141\040
\123\056\101\056\061\062\060\060\006\003\125\004\003\014\051\115
\125\114\124\111\103\105\122\124\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\060\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\120\124
\061\102\060\100\006\003\125\004\012\014\071\115\125\114\124\111
\103\105\122\124\040\055\040\123\145\162\166\151\303\247\157\163
\040\144\145\040\103\145\162\164\151\146\151\143\141\303\247\303
\243\157\040\105\154\145\143\164\162\303\263\156\151\143\141\040
\123\056\101\056\061\062\060\060\006\003\125\004\003\014\051\115
\125\114\124\111\103\105\122\124\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\124\115\245\274\100\065\126\132
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\361\060\202\003\331\240\003\002\001\002\002\010\124
\115\245\274\100\065\126\132\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\205\061\013\060\011\006\003\125
\004\006\023\002\120\124\061\102\060\100\006\003\125\004\012\014
\071\115\125\114\124\111\103\105\122\124\040\055\040\123\145\162
\166\151\303\247\157\163\040\144\145\040\103\145\162\164\151\146
\151\143\141\303\247\303\243\157\040\105\154\145\143\164\162\303
\263\156\151\143\141\040\123\056\101\056\061\062\060\060\006\003
\125\004\003\014\051\115\125\114\124\111\103\105\122\124\040\122
\157\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157

\156\040\101\165\164\150\157\162\151\164\171\040\060\061\060\036
\027\015\061\064\060\064\060\064\060\070\065\071\064\067\132\027
\015\063\071\060\064\060\064\060\070\065\071\064\067\132\060\201
\205\061\013\060\011\006\003\125\004\006\023\002\120\124\061\102
\060\100\006\003\125\004\012\014\071\115\125\114\124\111\103\105
\122\124\040\055\040\123\145\162\166\151\303\247\157\163\040\144
\145\040\103\145\162\164\151\146\151\143\141\303\247\303\243\157
\040\105\154\145\143\164\162\303\263\156\151\143\141\040\123\056
\101\056\061\062\060\060\006\003\125\004\003\014\051\115\125\114
\124\111\103\105\122\124\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\060\061\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\316\334\077\364\031\156\273\025\151
\206\364\344\315\347\072\160\073\307\232\213\073\203\000\201\133
\373\040\026\132\276\277\130\000\137\051\346\127\157\176\212\054
\025\007\134\032\143\214\102\137\026\335\332\211\204\105\127\027
\226\240\234\241\165\042\101\032\072\375\305\027\221\023\366\276
\142\012\274\156\045\055\133\300\214\020\146\367\342\326\373\334
\110\061\243\032\250\345\115\110\311\242\034\163\376\217\146\100
\143\167\131\007\074\075\024\237\324\367\205\221\320\303\102\365
\033\141\263\167\200\200\052\155\022\002\226\213\121\331\301\157
\047\013\032\007\064\000\377\322\131\114\051\350\327\031\143\330
\221\264\077\374\216\016\045\362\241\022\007\145\312\065\336\253
\376\026\243\010\214\257\177\176\022\364\131\026\005\037\350\255
\164\171\062\367\170\002\266\264\314\253\333\036\070\141\004\031
\172\101\100\332\132\021\144\165\002\375\144\321\326\224\102\017
\042\347\145\315\257\220\016\014\133\061\001\231\121\357\105\214
\175\245\070\332\236\174\113\344\246\350\263\244\202\326\003\064
\056\117\267\121\253\167\070\011\365\006\376\334\146\033\017\077
\372\175\357\214\125\276\340\015\206\225\241\334\275\304\303\010
\321\105\036\362\275\276\160\361\346\046\306\273\010\261\050\245
\302\245\355\210\326\241\300\373\043\361\047\071\314\341\204\007
\031\274\176\366\314\070\377\156\020\273\106\351\043\211\044\201
\377\000\342\121\000\334\122\120\175\023\120\175\026\075\100\215
\323\277\371\212\145\330\142\022\051\167\302\272\302\111\064\117
\212\171\151\311\113\025\363\064\336\317\257\206\342\345\310\251
\126\141\114\006\124\132\305\154\031\352\363\310\104\315\044\032
\166\321\161\000\131\153\331\165\233\316\375\020\376\261\203\242
\245\267\222\206\166\233\112\367\035\334\214\205\246\130\255\212
\246\150\151\027\311\155\033\246\317\047\113\051\054\335\161\102
\032\211\020\345\325\233\022\137\111\213\204\274\330\010\134\373
\317\070\102\257\276\321\156\173\221\252\146\100\305\005\176\053
\320\146\266\307\337\122\376\364\105\155\043\222\041\236\022\001
\220\163\203\342\245\011\015\327\300\370\205\225\036\143\321\077
\065\332\224\321\067\331\365\002\003\001\000\001\243\143\060\141
\060\035\006\003\125\035\016\004\026\004\024\325\071\034\234\133
\157\004\252\242\225\114\357\040\335\051\164\244\305\105\161\060

\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\037\006\003\125\035\043\004\030\060\026\200\024\325\071\034
\234\133\157\004\252\242\225\114\357\040\335\051\164\244\305\105
\161\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\077\347\137\363\042\026\336\203\236\040\344
\202\347\345\236\167\311\373\053\260\164\015\337\033\164\042\017
\163\020\241\260\027\354\114\014\324\050\160\152\146\162\104\151
\020\223\166\065\317\057\370\217\074\253\031\174\161\222\225\161
\033\067\025\302\033\050\172\357\156\170\070\337\373\217\233\001
\040\334\257\366\326\215\011\146\332\304\106\251\374\225\252\104
\043\022\337\107\300\260\025\354\265\261\236\154\017\221\252\246
\072\345\301\015\140\154\120\100\160\134\134\310\316\263\314\353
\355\252\210\031\126\245\244\310\014\172\345\166\100\147\063\264
\075\226\334\167\313\043\170\371\123\133\317\215\336\261\247\216
\132\172\242\062\143\243\210\327\045\141\132\135\111\072\162\346
\317\252\224\206\154\156\367\202\340\216\147\223\050\305\250\015
\115\357\070\255\171\112\146\215\204\001\010\004\171\363\122\306
\101\347\232\142\006\263\365\022\036\354\331\000\103\323\353\226
\167\164\341\171\371\024\224\204\155\272\124\202\005\214\337\001
\362\060\210\201\254\172\057\213\103\054\166\064\316\065\347\207
\216\116\013\012\245\032\127\261\123\132\277\153\330\276\000\176
\306\371\356\146\061\010\261\337\224\063\204\234\167\117\173\144
\057\357\216\017\131\050\042\313\360\134\076\053\375\065\326\225
\377\003\354\145\122\176\276\362\031\370\173\325\122\054\122\167
\232\221\146\101\160\215\325\111\347\013\110\177\212\256\336\105
\075\335\376\346\322\344\222\303\173\316\060\240\111\156\067\255
\250\323\054\266\075\236\041\333\006\127\342\360\256\006\373\331
\305\021\067\241\173\333\035\021\174\150\166\040\076\365\274\245
\331\146\265\041\255\105\046\306\135\036\002\243\101\304\324\175
\201\031\313\027\227\006\017\346\354\164\000\106\304\165\335\075
\360\103\064\257\246\274\374\366\202\373\317\305\372\263\017\045
\245\077\146\020\326\236\202\245\333\072\023\171\336\215\251\327
\246\215\206\322\057\331\151\015\342\165\170\176\111\137\042\253
\206\160\050\121\263\172\266\240\171\372\324\345\203\247\260\167
\312\333\001\202\357\342\276\115\057\323\300\115\320\343\151\156
\174\046\233\353\246\373\105\357\261\004\212\057\252\041\006\366
\346\324\274\101\043
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "MULTICERT Root Certification Authority 01"
Issuer: CN=MULTICERT Root Certification Authority 01,O=MULTICERT - Serviços de Certificação Electrónica S.A.,C=PT

Serial Number:54:4d:a5:bc:40:35:56:5a
Subject: CN=MULTICERT Root Certification Authority 01,O=MULTICERT - Serviços de Certificação Electrónica S.A.,C=PT
Not Valid Before: Fri Apr 04 08:59:47 2014
Not Valid After: Mon Apr 04 08:59:47 2039
Fingerprint (MD5): 30:b4:c2:a5:23:02:1d:2e:1b:c0:59:f2:ca:23:99:20
Fingerprint (SHA1): 46:af:7a:31:b5:99:46:0d:46:9d:60:41:14:5b:13:65:1d:f9:17:0a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "MULTICERT Root Certification Authority 01"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\106\257\172\061\265\231\106\015\106\235\140\101\024\133\023\145
\035\371\027\012
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\060\264\302\245\043\002\035\056\033\300\131\362\312\043\231\040
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\120\124
\061\102\060\100\006\003\125\004\012\014\071\115\125\114\124\111
\103\105\122\124\040\055\040\123\145\162\166\151\303\247\157\163
\040\144\145\040\103\145\162\164\151\146\151\143\141\303\247\303
\243\157\040\105\154\145\143\164\162\303\263\156\151\143\141\040
\123\056\101\056\061\062\060\060\006\003\125\004\003\014\051\115
\125\114\124\111\103\105\122\124\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\124\115\245\274\100\065\126\132
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certification Authority of WoSign G2"
Issuer: CN=Certification Authority of WoSign G2,O=WoSign CA Limited,C=CN
Serial Number:6b:25:da:8a:88:9d:7c:bc:0f:05:b3:b1:7a:61:45:44
Subject: CN=Certification Authority of WoSign G2,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Nov 08 00:58:58 2014
Not Valid After: Tue Nov 08 00:58:58 2044
Fingerprint (MD5): c8:1c:7d:19:aa:cb:71:93:f2:50:f8:52:a8:1e:ba:60

Fingerprint (SHA1): fb:ed:dc:90:65:b7:27:20:37:bc:55:0c:9c:56:de:bb:f2:78:94:e1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certification Authority of WoSign G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\055\060\053\006
\003\125\004\003\023\044\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156\040\107\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\055\060\053\006
\003\125\004\003\023\044\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\153\045\332\212\210\235\174\274\017\005\263\261\172\141
\105\104
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\174\060\202\002\144\240\003\002\001\002\002\020\153
\045\332\212\210\235\174\274\017\005\263\261\172\141\105\104\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\130
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\032\060
\030\006\003\125\004\012\023\021\127\157\123\151\147\156\040\103
\101\040\114\151\155\151\164\145\144\061\055\060\053\006\003\125
\004\003\023\044\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\157\146\040\127
\157\123\151\147\156\040\107\062\060\036\027\015\061\064\061\061
\060\070\060\060\065\070\065\070\132\027\015\064\064\061\061\060
\070\060\060\065\070\065\070\132\060\130\061\013\060\011\006\003
\125\004\006\023\002\103\116\061\032\060\030\006\003\125\004\012
\023\021\127\157\123\151\147\156\040\103\101\040\114\151\155\151
\164\145\144\061\055\060\053\006\003\125\004\003\023\044\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\157\146\040\127\157\123\151\147\156\040
\107\062\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202

\001\001\000\276\305\304\240\042\200\111\117\277\331\207\021\306
\123\341\273\017\275\140\177\257\366\202\016\037\334\260\216\075
\227\340\120\074\217\072\357\146\073\105\007\233\040\370\343\327
\045\206\065\220\026\242\135\157\060\031\010\207\013\177\006\262
\235\142\217\336\257\222\245\140\324\053\200\232\122\077\365\232
\203\351\064\132\313\331\325\142\134\346\016\340\337\006\230\016
\200\174\312\264\035\023\210\153\016\250\044\167\003\320\356\133
\363\312\151\221\065\071\126\305\155\343\367\075\117\136\223\070
\044\312\030\351\044\313\222\003\335\314\034\075\011\160\344\040
\344\361\256\254\273\163\151\243\143\072\017\105\017\241\112\232
\302\321\143\254\313\020\370\075\346\116\050\267\353\304\225\261
\254\375\136\253\372\101\313\135\235\113\334\364\174\166\357\147
\177\000\172\215\322\240\032\134\115\042\341\265\332\335\166\263
\324\166\337\136\270\213\230\310\024\124\314\153\027\222\267\340
\112\277\111\224\141\013\070\220\217\135\044\154\045\173\073\171
\331\342\176\235\255\237\230\241\006\374\170\024\140\127\370\356
\200\167\261\002\003\001\000\001\243\102\060\100\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006
\003\125\035\016\004\026\004\024\372\140\251\353\145\305\335\026
\024\010\116\014\017\215\233\340\367\144\257\147\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\001\001\000
\127\303\172\066\202\234\215\230\342\253\100\252\107\217\307\247
\133\355\174\347\075\146\132\073\061\273\337\363\026\063\221\374
\174\173\245\302\246\146\343\252\260\267\047\230\077\111\327\140
\147\147\077\066\117\112\313\361\024\372\132\207\050\034\355\217
\101\062\306\225\371\175\332\275\173\133\302\260\041\343\217\106
\334\041\070\103\164\114\373\060\370\027\162\301\062\374\310\221
\027\304\314\130\067\116\013\314\132\367\041\065\050\203\154\140
\055\104\353\122\214\120\075\265\154\022\327\372\011\273\154\262
\112\261\305\211\344\374\323\122\330\141\027\376\172\224\204\217
\171\266\063\131\272\017\304\013\342\160\240\113\170\056\372\310
\237\375\257\221\145\012\170\070\025\345\227\027\024\335\371\340
\054\064\370\070\320\204\042\000\300\024\121\030\053\002\334\060
\132\360\350\001\174\065\072\043\257\010\344\257\252\216\050\102
\111\056\360\365\231\064\276\355\017\113\030\341\322\044\074\273
\135\107\267\041\362\215\321\012\231\216\343\156\076\255\160\340
\217\271\312\314\156\201\061\366\173\234\172\171\344\147\161\030
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certification Authority of WoSign G2"
Issuer: CN=Certification Authority of WoSign G2,O=WoSign CA Limited,C=CN
Serial Number:6b:25:da:8a:88:9d:7c:bc:0f:05:b3:b1:7a:61:45:44

Subject: CN=Certification Authority of WoSign G2,O=WoSign CA Limited,C=CN
Not Valid
Before: Sat Nov 08 00:58:58 2014
Not Valid After: Tue Nov 08 00:58:58 2044
Fingerprint (MD5): c8:1c:7d:19:aa:cb:71:93:f2:50:f8:52:a8:1e:ba:60
Fingerprint (SHA1): fb:ed:dc:90:65:b7:27:20:37:bc:55:0c:9c:56:de:bb:f2:78:94:e1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certification Authority of WoSign G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\373\355\334\220\145\267\047\040\067\274\125\014\234\126\336\273
\362\170\224\341
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\310\034\175\031\252\313\161\223\362\120\370\122\250\036\272\140
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\055\060\053\006
\003\125\004\003\023\044\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\153\045\332\212\210\235\174\274\017\005\263\261\172\141
\105\104
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CA WoSign ECC Root"
Issuer: CN=CA WoSign ECC Root,O=WoSign CA Limited,C=CN
Serial Number:68:4a:58:70:80:6b:f0:8f:02:fa:f6:de:e8:b0:90:90
Subject: CN=CA WoSign ECC Root,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Nov 08 00:58:58 2014
Not Valid After: Tue Nov 08 00:58:58 2044
Fingerprint (MD5): 80:c6:53:ee:61:82:28:72:f0:ff:21:b9:17:ca:b2:20
Fingerprint (SHA1): d2:7a:d2:be:ed:94:c0:a1:3c:c7:25:21:ea:5d:71:be:81:19:f3:2b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "CA WoSign ECC Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\023\022\103\101\040\127\157\123\151\147\156\040
\105\103\103\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\023\022\103\101\040\127\157\123\151\147\156\040
\105\103\103\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\150\112\130\160\200\153\360\217\002\372\366\336\350\260
\220\220
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\011\060\202\001\217\240\003\002\001\002\002\020\150
\112\130\160\200\153\360\217\002\372\366\336\350\260\220\220\060
\012\006\010\052\206\110\316\075\004\003\003\060\106\061\013\060
\011\006\003\125\004\006\023\002\103\116\061\032\060\030\006\003
\125\004\012\023\021\127\157\123\151\147\156\040\103\101\040\114
\151\155\151\164\145\144\061\033\060\031\006\003\125\004\003\023
\022\103\101\040\127\157\123\151\147\156\040\105\103\103\040\122
\157\157\164\060\036\027\015\061\064\061\061\060\070\060\060\065
\070\065\070\132\027\015\064\064\061\061\060\070\060\060\065\070
\065\070\132\060\106\061\013\060\011\006\003\125\004\006\023\002
\103\116\061\032\060\030\006\003\125\004\012\023\021\127\157\123
\151\147\156\040\103\101\040\114\151\155\151\164\145\144\061\033
\060\031\006\003\125\004\003\023\022\103\101\040\127\157\123\151
\147\156\040\105\103\103\040\122\157\157\164\060\166\060\020\006
\007\052\206\110\316\075\002\001\006\005\053\201\004\000\042\003
\142\000\004\341\375\216\270\103\044\253\226\173\205\302\272\013
\255\215\340\072\343\044\271\322\261\276\210\072\312\277\112\270
\371\357\054\057\257\121\120\074\107\165\154\370\224\267\233\374
\050\036\305\124\314\143\235\026\113\123\301\347\040\253\315\254
\045\322\177\217\302\301\132\202\136\060\213\172\124\316\003\265
\221\177\252\224\320\321\212\110\314\202\005\046\241\325\121\022
\326\173\066\243\102\060\100\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004

\026\004\024\252\375\325\132\243\366\207\213\062\205\375\321\062
\133\200\105\223\363\003\270\060\012\006\010\052\206\110\316\075
\004\003\003\003\150\000\060\145\002\061\000\344\244\204\260\201
\325\075\260\164\254\224\244\350\016\075\000\164\114\241\227\153
\371\015\121\074\241\331\073\364\015\253\251\237\276\116\162\312
\205\324\331\354\265\062\105\030\157\253\255\002\060\175\307\367
\151\143\057\241\341\230\357\023\020\321\171\077\321\376\352\073
\177\336\126\364\220\261\025\021\330\262\042\025\320\057\303\046
\056\153\361\221\262\220\145\364\232\346\220\356\112
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CA WoSign ECC Root"
Issuer: CN=CA WoSign ECC Root,O=WoSign CA Limited,C=CN
Serial Number:68:4a:58:70:80:6b:f0:8f:02:fa:f6:de:e8:b0:90:90
Subject: CN=CA WoSign ECC Root,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Nov 08 00:58:58 2014
Not Valid After: Tue Nov 08 00:58:58 2044
Fingerprint (MD5): 80:c6:53:ee:61:82:28:72:f0:ff:21:b9:17:ca:b2:20
Fingerprint (SHA1): d2:7a:d2:be:ed:94:c0:a1:3c:c7:25:21:ea:5d:71:be:81:19:f3:2b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA WoSign ECC Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\322\172\322\276\355\224\300\241\074\307\045\041\352\135\161\276
\201\031\363\053
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\306\123\356\141\202\050\162\360\377\041\271\027\312\262\040
END
CKA_ISSUER
MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\023\022\103\101\040\127\157\123\151\147\156\040
\105\103\103\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\150\112\130\160\200\153\360\217\002\372\366\336\350\260
\220\220
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CCA India 2015 SPL"
Issuer: CN=CCA India 2015 SPL,O=India PKI,C=IN
Serial Number: 10165 (0x27b5)
Subject: CN=CCA India 2015 SPL,O=India PKI,C=IN
Not Valid Before: Thu Jan 29 11:36:43 2015
Not Valid After: Wed Jan 29 11:36:43 2025
#
Fingerprint (MD5): 16:da:3e:ac:1d:0a:57:a9:b4:e2:de:d0:93:96:dc:d4
Fingerprint (SHA1): 3b:c6:dc:e0:03:07:bd:67:60:41:eb:d8:59:70:c6:2f:8f:da:51:09
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CCA India 2015 SPL"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\033\060\031\006\003\125\004\003\023\022\103\103
\101\040\111\156\144\151\141\040\062\060\061\065\040\123\120\114
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\033\060\031\006\003\125\004\003\023\022\103\103
\101\040\111\156\144\151\141\040\062\060\061\065\040\123\120\114
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\047\265
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\003\053\060\202\002\023\240\003\002\001\002\002\002\047
\265\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\076\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\033\060\031\006\003\125\004\003\023\022\103\103
\101\040\111\156\144\151\141\040\062\060\061\065\040\123\120\114
\060\036\027\015\061\065\060\061\062\071\061\061\063\066\064\063
\132\027\015\062\065\060\061\062\071\061\061\063\066\064\063\132
\060\076\061\013\060\011\006\003\125\004\006\023\002\111\116\061

\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\033\060\031\006\003\125\004\003\023\022\103\103
\101\040\111\156\144\151\141\040\062\060\061\065\040\123\120\114
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\227\327\066\211\075\067\101\016\221\077\153\040\137\374\072
\176\073\132\135\057\303\014\207\123\074\030\242\310\141\163\015
\010\016\126\036\322\156\140\245\127\145\334\376\317\120\206\017
\132\116\253\142\213\004\312\126\357\341\321\236\256\164\255\252
\372\077\101\130\321\125\160\160\076\105\311\033\200\163\374\010
\210\344\213\162\250\012\265\051\127\260\255\012\221\101\032\234
\137\120\175\254\027\032\045\133\041\360\225\053\347\337\067\254
\064\363\007\260\361\035\301\023\357\173\056\072\305\251\141\220
\262\170\137\124\120\074\263\132\125\143\266\313\020\243\157\373
\015\364\266\357\346\010\336\242\020\277\166\227\177\352\331\226
\321\324\303\163\002\161\264\251\260\254\254\037\027\040\245\107
\106\326\104\002\070\231\276\313\024\170\376\346\137\304\177\335
\157\351\252\107\024\220\021\330\035\200\300\025\324\214\240\231
\343\031\016\012\017\314\032\010\234\324\123\007\000\340\037\111
\277\202\202\114\317\233\330\156\323\324\021\000\022\154\017\175
\140\147\112\214\120\333\362\057\340\271\171\207\203\303\134\302
\071\002\003\001\000\001\243\063\060\061\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\021\006\003\125
\035\016\004\012\004\010\114\021\160\252\217\335\037\007\060\013
\006\003\125\035\017\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\001\001\000\055
\274\214\025\312\064\355\114\050\042\273\341\123\045\113\072\227
\251\355\046\242\244\253\115\373\012\022\156\347\065\346\147\016
\030\201\142\066\245\314\302\337\032\345\150\001\201\116\263\231
\324\107\025\022\235\166\351\241\246\023\035\260\377\175\273\127
\343\357\131\233\310\073\120\151\306\143\072\254\240\301\345\220
\350\144\051\134\110\101\151\067\254\073\273\335\343\125\306\327
\222\015\225\203\260\050\127\302\243\251\226\247\312\336\114\036
\232\377\076\245\056\047\136\333\146\147\047\205\357\253\212\134
\163\174\210\315\107\146\360\235\203\314\204\217\342\051\364\037
\101\157\267\365\041\015\365\224\126\121\343\374\377\023\130\267
\237\003\356\051\237\322\001\260\142\236\224\275\031\206\132\103
\372\152\211\201\260\352\134\030\207\312\200\225\373\355\001\277
\021\032\337\225\024\256\056\342\257\315\221\220\272\263\047\303
\157\020\330\331\016\264\245\164\154\201\267\137\031\314\376\047
\116\263\105\230\130\030\234\127\304\222\162\022\317\247\202\071
\325\341\020\227\012\206\060\105\205\143\250\153\115\232\374
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CCA India 2015 SPL"
Issuer: CN=CCA India 2015 SPL,O=India PKI,C=IN
Serial Number: 10165 (0x27b5)
Subject: CN=CCA India 2015 SPL,O=India PKI,C=IN
Not Valid Before: Thu Jan 29 11:36:43 2015
Not Valid After: Wed Jan 29 11:36:43 2025
Fingerprint (MD5): 16:da:3e:ac:1d:0a:57:a9:b4:e2:de:d0:93:96:dc:d4
Fingerprint (SHA1): 3b:c6:dc:e0:03:07:bd:67:60:41:eb:d8:59:70:c6:2f:8f:da:51:09
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CCA India 2015 SPL"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\073\306\334\340\003\007\275\147\140\101\353\330\131\160\306\057
\217\332\121\011
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\026\332\076\254\035\012\127\251\264\342\336\320\223\226\334\324
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\033\060\031\006\003\125\004\003\023\022\103\103
\101\040\111\156\144\151\141\040\062\060\061\065\040\123\120\114
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\047\265
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swedish Government Root Authority
v3"
Issuer: CN=Swedish Government Root Authority v3,O=Swedish Social Insurance Agency,C=SE
Serial Number:32:69:a2:bf:40:6b:8d:b4:47:83:64:3c:8b:0d:c9:43
Subject: CN=Swedish Government Root Authority v3,O=Swedish Social Insurance Agency,C=SE
Not Valid Before: Tue Sep 29 11:32:32 2015
Not Valid After: Sat Sep 29 11:42:09 2040
Fingerprint (MD5): 63:e2:fd:ea:a2:55:6a:70:54:fb:3a:22:e3:34:b1:17
Fingerprint (SHA1): 74:6f:88:f9:ac:16:3c:53:00:9e:ef:92:0c:40:67:75:6a:15:71:7e
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swedish Government Root Authority v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163
\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163
\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\062\151\242\277\100\153\215\264\107\203\144\074\213\015
\311\103
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\252\060\202\003\222\240\003\002\001\002\002\020\062
\151\242\277\100\153\215\264\107\203\144\074\213\015\311\103\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\146
\061\013\060\011\006\003\125\004\006\023\002\123\105\061\050\060
\046\006\003\125\004\012\023\037\123\167\145\144\151\163\150\040
\123\157\143\151\141\154\040\111\156\163\165\162\141\156\143\145
\040\101\147\145\156\143\171\061\055\060\053\006\003\125\004\003
\023\044\123\167\145\144\151\163\150\040\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\101\165\164\150\157\162
\151\164\171\040\166\063\060\036\027\015\061\065\060\071\062\071
\061\061\063\062\063\062\132\027\015\064\060\060\071\062\071\061
\061\064\062\060\071\132\060\146\061\013\060\011\006\003\125\004
\006\023\002\123\105\061\050\060\046\006\003\125\004\012\023\037
\123\167\145\144\151\163\150\040\123\157\143\151\141\154\040\111
\156\163\165\162\141\156\143\145\040\101\147\145\156\143\171\061
\055\060\053\006\003\125\004\003\023\044\123\167\145\144\151\163
\150\040\107\157\166\145\162\156\155\145\156\164\040\122\157\157
\164\040\101\165\164\150\157\162\151\164\171\040\166\063\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005

\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\272
\036\242\151\033\150\117\134\217\272\364\043\307\136\146\005\170
\205\066\130\243\242\177\147\357\242\014\026\222\244\112\213\340
\240\222\207\125\067\013\304\321\304\320\100\103\227\062\120\117
\354\225\107\267\077\257\103\005\345\204\227\011\357\126\124\347
\103\063\107\375\255\361\072\233\230\244\341\344\121\243\271\254
\214\013\356\045\006\011\362\323\272\065\147\141\214\302\275\046
\313\327\143\314\327\203\063\331\114\342\357\371\033\237\250\313
\015\166\001\055\162\311\042\273\150\221\336\220\017\073\075\264
\102\275\031\175\237\204\134\074\176\102\067\206\261\140\302\110
\207\122\116\134\127\376\316\222\256\312\076\126\267\263\236\225
\232\224\370\057\241\320\242\056\302\124\132\154\314\314\326\255
\113\107\320\056\207\202\063\250\173\120\071\247\052\054\261\133
\047\012\237\255\365\024\353\374\215\123\262\163\053\124\043\364
\214\227\231\227\373\065\334\314\265\372\063\024\046\215\165\247
\044\246\350\024\056\055\246\200\050\203\232\077\270\312\073\307
\365\030\340\375\354\216\171\373\252\102\154\112\113\026\176\363
\202\003\156\272\347\021\006\245\237\204\053\322\140\155\351\106
\356\101\132\226\271\024\375\034\077\206\022\361\124\046\046\375
\147\200\057\345\250\055\050\056\103\267\144\302\357\344\267\176
\226\334\204\213\047\331\166\075\230\201\123\024\334\102\105\241
\124\147\371\332\030\146\220\012\264\107\220\074\001\345\053\243
\146\357\157\373\062\203\361\063\175\062\041\154\245\105\025\077
\057\363\125\221\110\223\237\045\317\055\074\071\073\122\015\032
\257\307\337\253\157\200\330\220\313\236\161\162\152\102\151\223
\352\222\000\075\111\004\331\243\134\272\105\373\002\020\377\255
\151\164\122\245\070\143\232\146\210\004\262\021\272\023\252\071
\325\203\137\355\145\133\123\310\235\134\262\205\240\170\160\065
\115\134\044\020\244\366\061\052\222\125\101\331\363\027\154\231
\023\130\372\335\050\320\154\023\275\133\207\215\223\203\255\130
\051\126\025\264\130\047\112\233\021\154\240\246\147\105\072\316
\320\330\316\377\220\063\354\132\061\115\017\122\022\373\255\366
\141\137\344\057\157\015\146\060\345\240\117\317\317\375\137\002
\003\001\000\001\243\124\060\122\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\234\274\001\347\253\144\065\365\061\233\215\265
\373\027\231\210\002\313\233\362\060\020\006\011\053\006\001\004
\001\202\067\025\001\004\003\002\001\000\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\207\253
\152\344\347\153\044\122\075\366\042\203\117\123\004\105\062\234
\141\132\026\134\234\104\265\243\321\226\320\100\376\317\146\025
\136\176\100\000\040\025\375\247\252\144\332\247\141\146\150\302
\335\122\161\045\240\152\271\335\300\315\316\206\010\324\074\065
\021\057\175\364\157\322\332\014\227\003\145\227\203\264\076\072
\313\011\164\215\353\005\312\172\351\200\260\267\121\055\042\223
\343\232\031\356\355\227\010\041\203\255\307\012\221\137\304\312
\333\136\257\270\347\214\272\072\111\322\125\003\065\031\031\120

\112\342\206\247\273\170\075\225\375\261\037\106\362\117\146\362
\373\277\205\144\266\012\043\030\222\011\236\111\105\061\266\326
\024\127\236\374\211\105\164\177\071\314\300\152\150\310\317\107
\320\341\036\307\323\057\055\371\054\044\073\374\152\272\224\023
\336\314\162\362\242\035\313\037\237\325\203\167\046\136\176\233
\240\257\151\237\170\333\245\301\156\161\134\110\102\116\053\330
\170\270\325\017\245\077\154\313\217\220\315\107\330\220\031\111
\205\326\154\374\342\253\252\102\277\313\023\227\277\151\104\165
\143\065\055\332\240\307\375\141\367\312\101\075\124\234\364\066
\300\344\156\041\110\237\135\161\142\201\323\362\045\346\131\214
\131\101\046\110\247\343\353\147\152\323\354\064\267\230\367\314
\312\243\066\006\225\347\310\060\131\367\377\311\241\321\344\171
\274\337\023\037\056\331\263\165\321\004\267\043\011\041\314\035
\041\034\047\234\016\053\372\301\207\030\311\372\371\111\203\214
\022\026\373\305\022\316\073\017\102\372\360\005\145\176\250\307
\353\122\112\371\230\136\161\243\254\022\307\050\161\032\132\165
\317\207\312\037\067\050\034\024\235\220\120\157\306\277\112\314
\307\045\317\061\335\133\221\116\166\250\021\325\166\146\331\277
\200\163\142\260\354\303\376\104\274\315\131\023\013\014\055\330
\241\314\252\142\115\124\105\136\244\122\243\214\127\074\024\061
\223\124\316\245\026\124\136\055\102\263\356\145\251\266\235\077
\154\316\141\331\126\313\336\352\240\126\336\155\206\003\372\267
\201\152\214\322\330\363\327\266\300\254\051\204\131\043\016\233
\227\152\346\240\316\325\052\124\030\357\120\230\171\040
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swedish Government Root Authority v3"
Issuer: CN=Swedish Government Root Authority v3,O=Swedish Social
Insurance Agency,C=SE
Serial Number:32:69:a2:bf:40:6b:8d:b4:47:83:64:3c:8b:0d:c9:43
Subject: CN=Swedish Government Root Authority v3,O=Swedish Social Insurance Agency,C=SE
Not Valid Before: Tue Sep 29 11:32:32 2015
Not Valid After: Sat Sep 29 11:42:09 2040
Fingerprint (MD5): 63:e2:fd:ea:a2:55:6a:70:54:fb:3a:22:e3:34:b1:17
Fingerprint (SHA1): 74:6f:88:f9:ac:16:3c:53:00:9e:ef:92:0c:40:67:75:6a:15:71:7e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swedish Government Root Authority v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\157\210\371\254\026\074\123\000\236\357\222\014\100\147\165
\152\025\161\176

```
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\143\342\375\352\242\125\152\160\124\373\072\042\343\064\261\027
END
CKA_ISSUER MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163
\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\062\151\242\277\100\153\215\264\107\203\144\074\213\015
\311\103
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Swedish Government Root Authority v2"
# Issuer: CN=Swedish Government Root Authority v2,O=Swedish Social Insurance Agency,C=SE
# Serial Number:54:12:15:9f:ab:8a:75:93:44:94:ca:77:40:56:2e:ef
# Subject: CN=Swedish Government Root Authority v2,O=Swedish Social Insurance Agency,C=SE
# Not Valid Before: Tue May 05 11:15:23 2015
#
 Not Valid After: Sat May 05 11:24:19 2040
# Fingerprint (MD5): 33:85:e1:95:66:4b:83:50:73:42:c2:e0:da:a0:40:92
# Fingerprint (SHA1): 32:f4:42:09:3b:36:d7:03:1b:75:ca:4d:ad:dc:b3:27:fa:a0:2b:9c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swedish Government Root Authority v2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163
\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\062
END
```

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163
\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\124\022\025\237\253\212\165\223\104\224\312\167\100\126
\056\357
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\013\060\202\003\363\240\003\002\001\002\002\020\124
\022\025\237\253\212\165\223\104\224\312\167\100\126\056\357\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\146
\061\013\060\011\006\003\125\004\006\023\002\123\105\061\050\060
\046\006\003\125\004\012\023\037\123\167\145\144\151\163\150\040
\123\157\143\151\141\154\040\111\156\163\165\162\141\156\143\145
\040\101\147\145\156\143\171\061\055\060\053\006\003\125\004\003
\023\044\123\167\145\144\151\163\150\040\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\101\165\164\150\157\162
\151\164\171\040\166\062\060\036\027\015\061\065\060\065\060\065
\061\061\061\065\062\063\132\027\015\064\060\060\065\060\065\061
\061\062\064\061\071\132\060\146\061\013\060\011\006\003\125\004
\006\023\002\123\105\061\050\060\046\006\003\125\004\012\023\037
\123\167\145\144\151\163\150\040\123\157\143\151\141\154\040\111
\156\163\165\162\141\156\143\145\040\101\147\145\156\143\171\061
\055\060\053\006\003\125\004\003\023\044\123\167\145\144\151\163
\150\040\107\157\166\145\162\156\155\145\156\164\040\122\157\157
\164\040\101\165\164\150\157\162\151\164\171\040\166\062\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\310
\256\265\103\274\102\105\113\065\143\077\002\113\305\377\333\066
\327\047\305\302\256\105\146\243\161\207\026\115\211\117\141\224
\340\126\106\270\320\104\023\346\163\220\360\141\170\101\212\340
\032\176\067\254\002\051\276\350\377\002\046\306\032\174\012\261
\217\144\051\242\332\007\212\325\044\205\150\031\222\062\337\237
\051\140\130\155\052\205\200\021\066\311\266\302\323\236\204\014
\272\121\021\314\124\351\253\006\060\022\217\040\167\005\300\306
\215\232\233\131\310\266\205\350\160\007\002\261\036\377\327\151
\317\026\106\213\141\057\102\315\122\246\330\016\172\057\207\055
\306\057\074\042\103\261\223\176\303\026\166\331\314\327\213\354
\021\033\320\311\161\024\302\211\111\176\361\244\020\252\065\074
\250\033\273\377\354\062\100\345\275\052\363\246\001\023\310\214

\227\031\220\316\143\371\260\153\175\367\371\212\316\156\340\205
\347\333\224\325\172\040\045\240\065\360\251\367\257\132\050\132
\014\310\363\164\071\213\061\073\042\314\111\045\311\157\270\134
\172\056\054\226\343\057\243\076\312\171\167\151\221\132\370\360
\305\123\067\116\123\155\111\047\126\142\312\345\371\163\140\251
\027\073\133\242\045\257\055\173\311\267\333\317\031\021\072\063
\161\071\131\132\003\351\347\054\014\377\155\234\162\143\143\200
\005\130\123\206\334\050\165\026\302\345\360\023\131\241\201\377
\005\014\231\250\266\074\154\056\305\016\000\230\201\351\203\167
\146\103\073\132\216\205\105\114\262\317\271\075\344\234\066\223
\100\172\123\025\051\324\021\220\272\241\140\212\235\253\364\112
\112\152\335\207\252\301\355\005\332\236\133\126\341\210\117\052
\153\225\050\206\146\120\241\357\332\112\262\220\012\066\067\111
\205\227\102\170\007\147\346\233\040\241\014\154\311\317\317\376
\167\225\204\132\172\073\027\260\357\114\367\055\221\252\317\031
\157\306\371\022\050\347\036\012\246\226\315\041\260\003\142\120
\203\006\040\346\350\336\337\103\026\026\271\201\240\360\201\064
\133\313\301\211\366\363\350\042\270\316\270\122\076\121\036\261
\005\270\267\003\053\013\254\164\165\123\044\341\166\270\117\045
\166\135\357\321\232\363\156\112\270\174\113\370\212\300\031\002
\003\001\000\001\243\201\264\060\201\261\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\022\006\003\125\035
\023\001\001\377\004\010\060\006\001\001\377\002\001\001\060\035
\006\003\125\035\016\004\026\004\024\143\153\102\140\123\127\021
\273\310\044\211\045\002\146\104\164\241\015\045\156\060\020\006
\011\053\006\001\004\001\202\067\025\001\004\003\002\001\000\060
\021\006\003\125\035\040\004\012\060\010\060\006\006\004\125\035
\040\000\060\107\006\003\125\035\045\004\100\060\076\006\010\053
\006\001\005\005\007\003\001\006\010\053\006\001\005\005\007\003
\002\006\010\053\006\001\005\005\007\003\004\006\012\053\006\001
\004\001\202\067\012\003\014\006\010\053\006\001\005\005\007\003
\003\006\010\053\006\001\005\005\007\003\010\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\043
\056\252\205\227\113\244\134\020\257\332\370\075\275\223\130\057
\170\373\031\167\003\071\026\107\111\162\125\314\207\350\275\244
\177\322\253\044\254\347\324\120\356\235\330\203\306\231\040\373
\026\057\210\306\027\067\312\213\036\253\320\342\154\007\130\270
\144\221\241\020\241\151\067\165\136\376\332\163\024\346\212\153
\276\302\140\041\057\300\371\243\004\110\066\133\067\276\332\154
\375\351\226\216\236\361\123\174\217\145\104\247\125\175\013\224
\116\124\366\377\062\275\057\175\234\245\136\102\304\114\051\343
\020\144\057\346\317\132\073\064\125\050\141\321\047\022\273\156
\124\233\201\130\254\325\136\235\127\003\240\115\321\377\067\164
\246\215\363\371\225\375\052\211\165\172\171\067\375\046\171\057
\047\163\177\251\031\040\345\320\137\230\350\226\005\217\230\171
\351\171\020\101\051\001\103\365\151\067\314\120\020\150\265\330
\104\116\016\362\231\343\047\054\152\216\137\273\175\273\153\161
\113\006\212\335\052\330\012\077\133\310\162\056\130\141\012\017

\201\150\036\107\307\351\055\272\357\215\334\016\243\043\303\262
\055\265\107\261\213\264\076\047\110\347\334\010\142\014\124\376
\103\327\225\112\277\007\057\112\100\176\006\245\121\207\046\211
\005\335\074\312\117\376\034\047\351\333\210\036\300\262\376\343
\357\037\176\261\350\131\225\240\117\253\012\211\000\340\163\262
\347\034\301\027\120\200\207\114\322\103\031\131\225\322\133\024
\133\012\133\300\174\211\161\172\265\012\300\212\105\057\356\304
\300\376\124\055\347\225\044\167\005\056\356\164\306\240\220\261
\163\334\102\326\240\165\311\130\131\005\242\336\021\277\131\351
\015\247\046\302\156\300\106\212\306\036\323\365\352\017\175\075
\162\315\031\225\114\272\340\150\227\215\130\300\152\357\171\367
\262\150\152\270\162\066\303\044\014\350\062\355\275\361\237\310
\357\336\165\322\333\166\251\224\047\070\364\001\141\277\146\070
\217\152\075\334\000\133\263\374\104\337\003\113\371\361\166\045
\065\377\122\037\010\035\320\245\024\351\213\006\053\170\203\054
\161\134\117\221\207\143\326\014\016\005\210\074\224\240\261\132
\124\026\337\335\121\303\250\066\056\054\202\174\271\232\260
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swedish
Government Root Authority v2"
Issuer: CN=Swedish Government Root Authority v2,O=Swedish Social Insurance Agency,C=SE
Serial Number:54:12:15:9f:ab:8a:75:93:44:94:ca:77:40:56:2e:ef
Subject: CN=Swedish Government Root Authority v2,O=Swedish Social Insurance Agency,C=SE
Not Valid Before: Tue May 05 11:15:23 2015
Not Valid After: Sat May 05 11:24:19 2040
Fingerprint (MD5): 33:85:e1:95:66:4b:83:50:73:42:c2:e0:da:a0:40:92
Fingerprint (SHA1): 32:f4:42:09:3b:36:d7:03:1b:75:ca:4d:ad:dc:b3:27:fa:a0:2b:9c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swedish Government Root Authority v2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\062\364\102\011\073\066\327\003\033\165\312\115\255\334\263\047
\372\240\053\234
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\063\205\341\225\146\113\203\120\163\102\302\340\332\240\100\222
END
CKA_ISSUER MULTILINE_OCTAL
\060\146\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\050\060\046\006\003\125\004\012\023\037\123\167\145\144\151\163

\150\040\123\157\143\151\141\154\040\111\156\163\165\162\141\156
\143\145\040\101\147\145\156\143\171\061\055\060\053\006\003\125
\004\003\023\044\123\167\145\144\151\163\150\040\107\157\166\145
\162\156\155\145\156\164\040\122\157\157\164\040\101\165\164\150
\157\162\151\164\171\040\166\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\124\022\025\237\253\212\165\223\104\224\312\167\100\126
\056\357
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Tunisian Root Certificate Authority - TunRootCA2"
Issuer: O=National Digital Certification Agency,CN=Tunisian Root Certificate Authority - TunRootCA2,C=TN
Serial Number:21:66:15:05:05:27:05:05:bc:8a:b0:1d:af:0a:be:c4
Subject:
O=National Digital Certification Agency,CN=Tunisian Root Certificate Authority - TunRootCA2,C=TN
Not Valid Before: Tue May 05 08:57:01 2015
Not Valid After: Wed May 05 08:57:01 2027
Fingerprint (MD5): 03:d1:25:b1:f0:55:ad:ca:dd:7c:59:93:50:ef:17:21
Fingerprint (SHA1): 96:38:63:3c:90:56:ae:88:14:a0:65:d2:3b:dc:60:a0:ee:70:2f:a7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Tunisian Root Certificate Authority - TunRootCA2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\071\060\067\006\003\125\004\003\023\060\124\165\156\151\163\151
\141\156\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\124\165\156\122\157\157\164\103\101\062\061\056\060\054\006\003
\125\004\012\023\045\116\141\164\151\157\156\141\154\040\104\151
\147\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\147\145\156\143\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\071\060\067\006\003\125\004\003\023\060\124\165\156\151\163\151
\141\156\040\122\157\157\164\040\103\145\162\164\151\146\151\143

\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\124\165\156\122\157\157\164\103\101\062\061\056\060\054\006\003
\125\004\012\023\045\116\141\164\151\157\156\141\154\040\104\151
\147\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\147\145\156\143\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\041\146\025\005\005\047\005\005\274\212\260\035\257\012
\276\304
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\274\060\202\003\244\240\003\002\001\002\002\020\041
\146\025\005\005\047\005\005\274\212\260\035\257\012\276\304\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\170
\061\013\060\011\006\003\125\004\006\023\002\124\116\061\071\060
\067\006\003\125\004\003\023\060\124\165\156\151\163\151\141\156
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\145\040\101\165\164\150\157\162\151\164\171\040\055\040\124\165
\156\122\157\157\164\103\101\062\061\056\060\054\006\003\125\004
\012\023\045\116\141\164\151\157\156\141\154\040\104\151\147\151
\164\141\154\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\147\145\156\143\171\060\036\027\015\061\065\060\065
\060\065\060\070\065\067\060\061\132\027\015\062\067\060\065\060
\065\060\070\065\067\060\061\132\060\170\061\013\060\011\006\003
\125\004\006\023\002\124\116\061\071\060\067\006\003\125\004\003
\023\060\124\165\156\151\163\151\141\156\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\040\055\040\124\165\156\122\157\157\164\103
\101\062\061\056\060\054\006\003\125\004\012\023\045\116\141\164
\151\157\156\141\154\040\104\151\147\151\164\141\154\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\147\145\156
\143\171\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\260\007\347\142\373\320\015\125\316\147\267\127\215
\156\014\251\047\124\036\353\251\044\253\147\217\217\234\141\017
\333\050\062\057\073\370\054\145\222\055\256\272\063\222\300\053
\236\362\037\136\155\043\135\263\130\037\215\241\300\155\165\205
\012\260\023\116\133\126\106\213\071\275\013\202\273\072\103\233
\010\272\106\356\371\027\353\315\310\327\343\165\023\336\256\121
\110\012\316\040\225\106\237\002\354\125\214\164\252\132\374\374
\352\011\063\065\156\243\107\006\307\335\176\204\150\016\307\022
\312\224\303\355\346\154\002\155\336\002\211\065\263\004\313\105
\370\174\107\244\323\037\337\345\134\043\342\363\042\173\271\113
\242\375\027\065\135\110\351\277\365\263\045\143\213\347\170\353
\374\165\047\275\210\134\246\205\077\101\337\225\174\335\172\106
\217\376\036\332\261\253\330\323\216\315\006\214\311\330\122\102
\021\122\242\203\217\134\203\173\344\047\266\217\037\240\136\075
\322\165\175\171\123\223\006\227\343\003\307\226\054\332\001\074

\171\305\073\120\350\260\323\241\244\342\323\203\175\104\370\020
\317\240\032\052\362\145\200\275\167\301\230\145\166\256\022\041
\142\312\072\276\276\265\231\303\133\304\321\277\233\300\012\312
\130\036\025\246\327\041\136\261\115\012\345\160\170\232\150\346
\164\146\062\024\052\036\021\276\210\367\006\366\125\243\303\037
\156\027\220\125\321\212\100\211\126\103\325\117\346\242\311\210
\144\000\005\121\077\127\264\074\266\276\152\221\161\100\361\242
\134\361\327\355\234\266\127\366\131\324\052\021\345\324\345\277
\273\036\321\310\327\137\104\005\233\273\211\072\255\247\103\167
\176\025\140\174\210\135\233\354\245\134\322\106\255\014\213\124
\105\324\224\121\125\105\122\252\134\330\021\254\370\126\042\154
\331\322\024\351\267\116\102\205\124\106\370\001\306\075\046\006
\167\350\262\065\033\360\235\102\311\177\376\200\047\001\120\313
\177\305\254\124\372\153\155\226\214\101\244\241\322\347\265\221
\110\157\167\034\213\302\053\164\376\074\134\304\135\224\316\253
\361\040\226\153\301\014\132\137\371\345\065\271\154\243\020\147
\357\221\252\110\016\357\110\267\166\130\142\331\276\236\102\263
\244\275\065\002\003\001\000\001\243\102\060\100\060\035\006\003
\125\035\016\004\026\004\024\314\163\305\243\152\051\061\227\247
\215\240\330\124\301\012\165\266\043\077\246\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000
\056\362\207\110\355\231\236\237\001\014\074\311\012\170\123\174
\030\065\336\266\345\154\364\000\200\341\233\213\331\372\373\252
\373\145\267\322\311\365\327\247\313\176\311\261\242\161\130\155
\131\067\326\340\063\020\312\265\331\162\333\116\045\067\252\246
\335\035\030\275\365\311\212\234\172\210\356\037\002\304\055\222
\124\175\127\342\134\031\030\043\002\172\134\111\225\266\230\347
\302\140\101\145\100\273\354\132\267\161\234\120\362\163\166\373
\137\015\357\065\317\264\151\215\205\350\114\220\027\003\013\311
\263\056\040\067\143\021\142\246\117\343\064\340\373\171\125\347
\306\302\256\102\376\260\064\154\111\043\016\162\007\173\146\005
\125\110\373\022\017\240\300\372\116\321\373\075\314\376\375\026
\113\126\120\315\021\054\247\233\367\261\012\317\246\353\357\335
\216\270\256\102\010\174\244\214\224\352\206\307\103\343\367\074
\212\337\107\322\060\100\310\055\123\365\157\021\111\314\041\214
\226\103\117\020\240\107\241\126\215\037\034\133\330\126\133\353
\064\166\341\065\072\161\324\314\041\057\236\065\050\362\132\336
\236\344\356\107\152\020\350\070\275\112\264\175\004\177\005\256
\110\012\264\003\277\056\263\012\033\237\313\255\335\115\320\207
\041\267\107\166\202\203\055\307\127\276\232\025\243\033\060\030
\154\243\072\161\157\144\107\050\222\333\021\141\040\232\167\145
\055\371\254\126\023\154\113\243\137\377\233\244\350\357\347\130
\350\173\236\073\177\152\247\276\071\012\023\224\311\110\116\146
\144\330\123\114\354\101\153\375\374\066\056\327\016\337\141\013
\173\265\100\254\335\102\111\155\236\200\277\140\225\360\351\300
\077\173\273\030\351\070\265\126\116\247\176\212\142\357\230\036

\370\170\100\251\273\330\351\345\264\264\371\343\147\234\354\123
\317\270\102\264\057\223\201\065\240\154\366\272\040\212\150\075
\367\155\377\177\323\114\367\172\224\150\003\167\103\073\065\121
\252\123\022\076\107\023\024\071\254\326\145\217\250\106\377\074
\041\364\322\277\320\110\244\176\247\121\233\227\022\365\231\064
\027\043\126\204\023\143\313\064\312\037\312\272\250\007\051\363
\103\044\012\111\177\375\016\324\220\360\253\103\041\142\234\217
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Tunisian Root Certificate
Authority - TunRootCA2"
Issuer: O=National Digital Certification Agency,CN=Tunisian Root Certificate Authority - TunRootCA2,C=TN
Serial Number:21:66:15:05:05:27:05:05:bc:8a:b0:1d:af:0a:be:c4
Subject: O=National Digital Certification Agency,CN=Tunisian Root Certificate Authority - TunRootCA2,C=TN
Not Valid Before: Tue May 05 08:57:01 2015
Not Valid After: Wed May 05 08:57:01 2027
Fingerprint (MD5): 03:d1:25:b1:f0:55:ad:ca:dd:7c:59:93:50:ef:17:21
Fingerprint (SHA1): 96:38:63:3c:90:56:ae:88:14:a0:65:d2:3b:dc:60:a0:ee:70:2f:a7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Tunisian Root Certificate Authority - TunRootCA2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\226\070\143\074\220\126\256\210\024\240\145\322\073\334\140\240
\356\160\057\247
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\003\321\045\261\360\125\255\312\335\174\131\223\120\357\027\041
END
CKA_ISSUER MULTILINE_OCTAL
\060\170\061\013\060\011\006\003\125\004\006\023\002\124\116\061
\071\060\067\006\003\125\004\003\023\060\124\165\156\151\163\151
\141\156\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\055\040
\124\165\156\122\157\157\164\103\101\062\061\056\060\054\006\003
\125\004\012\023\045\116\141\164\151\157\156\141\154\040\104\151
\147\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\147\145\156\143\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\041\146\025\005\005\047\005\005\274\212\260\035\257\012

\276\304
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "OpenTrust Root CA G2"
Issuer: CN=OpenTrust Root CA G2,O=OpenTrust,C=FR
Serial Number:11:20:a1:69:1b:bf:bd:b9:bd:52:96:8f:23:e8:48:bf:26:11
#
 Subject: CN=OpenTrust Root CA G2,O=OpenTrust,C=FR
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): 57:24:b6:59:24:6b:ae:c8:fe:1c:0c:20:f2:c0:4e:eb
Fingerprint (SHA1): 79:5f:88:60:c5:ab:7c:3d:92:e6:cb:f4:8d:e1:45:cd:11:ef:60:0b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OpenTrust Root CA G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\022\021\040\241\151\033\277\275\271\275\122\226\217\043\350
\110\277\046\021
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\157\060\202\003\127\240\003\002\001\002\002\022\021
\040\241\151\033\277\275\271\275\122\226\217\043\350\110\277\046
\021\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061

\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\062\060\036\027\015\061\064\060\065\062\066\060\060\060\060
\060\060\132\027\015\063\070\060\061\061\065\060\060\060\060\060
\060\132\060\100\061\013\060\011\006\003\125\004\006\023\002\106
\122\061\022\060\020\006\003\125\004\012\014\011\117\160\145\156
\124\162\165\163\164\061\035\060\033\006\003\125\004\003\014\024
\117\160\145\156\124\162\165\163\164\040\122\157\157\164\040\103
\101\040\107\062\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\314\266\127\245\063\224\020\201\062\123\337
\141\176\017\166\071\317\134\302\123\165\035\111\172\226\070\335
\242\163\152\361\157\336\136\242\132\271\161\041\276\066\331\241
\374\274\356\154\250\174\064\032\161\032\350\032\330\137\016\104
\006\355\247\340\363\322\141\013\340\062\242\226\321\070\360\302
\332\001\027\374\344\254\117\350\356\211\036\164\253\117\277\036
\011\266\066\152\126\363\341\356\226\211\146\044\006\344\315\102
\072\112\335\340\232\260\304\202\105\263\376\311\253\134\174\076
\311\353\027\057\014\175\156\256\245\217\310\254\045\012\157\372
\325\105\230\322\065\011\366\003\103\224\376\331\277\040\225\171
\200\230\212\331\211\065\273\121\033\244\067\175\374\231\073\253
\377\277\254\015\217\103\261\231\173\026\020\176\035\157\107\304
\025\217\004\226\010\006\102\004\370\204\326\035\274\221\246\102
\276\111\325\152\210\077\274\055\121\321\236\215\340\122\314\127
\335\065\065\130\333\264\217\044\210\344\213\337\334\153\124\322
\201\053\262\316\222\113\034\037\106\372\035\330\222\313\166\147
\265\011\231\011\345\254\027\024\125\160\306\074\240\126\012\003
\263\334\142\031\337\310\265\060\177\365\074\046\165\021\275\327
\033\263\207\236\007\257\145\161\345\240\317\032\247\011\020\035
\223\211\146\133\350\074\142\062\265\265\072\156\351\205\001\213
\236\103\214\147\163\050\131\133\353\343\334\054\314\245\046\162
\142\022\264\346\234\203\104\366\121\244\342\300\172\044\127\312
\016\245\077\072\265\073\213\345\166\356\160\346\222\336\026\134
\050\133\227\031\047\222\376\172\222\124\316\223\071\012\026\207
\274\143\263\365\261\223\134\340\156\267\320\352\371\142\062\210
\104\373\277\047\050\266\060\225\135\022\050\271\225\276\217\123
\030\345\242\030\026\342\126\244\262\054\020\365\035\067\246\370
\267\366\320\131\134\211\367\302\325\265\224\164\321\325\376\033
\266\360\346\326\036\173\322\074\313\250\343\365\030\363\041\037
\156\357\115\150\006\173\055\135\156\103\211\246\300\371\240\277
\202\036\317\123\177\264\353\054\333\135\366\152\175\100\044\005
\162\211\070\001\223\313\161\302\071\135\006\021\366\157\170\370
\067\015\071\204\047\002\003\001\000\001\243\143\060\141\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\152\071\372\102\042\367
\346\211\000\115\136\175\063\203\313\270\156\167\206\257\060\037

\006\003\125\035\043\004\030\060\026\200\024\152\071\372\102\042
\367\346\211\000\115\136\175\063\203\313\270\156\167\206\257\060
\015\006\011\052\206\110\206\367\015\001\001\015\005\000\003\202
\002\001\000\230\313\253\100\074\345\063\002\227\177\055\207\246
\217\324\136\112\257\270\036\347\273\161\373\200\144\045\251\263
\032\076\150\135\047\046\247\272\052\341\360\127\203\012\144\117
\036\042\164\033\351\220\137\360\254\317\377\117\150\172\070\244
\020\154\015\261\307\244\167\200\030\266\242\050\104\166\247\064
\235\161\204\057\312\131\322\107\210\231\101\042\311\060\230\141
\156\075\250\250\005\155\321\037\300\121\104\126\177\047\065\002
\335\136\230\012\102\353\060\277\215\241\233\121\252\073\352\223
\106\144\305\000\171\336\041\153\366\127\240\206\327\006\162\354
\160\106\113\213\163\335\240\041\165\076\334\035\300\217\323\117
\163\034\205\331\376\177\142\310\225\157\266\323\173\214\272\123
\302\157\233\104\114\171\320\035\160\263\327\237\002\364\262\007
\260\307\345\370\255\043\016\246\126\311\051\022\167\110\331\057
\106\375\073\360\374\164\160\222\245\216\070\010\037\144\060\266
\267\113\373\066\254\020\216\240\122\063\143\235\003\065\126\305
\151\275\306\043\132\047\224\366\244\022\370\055\063\074\241\126
\245\137\326\031\351\355\174\010\275\167\315\047\144\314\224\332
\116\106\120\207\340\371\301\123\200\036\273\255\373\107\122\213
\033\375\242\371\336\016\042\267\075\063\131\154\324\336\365\225
\006\062\015\121\031\101\134\076\117\006\367\271\053\200\047\366
\243\252\172\174\006\341\103\303\023\071\142\032\066\275\340\050
\056\224\002\344\051\056\140\125\256\100\075\260\164\222\136\360
\040\144\226\077\137\105\135\210\265\212\332\002\240\133\105\124
\336\070\075\011\300\250\112\145\106\026\374\252\277\124\116\115
\133\276\070\103\267\050\312\213\063\252\032\045\272\045\134\051
\057\133\112\156\214\352\055\234\052\366\005\166\340\167\227\200
\210\335\147\023\157\035\150\044\213\117\267\164\201\345\364\140
\237\172\125\327\076\067\332\026\153\076\167\254\256\030\160\225
\010\171\051\003\212\376\301\073\263\077\032\017\244\073\136\037
\130\241\225\311\253\057\163\112\320\055\156\232\131\017\125\030
\170\055\074\121\246\227\213\346\273\262\160\252\114\021\336\377
\174\053\067\324\172\321\167\064\217\347\371\102\367\074\201\014
\113\122\012
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL
 CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "OpenTrust Root CA G2"
Issuer: CN=OpenTrust Root CA G2,O=OpenTrust,C=FR
Serial Number:11:20:a1:69:1b:bf:bd:b9:bd:52:96:8f:23:e8:48:bf:26:11
Subject: CN=OpenTrust Root CA G2,O=OpenTrust,C=FR

```
# Not Valid Before: Mon May 26 00:00:00 2014
# Not Valid After: Fri Jan 15 00:00:00 2038
# Fingerprint (MD5): 57:24:b6:59:24:6b:ae:c8:fe:1c:0c:20:f2:c0:4e:eb
# Fingerprint (SHA1): 79:5f:88:60:c5:ab:7c:3d:92:e6:cb:f4:8d:e1:45:cd:11:ef:60:0b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OpenTrust Root CA G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\171\137\210\140\305\253\174\075\222\346\313\364\215\341\105\315
\021\357\140\013
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\127\044\266\131\044\153\256\310\376\034\014\040\362\300\116\353
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\241\151\033\277\275\271\275\122\226\217\043\350
\110\277\046\021
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "OpenTrust Root CA G3"
# Issuer: CN=OpenTrust Root CA G3,O=OpenTrust,C=FR
# Serial Number:11:20:e6:f8:4c:fc:24:b0:be:05:40:ac:da:83:1b:34:60:3f
# Subject: CN=OpenTrust Root CA G3,O=OpenTrust,C=FR
# Not Valid Before: Mon May 26 00:00:00 2014
# Not Valid After: Fri Jan 15 00:00:00 2038
# Fingerprint (MD5):
 21:37:b4:17:16:92:7b:67:46:70:a9:96:d7:a8:13:24
# Fingerprint (SHA1): 6e:26:64:f3:56:bf:34:55:bf:d1:93:3f:7c:01:de:d8:13:da:8a:a6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OpenTrust Root CA G3"
```

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\346\370\114\374\044\260\276\005\100\254\332\203
\033\064\140\077
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\002\041\060\202\001\246\240\003\002\001\002\002\022\021
\040\346\370\114\374\044\260\276\005\100\254\332\203\033\064\140
\077\060\012\006\010\052\206\110\316\075\004\003\003\060\100\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\022\060\020
\006\003\125\004\012\014\011\117\160\145\156\124\162\165\163\164
\061\035\060\033\006\003\125\004\003\014\024\117\160\145\156\124
\162\165\163\164\040\122\157\157\164\040\103\101\040\107\063\060
\036\027\015\061\064\060\065\062\066\060\060\060\060\060\060\132
\027\015\063\070\060\061\061\065\060\060\060\060\060\060\132\060
\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061\022
\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162\165
\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160\145
\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040\107
\063\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\112\356\130\256\115\312\146
\336\006\072\243\021\374\340\030\360\156\034\272\055\060\014\211
\331\326\356\233\163\203\251\043\025\214\057\131\212\132\335\024
\352\235\131\053\103\267\006\354\062\266\272\356\101\265\255\135
\241\205\314\352\035\024\146\243\147\176\106\342\224\363\347\266
\126\241\025\131\241\117\067\227\271\042\036\275\021\353\364\262
\037\136\303\024\232\345\331\227\231\243\143\060\141\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\107\167\303\024\213\142\071
\014\311\157\341\120\115\320\020\130\334\225\210\155\060\037\006
\003\125\035\043\004\030\060\026\200\024\107\167\303\024\213\142

\071\014\311\157\341\120\115\320\020\130\334\225\210\155\060\012
\006\010\052\206\110\316\075\004\003\003\003\151\000\060\146\002
\061\000\217\250\334\235\272\014\004\027\372\025\351\075\057\051
\001\227\277\201\026\063\100\223\154\374\371\355\200\160\157\252
\217\333\204\302\213\365\065\312\006\334\144\157\150\026\341\217
\221\271\002\061\000\330\113\245\313\302\320\010\154\351\030\373
\132\335\115\137\044\013\260\000\041\045\357\217\247\004\046\161
\342\174\151\345\135\232\370\101\037\073\071\223\223\235\125\352
\315\215\361\373\301
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "OpenTrust Root CA G3"
Issuer: CN=OpenTrust Root CA G3,O=OpenTrust,C=FR
Serial Number:11:20:e6:f8:4c:fc:24:b0:be:05:40:ac:da:83:1b:34:60:3f
Subject: CN=OpenTrust Root CA G3,O=OpenTrust,C=FR
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): 21:37:b4:17:16:92:7b:67:46:70:a9:96:d7:a8:13:24
Fingerprint (SHA1): 6e:26:64:f3:56:bf:34:55:bf:d1:93:3f:7c:01:de:d8:13:da:8a:a6
CKA_CLASS CK_OBJECT_CLASS
 CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "OpenTrust Root CA G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\156\046\144\363\126\277\064\125\277\321\223\077\174\001\336\330
\023\332\212\246
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\041\067\264\027\026\222\173\147\106\160\251\226\327\250\023\044
END
CKA_ISSUER MULTILINE_OCTAL
\060\100\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\014\011\117\160\145\156\124\162
\165\163\164\061\035\060\033\006\003\125\004\003\014\024\117\160
\145\156\124\162\165\163\164\040\122\157\157\164\040\103\101\040
\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\346\370\114\374\044\260\276\005\100\254\332\203
\033\064\140\077
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certplus Root CA G1"
Issuer: CN=Certplus Root CA G1,O=Certplus,C=FR
Serial Number:11:20:55:83:e4:2d:3e:54:56:85:2d:83:37:b7:2c:dc:46:11
Subject: CN=Certplus Root CA G1,O=Certplus,C=FR
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): 7f:09:9c:f7:d9:b9:5c:69:69:56:d5:37:3e:14:0d:42
Fingerprint (SHA1): 22:fd:d0:b7:fd:a2:4e:0d:ac:49:2c:a0:ac:a6:7b:6a:1f:e3:f7:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certplus Root CA G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\061
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\125\203\344\055\076\124\126\205\055\203\067\267
\054\334\106\021
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\153\060\202\003\123\240\003\002\001\002\002\022\021
\040\125\203\344\055\076\124\126\205\055\203\067\267\054\334\106
\021\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\061
\060\036\027\015\061\064\060\065\062\066\060\060\060\060\060\060

\132\027\015\063\070\060\061\061\065\060\060\060\060\060\060\132
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\061
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\332\120\207\266\332\270\251\076\235\144\372\126\063\232\126
\075\026\345\003\225\262\064\034\232\155\142\005\324\330\217\347
\211\144\237\272\333\144\213\144\346\171\052\141\315\257\217\132
\211\221\145\271\130\374\264\003\137\221\077\055\020\025\340\176
\317\274\374\177\103\147\250\255\136\066\043\330\230\263\115\363
\103\236\071\174\052\374\354\210\325\210\356\160\275\205\026\055
\352\113\211\074\243\161\102\376\034\375\323\034\055\020\270\206
\124\352\103\270\333\306\207\332\250\256\200\045\317\172\046\035
\252\221\260\110\157\256\265\336\236\330\327\372\000\375\306\217
\320\121\273\142\175\244\261\214\262\377\040\021\272\065\143\005
\206\107\140\103\063\220\366\107\242\003\117\226\115\235\117\301
\352\352\234\242\376\064\056\336\267\312\033\166\244\267\255\237
\351\250\324\170\077\170\376\362\070\011\066\035\322\026\002\310
\354\052\150\257\365\216\224\357\055\023\172\036\102\112\035\025
\061\256\014\004\127\374\141\163\363\061\126\206\061\200\240\304
\021\156\060\166\343\224\360\137\004\304\254\207\162\211\230\305
\235\314\127\010\232\364\014\374\175\172\005\072\372\107\200\071
\266\317\204\023\167\157\047\352\377\226\147\027\010\155\351\015
\326\043\120\060\260\025\164\023\076\345\057\377\016\315\304\013
\112\135\360\330\000\063\111\146\353\241\030\174\131\056\075\050
\271\141\161\313\265\245\272\270\352\334\342\160\157\010\152\334
\207\147\064\357\337\060\162\335\363\311\077\043\377\065\341\276
\041\051\040\060\201\344\031\245\040\351\045\312\163\061\164\051
\276\342\102\325\363\262\046\146\307\150\375\031\263\347\040\223
\231\350\135\340\136\207\347\106\350\045\234\012\051\044\324\315
\130\206\122\100\044\262\173\017\230\022\040\044\366\220\154\107
\310\015\273\030\040\056\331\375\374\213\362\051\352\207\164\225
\340\102\120\170\204\004\101\141\260\364\041\043\217\055\313\050
\041\362\152\154\364\032\246\305\024\264\067\145\117\225\375\200
\310\370\162\345\045\153\304\140\261\173\155\216\112\212\163\316
\131\373\160\172\163\006\023\331\323\164\067\044\101\012\021\157
\227\334\347\344\176\241\275\025\362\272\207\017\075\150\212\026
\007\002\003\001\000\001\243\143\060\141\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\250\301\300\233\221\250\103\025\174\135
\006\047\264\052\121\330\227\013\201\261\060\037\006\003\125\035
\043\004\030\060\026\200\024\250\301\300\233\221\250\103\025\174
\135\006\047\264\052\121\330\227\013\201\261\060\015\006\011\052
\206\110\206\367\015\001\001\015\005\000\003\202\002\001\000\234
\126\157\001\176\321\275\114\365\212\306\360\046\037\344\340\070

\030\314\062\303\051\073\235\101\051\064\141\306\327\360\000\241
\353\244\162\217\224\027\274\023\054\165\264\127\356\012\174\011
\172\334\325\312\241\320\064\023\370\167\253\237\345\376\330\036
\164\212\205\007\217\177\314\171\172\312\226\315\315\375\117\373
\375\043\015\220\365\364\136\323\306\141\175\236\021\340\002\356
\011\004\331\007\335\246\212\267\014\203\044\273\203\120\222\376
\140\165\021\076\330\235\260\212\172\265\340\235\233\313\220\122
\113\260\223\052\324\076\026\063\345\236\306\145\025\076\144\073
\004\077\333\014\217\137\134\035\151\037\257\363\351\041\214\363
\357\227\366\232\267\031\266\204\164\234\243\124\265\160\116\143
\330\127\135\123\041\233\100\222\103\372\326\167\125\063\117\144
\325\373\320\054\152\216\155\045\246\357\205\350\002\304\123\076
\271\236\207\274\314\065\032\336\241\351\212\143\207\145\036\021
\052\333\143\167\227\024\276\232\024\231\021\262\300\356\260\117
\370\024\041\062\103\117\237\253\242\313\250\017\252\073\006\125
\306\022\051\127\010\324\067\327\207\047\255\111\131\247\221\253
\104\172\136\215\160\333\227\316\110\120\261\163\223\366\360\203
\140\371\315\361\341\061\375\133\174\161\041\143\024\024\252\257
\305\336\223\176\150\261\354\042\242\252\220\165\236\265\103\162
\352\144\243\204\113\375\014\250\046\153\161\227\356\126\143\146
\350\102\124\371\307\035\337\320\217\133\337\310\060\157\210\376
\015\304\063\034\123\250\243\375\110\020\362\344\012\116\341\025
\127\374\156\144\060\302\125\021\334\352\251\315\112\124\254\051
\143\104\317\112\100\240\326\150\131\033\063\371\357\072\213\333
\040\222\334\102\204\277\001\253\207\300\325\040\202\333\306\271
\203\205\102\134\017\103\073\152\111\065\325\230\364\025\277\372
\141\201\014\011\040\030\322\320\027\014\313\110\000\120\351\166
\202\214\144\327\072\240\007\125\314\036\061\300\357\072\264\145
\373\343\277\102\153\236\017\250\275\153\230\334\330\333\313\213
\244\335\327\131\364\156\335\376\252\303\221\320\056\102\007\300
\014\115\123\315\044\261\114\133\036\121\364\337\351\222\372
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certplus Root CA G1"
Issuer: CN=Certplus Root CA G1,O=Certplus,C=FR
Serial Number:11:20:55:83:e4:2d:3e:54:56:85:2d:83:37:b7:2c:dc:46:11
Subject: CN=Certplus Root CA G1,O=Certplus,C=FR
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): 7f:09:9c:f7:d9:b9:5c:69:69:56:d5:37:3e:14:0d:42
Fingerprint (SHA1): 22:fd:d0:b7:fd:a2:4e:0d:ac:49:2c:a0:ac:a6:7b:6a:1f:e3:f7:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certplus Root CA G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\042\375\320\267\375\242\116\015\254\111\054\240\254\246\173\152
\037\343\367\146
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\177\011\234\367\331\271\134\151\151\126\325\067\076\024\015\102
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\125\203\344\055\076\124\126\205\055\203\067\267
\054\334\106\021
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certplus Root CA G2"
Issuer: CN=Certplus Root CA G2,O=Certplus,C=FR
Serial Number:11:20:d9:91:ce:ae:a3:e8:c5:e7:ff:e9:02:af:cf:73:bc:55
Subject: CN=Certplus Root CA G2,O=Certplus,C=FR
#
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): a7:ee:c4:78:2d:1b:ee:2d:b9:29:ce:d6:a7:96:32:31
Fingerprint (SHA1): 4f:65:8e:1f:e9:06:d8:28:02:e9:54:47:41:c9:54:25:5d:69:cc:1a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certplus Root CA G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\062
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\022\021\040\331\221\316\256\243\350\305\347\377\351\002\257
\317\163\274\125
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\034\060\202\001\242\240\003\002\001\002\002\022\021
\040\331\221\316\256\243\350\305\347\377\351\002\257\317\163\274
\125\060\012\006\010\052\206\110\316\075\004\003\003\060\076\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\021\060\017
\006\003\125\004\012\014\010\103\145\162\164\160\154\165\163\061
\034\060\032\006\003\125\004\003\014\023\103\145\162\164\160\154
\165\163\040\122\157\157\164\040\103\101\040\107\062\060\036\027
\015\061\064\060\065\062\066\060\060\060\060\060\060\132\027\015
\063\070\060\061\061\065\060\060\060\060\060\060\132\060\076\061
\013\060\011\006\003\125\004\006\023\002\106\122\061\021\060\017
\006\003\125\004\012\014\010\103\145\162\164\160\154\165\163\061
\034\060\032\006\003\125\004\003\014\023\103\145\162\164\160\154
\165\163\040\122\157\157\164\040\103\101\040\107\062\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\315\017\133\126\202\337\360\105\032\326\255
\367\171\360\035\311\254\226\326\236\116\234\037\264\102\021\312
\206\277\155\373\205\243\305\345\031\134\327\356\246\077\151\147
\330\170\342\246\311\304\333\055\171\056\347\213\215\002\157\061
\042\115\006\343\140\162\105\235\016\102\167\236\316\317\345\177
\205\233\030\344\374\314\056\162\323\026\223\116\312\231\143\134
\241\005\052\154\006\243\143\060\141\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\332\203\143\002\171\216\332\114\306\074\043
\024\330\217\303\040\253\050\140\131\060\037\006\003\125\035\043
\004\030\060\026\200\024\332\203\143\002\171\216\332\114\306\074
\043\024\330\217\303\040\253\050\140\131\060\012\006\010\052\206
\110\316\075\004\003\003\003\150\000\060\145\002\060\160\376\260
\013\331\367\203\227\354\363\125\035\324\334\263\006\016\376\063
\230\235\213\071\220\153\224\041\355\266\327\135\326\114\327\041
\247\347\277\041\017\053\315\367\052\334\205\007\235\002\061\000
\206\024\026\345\334\260\145\302\300\216\024\237\277\044\026\150
\345\274\371\171\151\334\255\105\053\367\266\061\163\314\006\245
\123\223\221\032\223\256\160\152\147\272\327\236\345\141\032\137
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certplus Root CA G2"
Issuer: CN=Certplus Root CA G2,O=Certplus,C=FR
Serial Number:11:20:d9:91:ce:ae:a3:e8:c5:e7:ff:e9:02:af:cf:73:bc:55
Subject: CN=Certplus Root CA G2,O=Certplus,C=FR
Not Valid Before: Mon May 26 00:00:00 2014
Not Valid After: Fri Jan 15 00:00:00 2038
Fingerprint (MD5): a7:ee:c4:78:2d:1b:ee:2d:b9:29:ce:d6:a7:96:32:31
Fingerprint (SHA1):
4f:65:8e:1f:e9:06:d8:28:02:e9:54:47:41:c9:54:25:5d:69:cc:1a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certplus Root CA G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\117\145\216\037\351\006\330\050\002\351\124\107\101\311\124\045
\135\151\314\032
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\247\356\304\170\055\033\356\055\271\051\316\326\247\226\062\061
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\014\010\103\145\162\164\160\154
\165\163\061\034\060\032\006\003\125\004\003\014\023\103\145\162
\164\160\154\165\163\040\122\157\157\164\040\103\101\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\040\331\221\316\256\243\350\305\347\377\351\002\257
\317\163\274\125
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Government Root Certification Authority"
Issuer: O=Government Root Certification Authority,C=TW
Serial Number:b6:4b:88:07:e2:23:ee:c8:5c:12:ad:a6:0e:06:a1:f2
Subject: O=Government Root Certification Authority,C=TW

```
# Not Valid Before: Fri Sep 28 08:58:51 2012
# Not Valid After: Thu Dec 31 15:59:59 2037
# Fingerprint (MD5): 2f:d4:2d:cd:86:7f:36:b0:5f:1c:e0:53:8d:b6:a2:5b
# Fingerprint (SHA1): b0:91:aa:91:38:47:f3:13:d7:27:bc:ef:c8:17:9f:08:6f:3a:8c:0f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Government Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\077\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\060\060\056\006\003\125\004\012\014\047\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\077\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\060\060\056\006\003\125\004\012\014\047\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\266\113\210\007\342\043\356\310\134\022\255\246\016
\006\241\362
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\113\060\202\003\063\240\003\002\001\002\002\021\000
\266\113\210\007\342\043\356\310\134\022\255\246\016\006\241\362
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\077\061\013\060\011\006\003\125\004\006\023\002\124\127\061\060
\060\056\006\003\125\004\012\014\047\107\157\166\145\162\156\155
\145\156\164\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\036\027\015\061\062\060\071\062\070\060\070\065\070\065\061
\132\027\015\063\067\061\062\063\061\061\065\065\071\065\071\132
\060\077\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\060\060\056\006\003\125\004\012\014\047\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\266\377\227\074\201\276\001\130\044\047\257\216\001\053
\326\162\222\060\062\033\137\233\174\324\324\177\350\241\140\163
```

\060\127\020\000\372\120\226\044\376\120\346\214\072\225\321\127
\171\204\325\147\123\014\052\202\076\030\134\270\060\046\032\326
\136\306\055\262\004\121\016\357\337\014\143\107\353\304\022\010
\121\053\231\161\136\325\151\173\341\135\311\167\035\040\354\126
\216\345\141\140\055\374\351\034\200\337\372\152\203\273\005\265
\036\043\022\234\202\312\012\363\024\035\040\344\006\217\103\044
\231\237\266\012\223\132\163\033\026\071\276\005\266\361\214\245
\144\222\217\005\344\134\166\367\071\303\317\055\275\016\330\313
\250\016\061\233\311\106\017\147\123\103\004\217\310\262\310\203
\200\137\272\362\017\253\201\065\242\040\041\227\316\017\211\064
\170\017\317\037\116\351\373\214\050\074\336\064\347\355\237\322
\146\365\305\312\061\170\322\316\120\321\140\202\143\235\340\114
\367\007\256\203\064\235\111\111\103\324\176\275\055\342\352\307
\161\145\200\010\344\066\236\171\160\012\074\207\051\351\344\222
\224\352\006\222\051\047\170\346\255\327\075\351\012\013\136\364
\340\326\206\235\055\162\313\213\144\126\346\364\256\170\245\240
\071\063\130\074\334\250\217\215\264\152\055\375\210\163\351\225
\120\163\004\337\021\210\076\102\326\002\164\373\054\304\157\274
\154\326\340\200\157\321\206\245\062\127\003\326\115\364\116\012
\231\042\166\176\112\100\202\370\311\344\116\313\123\055\307\261
\266\342\323\302\165\047\156\271\016\161\262\064\374\277\034\116
\302\075\370\066\351\012\314\130\232\241\030\206\116\342\341\252
\263\163\131\156\136\235\264\302\010\257\257\134\375\244\002\157
\377\270\015\273\325\253\327\156\237\032\117\221\100\360\037\106
\125\155\240\222\303\211\315\267\261\377\034\263\313\243\234\012
\343\376\315\252\274\001\354\335\124\312\221\335\117\023\207\244
\366\230\357\375\111\326\127\052\074\246\134\366\140\067\277\330
\076\176\116\150\052\043\062\072\276\156\344\042\075\007\044\317
\212\313\233\135\121\263\060\322\161\155\316\106\212\155\174\112
\063\104\332\022\057\066\113\362\351\361\121\011\155\333\152\227
\016\027\002\003\001\000\001\243\102\060\100\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\325\147\035\340\234\172\054\234\313
\305\230\347\035\007\046\052\206\354\164\315\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\220
\073\345\302\123\102\050\352\365\061\116\216\075\221\236\115\011
\363\330\261\122\346\117\254\014\061\041\273\361\352\231\314\203
\374\266\050\344\354\204\007\016\017\116\227\273\157\150\106\217
\016\121\025\225\370\072\073\037\137\202\016\014\161\016\274\221
\117\256\063\056\043\101\364\046\153\117\023\207\372\170\366\056
\302\017\221\005\227\252\152\301\152\237\274\204\236\010\052\047
\335\332\207\027\206\341\263\312\135\355\070\251\051\156\204\336
\106\153\374\047\031\120\245\022\172\214\175\142\374\332\347\314
\274\237\111\257\006\270\047\047\362\211\367\026\075\030\346\275
\336\365\214\022\221\237\343\004\215\376\007\024\032\132\254\071
\202\033\361\070\031\341\143\343\257\154\266\246\121\027\353\372
\113\353\213\042\366\227\376\020\072\137\224\240\113\123\161\077

\132\341\020\370\162\217\226\200\335\215\002\230\000\141\075\215
\274\055\261\107\314\332\135\341\040\247\214\061\134\361\343\332
\271\012\206\107\310\241\075\007\243\074\246\163\156\224\221\355
\156\044\072\371\311\060\321\007\250\201\175\046\175\175\204\337
\206\311\213\345\256\015\036\276\211\110\121\025\203\230\226\057
\112\353\163\064\327\164\315\311\157\320\302\272\053\366\232\376
\231\335\140\024\216\033\371\234\071\074\177\103\211\123\350\345
\302\253\276\042\255\047\070\233\167\050\267\243\143\143\247\201
\347\251\151\105\353\216\170\126\314\005\204\307\373\255\266\060
\174\143\005\237\055\214\044\177\113\213\222\374\070\036\237\240
\245\127\263\156\235\330\144\270\160\232\140\122\160\310\251\320
\377\306\234\355\020\141\136\315\203\016\156\350\115\002\101\112
\342\166\004\171\326\124\077\212\230\062\024\240\335\055\234\347
\272\202\161\243\206\125\051\231\322\051\333\165\072\367\333\103
\377\266\133\373\267\176\065\200\216\015\154\256\171\267\066\055
\227\122\241\260\007\234\007\345\053\066\315\003\227\224\275\055
\016\064\006\374\300\026\211\374\067\124\344\326\317\075\023\004
\362\221\331\311\066\056\076\305\132\320\245\114\202\303\377\056
\174\046\166\367\363\375\105\242\245\156\125\256\056\314\317\054
\211\064\332\366\015\347\221\250\020\352\027\235\362\366\354
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Government Root Certification Authority"
Issuer: O=Government Root Certification Authority,C=TW
Serial Number:b6:4b:88:07:e2:23:ee:c8:5c:12:ad:a6:0e:06:a1:f2
Subject: O=Government Root Certification Authority,C=TW
Not Valid Before: Fri Sep 28 08:58:51 2012
Not Valid After: Thu Dec 31 15:59:59 2037
Fingerprint (MD5): 2f:d4:2d:cd:86:7f:36:b0:5f:1c:e0:53:8d:b6:a2:5b
Fingerprint (SHA1): b0:91:aa:91:38:47:f3:13:d7:27:bc:ef:c8:17:9f:08:6f:3a:8c:0f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Government Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\260\221\252\221\070\107\363\023\327\047\274\357\310\027\237\010
\157\072\214\017
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\057\324\055\315\206\177\066\260\137\034\340\123\215\266\242\133
END

CKA_ISSUER MULTILINE_OCTAL
\060\077\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\060\060\056\006\003\125\004\012\014\047\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\266\113\210\007\342\043\356\310\134\022\255\246\016
\006\241\362
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "A-Trust-Root-05"
Issuer: CN=A-Trust-Root-05,OU=A-Trust-Root-05,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr
GmbH,C=AT
Serial Number: 1035700 (0xfcdb4)
Subject: CN=A-Trust-Root-05,OU=A-Trust-Root-05,O=A-Trust Ges. f. Sicherheitssysteme im elektr.
Datenverkehr GmbH,C=AT
Not Valid Before: Mon Sep 23 13:24:11 2013
Not Valid After: Wed Sep 20 11:24:11 2023
Fingerprint (MD5): f4:6f:96:17:87:40:f4:cf:37:d3:18:29:89:76:e6:0a
Fingerprint (SHA1): 2e:66:c9:84:11:81:c0:8f:b1:df:ab:d4:ff:8d:5c:c7:2b:e0:8f:02
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Root-05"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\122\157\157
\164\055\060\065\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\122\157\157\164\055\060\065
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124

\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\122\157\157
\164\055\060\065\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\122\157\157\164\055\060\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\315\264
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\311\060\202\003\261\240\003\002\001\002\002\003\017
\315\264\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101
\124\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162
\165\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150
\145\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151
\155\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166
\145\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006
\003\125\004\013\014\017\101\055\124\162\165\163\164\055\122\157
\157\164\055\060\065\061\030\060\026\006\003\125\004\003\014\017
\101\055\124\162\165\163\164\055\122\157\157\164\055\060\065\060
\036\027\015\061\063\060\071\062\063\061\063\062\064\061\061\132
\027\015\062\063\060\071\062\060\061\061\062\064\061\061\132\060
\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165\163
\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145\162
\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155\040
\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145\162
\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003\125
\004\013\014\017\101\055\124\162\165\163\164\055\122\157\157\164
\055\060\065\061\030\060\026\006\003\125\004\003\014\017\101\055
\124\162\165\163\164\055\122\157\157\164\055\060\065\060\202\002
\040\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\015\000\060\202\002\010\002\202\002\001\000\344\373
\214\122\046\245\147\201\204\150\335\202\311\315\250\162\001\131
\042\077\044\351\022\244\222\227\305\120\316\362\105\077\153\104
\005\030\272\173\161\257\346\215\273\155\366\344\363\345\334\274
\344\170\023\043\262\012\104\235\267\275\067\100\326\045\104\120
\211\316\150\322\303\142\247\104\241\043\105\257\137\006\161\166
\106\341\151\377\342\041\340\077\317\062\225\352\210\046\247\040
\254\302\161\135\060\311\014\354\104\055\316\305\145\174\327\007
\176\065\366\015\030\026\115\173\253\363\252\017\175\336\350\214
\224\056\223\320\267\156\110\070\304\002\042\032\337\040\245\202
\143\277\123\325\104\025\006\073\244\073\172\334\266\356\220\213
\100\002\264\237\300\366\161\063\131\246\042\323\260\150\043\077

\375\204\310\226\260\371\160\113\057\064\206\375\045\125\231\321
\315\167\047\070\304\155\134\031\352\353\176\023\206\001\240\020
\100\046\107\037\276\024\276\137\245\270\077\140\241\156\341\041
\216\023\045\170\056\247\172\315\130\257\176\133\254\077\316\017
\263\362\127\174\325\173\155\311\323\374\255\225\255\033\277\207
\230\117\047\346\013\251\150\073\344\054\054\365\024\107\327\251
\135\202\366\342\233\267\040\341\345\032\153\054\170\010\215\154
\165\214\352\067\226\211\235\131\351\164\062\057\030\060\030\072
\004\045\113\006\355\306\147\147\046\200\152\137\201\167\060\036
\236\321\164\217\137\214\300\124\152\354\244\030\141\231\172\035
\371\235\371\350\371\361\357\162\276\316\057\031\222\174\343\050
\257\321\270\270\157\320\140\276\170\130\244\056\067\072\262\047
\211\021\121\242\136\211\274\035\314\127\145\113\111\114\023\020
\002\256\127\276\114\041\361\042\252\036\240\222\324\124\054\270
\233\174\063\150\047\020\052\035\113\377\006\012\002\223\200\207
\031\257\277\250\203\022\020\216\175\020\245\053\220\350\016\340
\024\206\105\366\327\345\126\163\226\037\217\236\074\052\243\032
\136\054\220\146\205\157\001\166\275\263\360\051\310\047\212\251
\251\043\260\325\362\360\312\325\275\266\062\160\314\057\034\131
\277\352\303\006\244\140\337\253\211\156\107\024\357\205\220\153
\150\043\226\116\006\323\261\047\243\003\303\271\331\275\002\001
\003\243\066\060\064\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\021\006\003\125\035\016\004\012\004
\010\100\371\271\147\276\003\322\010\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\342\052\145
\306\153\132\053\310\250\064\313\227\021\035\046\037\243\262\316
\270\074\053\041\237\230\364\027\037\015\266\173\256\313\020\155
\203\362\143\301\210\256\351\300\122\102\256\067\237\013\231\127
\122\350\105\176\230\224\351\051\107\237\361\007\301\102\010\363
\163\074\252\153\065\263\154\025\053\221\061\033\344\176\222\347
\303\305\246\041\070\337\033\276\321\237\226\015\120\266\365\173
\224\243\055\252\257\267\215\322\073\055\174\202\020\324\152\112
\311\141\243\246\217\247\262\240\331\124\303\227\177\321\211\314
\143\370\331\337\070\130\225\272\001\120\314\012\363\213\111\074
\177\077\075\250\363\150\314\307\230\323\331\065\060\367\016\202
\136\370\020\141\256\274\116\360\053\064\172\242\232\366\333\215
\257\353\003\114\047\303\336\256\154\335\125\024\257\077\035\353
\217\232\266\170\111\356\274\371\036\167\140\002\044\334\336\336
\351\245\373\221\246\034\172\262\111\340\367\277\035\007\256\206
\313\273\331\000\327\313\001\030\357\350\303\217\014\007\060\160
\130\301\362\143\352\214\375\266\255\343\350\007\074\075\133\005
\207\164\313\065\345\357\011\267\273\240\204\151\274\101\161\143
\333\062\234\101\341\137\176\332\166\155\223\243\256\205\372\345
\214\311\122\254\047\313\140\263\066\054\111\251\004\336\270\047
\053\011\061\304\222\223\351\214\321\244\113\375\276\126\121\260
\330\267\316\235\105\303\033\110\057\321\263\060\367\176\134\251
\133\061\077\345\005\233\341\166\251\327\365\051\206\163\127\034

\275\057\333\327\031\026\364\045\064\361\203\026\264\062\130\013
\261\131\116\343\213\320\243\053\213\033\100\302\367\343\122\250
\116\112\356\165\351\355\143\231\033\006\373\060\215\374\036\127
\231\354\316\024\050\343\240\215\055\353\357\007\036\014\002\216
\214\110\314\210\332\246\255\171\224\264\254\351\014\060\266\377
\006\073\024\161\225\205\373\260\172\313\213\110\131\162\333\120
\000\362\267\215\171\053\315\004\225\222\165\111\002\226\124\242
\035\124\205\273\140\257\175\175\252\263\275\371\160\074\131\172
\301\201\374\254\120\000\030\022\344\265\334\135\330\245\130\136
\035\137\047\151\216\314\333\357\252\127\032\253\204
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "A-Trust-Root-05"
Issuer: CN=A-Trust-Root-05,OU=A-Trust-Root-05,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number: 1035700 (0xfcdb4)
Subject: CN=A-Trust-Root-05,OU=A-Trust-Root-05,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Mon Sep 23 13:24:11 2013
Not Valid After: Wed Sep 20 11:24:11 2023
Fingerprint (MD5): f4:6f:96:17:87:40:f4:cf:37:d3:18:29:89:76:e6:0a
Fingerprint (SHA1): 2e:66:c9:84:11:81:c0:8f:b1:df:ab:d4:ff:8d:5c:c7:2b:e0:8f:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Root-05"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\056\146\311\204\021\201\300\217\261\337\253\324\377\215\134\307
\053\340\217\002
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\364\157\226\027\207\100\364\317\067\323\030\051\211\166\346\012
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\122\157\157

\164\055\060\065\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\122\157\157\164\055\060\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\017\315\264
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code
Signing Only Certificate
Certificate "A-Trust-Qual-02"
Issuer: CN=A-Trust-Qual-02,OU=A-Trust-Qual-02,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number:14:4d:e4
Subject: CN=A-Trust-Qual-02,OU=A-Trust-Qual-02,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Tue Jul 01 11:23:33 2014
Not Valid After: Mon Jul 01 09:23:33 2024
Fingerprint (MD5): 4b:d4:35:43:a8:b2:43:6d:d7:78:e2:89:a2:a9:39:ab
Fingerprint (SHA1): cd:78:7a:3d:5c:ba:82:07:08:28:48:36:5e:9a:cd:e9:68:33:64:d8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Qual-02"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\062\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\062
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145

\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\062\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\024\115\344
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\313\060\202\002\263\240\003\002\001\002\002\003\024
\115\344\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101
\124\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162
\165\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150
\145\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151
\155\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166
\145\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006
\003\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165
\141\154\055\060\062\061\030\060\026\006\003\125\004\003\014\017
\101\055\124\162\165\163\164\055\121\165\141\154\055\060\062\060
\036\027\015\061\064\060\067\060\061\061\061\062\063\063\063\132
\027\015\062\064\060\067\060\061\060\071\062\063\063\063\132\060
\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165\163
\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145\162
\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155\040
\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145\162
\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003\125
\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141\154
\055\060\062\061\030\060\026\006\003\125\004\003\014\017\101\055
\124\162\165\163\164\055\121\165\141\154\055\060\062\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\226\221
\253\327\216\260\131\270\001\275\264\036\255\231\375\241\374\352
\014\226\153\217\056\111\110\330\351\344\044\202\341\330\272\314
\353\336\007\134\110\306\031\202\001\107\102\011\341\174\271\237
\256\217\366\356\136\153\250\250\126\210\070\126\263\346\376\311
\235\117\064\070\121\074\234\276\363\254\234\034\310\075\134\232
\204\256\367\224\054\024\262\144\067\140\216\024\260\073\052\315
\211\265\042\257\367\344\177\356\054\053\063\371\216\074\255\114
\242\127\017\373\202\305\216\037\001\337\123\214\301\025\244\335
\356\232\222\022\322\050\351\142\027\045\140\061\357\317\061\224
\363\175\363\344\074\041\253\220\374\155\317\143\247\306\022\000
\161\111\327\034\310\240\355\143\232\175\343\217\050\335\140\371
\330\346\026\253\046\321\320\057\275\347\015\011\337\156\324\354
\345\070\123\364\144\013\272\132\314\200\265\070\131\354\200\131
\145\204\061\152\137\125\221\114\044\345\044\232\203\204\172\276

\200\361\356\137\040\007\252\167\027\154\013\342\125\252\226\170
\010\002\236\227\360\053\256\130\365\200\120\077\376\073\002\003
\001\000\001\243\066\060\064\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\021\006\003\125\035\016\004
\012\004\010\102\075\053\044\246\301\105\316\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\141
\061\363\210\065\011\270\136\234\305\350\071\244\072\146\377\002
\264\227\035\376\113\071\272\205\230\203\050\240\332\366\116\114
\263\255\104\312\374\321\076\231\332\346\327\224\137\166\333\073
\221\225\152\374\200\237\101\041\136\150\373\326\150\005\152\342
\231\107\377\156\216\216\363\023\126\376\303\176\007\317\005\114
\103\132\251\102\270\071\303\234\360\025\103\354\250\376\216\142
\004\016\156\122\123\033\247\234\347\154\073\145\307\001\177\346
\005\252\162\177\341\053\024\224\010\375\156\210\343\310\224\247
\336\126\373\021\230\027\011\001\332\042\305\063\077\041\315\164
\245\253\311\060\143\210\333\112\047\002\273\320\144\005\004\155
\164\013\003\307\054\362\166\261\174\136\201\243\176\224\366\171
\072\302\176\352\361\123\327\205\130\236\220\034\235\327\261\172
\364\017\232\207\102\052\303\204\217\177\320\152\065\022\036\325
\214\161\214\070\102\232\065\255\335\252\062\023\166\105\006\341
\243\133\352\366\212\226\377\274\145\065\373\152\062\313\141\135
\331\323\046\210\304\073\200\150\126\137\325\372\201\142\335
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "A-Trust-Qual-02"
Issuer: CN=A-Trust-Qual-02,OU=A-Trust-Qual-02,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number:14:4d:e4
Subject: CN=A-Trust-Qual-02,OU=A-Trust-Qual-02,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Tue Jul 01 11:23:33 2014
Not Valid After: Mon Jul 01 09:23:33 2024
Fingerprint (MD5): 4b:d4:35:43:a8:b2:43:6d:d7:78:e2:89:a2:a9:39:ab
Fingerprint (SHA1): cd:78:7a:3d:5c:ba:82:07:08:28:48:36:5e:9a:cd:e9:68:33:64:d8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Qual-02"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\315\170\172\075\134\272\202\007\010\050\110\066\136\232\315\351
\150\063\144\330

END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\113\324\065\103\250\262\103\155\327\170\342\211\242\251\071\253
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\062\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\024\115\344
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Thailand National Root Certification Authority - G1"
Issuer: CN=Thailand National Root Certification Authority - G1,OU=Thailand National Root Certification Authority,O=Electronic Transactions Development Agency (Public Organization),C=TH
Serial Number:51:52:c5:8c
Subject: CN=Thailand National Root Certification Authority - G1,OU=Thailand National Root Certification Authority,O=Electronic Transactions Development Agency (Public Organization),C=TH
Not Valid Before: Wed Mar 27 09:40:22 2013
Not Valid After: Thu Mar 27 10:10:22 2036
Fingerprint (MD5): da:9d:b6:26:4a:e5:22:a0:bb:8d:a4:f7:bc:0d:25:cc
Fingerprint (SHA1): 66:f2:dc:fb:3f:81:4d:de:e9:b3:20:6f:11:de:fe:1b:fb:df:e1:32
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thailand National Root Certification Authority
- G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\124\110
\061\111\060\107\006\003\125\004\012\014\100\105\154\145\143\164
\162\157\156\151\143\040\124\162\141\156\163\141\143\164\151\157
\156\163\040\104\145\166\145\154\157\160\155\145\156\164\040\101

\147\145\156\143\171\040\050\120\165\142\154\151\143\040\117\162
\147\141\156\151\172\141\164\151\157\156\051\061\067\060\065\006
\003\125\004\013\014\056\124\150\141\151\154\141\156\144\040\116
\141\164\151\157\156\141\154\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\061\074\060\072\006\003\125\004\003\014\063\124
\150\141\151\154\141\156\144\040\116\141\164\151\157\156\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\124\110
\061\111\060\107\006\003\125\004\012\014\100\105\154\145\143\164
\162\157\156\151\143\040\124\162\141\156\163\141\143\164\151\157
\156\163\040\104\145\166\145\154\157\160\155\145\156\164\040\101
\147\145\156\143\171\040\050\120\165\142\154\151\143\040\117\162
\147\141\156\151\172\141\164\151\157\156\051\061\067\060\065\006
\003\125\004\013\014\056\124\150\141\151\154\141\156\144\040\116
\141\164\151\157\156\141\154\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\061\074\060\072\006\003\125\004\003\014\063\124
\150\141\151\154\141\156\144\040\116\141\164\151\157\156\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\121\122\305\214
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\201\060\202\004\151\240\003\002\001\002\002\004\121
\122\305\214\060\015\006\011\052\206\110\206\367\015\001\001\015
\005\000\060\201\317\061\013\060\011\006\003\125\004\006\023\002
\124\110\061\111\060\107\006\003\125\004\012\014\100\105\154\145
\143\164\162\157\156\151\143\040\124\162\141\156\163\141\143\164
\151\157\156\163\040\104\145\166\145\154\157\160\155\145\156\164
\040\101\147\145\156\143\171\040\050\120\165\142\154\151\143\040
\117\162\147\141\156\151\172\141\164\151\157\156\051\061\067\060
\065\006\003\125\004\013\014\056\124\150\141\151\154\141\156\144
\040\116\141\164\151\157\156\141\154\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\061\074\060\072\006\003\125\004\003\014
\063\124\150\141\151\154\141\156\144\040\116\141\164\151\157\156
\141\154\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040

\055\040\107\061\060\036\027\015\061\063\060\063\062\067\060\071
\064\060\062\062\132\027\015\063\066\060\063\062\067\061\060\061
\060\062\062\132\060\201\317\061\013\060\011\006\003\125\004\006
\023\002\124\110\061\111\060\107\006\003\125\004\012\014\100\105
\154\145\143\164\162\157\156\151\143\040\124\162\141\156\163\141
\143\164\151\157\156\163\040\104\145\166\145\154\157\160\155\145
\156\164\040\101\147\145\156\143\171\040\050\120\165\142\154\151
\143\040\117\162\147\141\156\151\172\141\164\151\157\156\051\061
\067\060\065\006\003\125\004\013\014\056\124\150\141\151\154\141
\156\144\040\116\141\164\151\157\156\141\154\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\061\074\060\072\006\003\125\004
\003\014\063\124\150\141\151\154\141\156\144\040\116\141\164\151
\157\156\141\154\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\061\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\326\272\112\344\214\361\232\056\211
\027\302\100\363\202\000\061\376\023\002\172\145\312\010\330\253
\042\261\002\232\161\064\112\144\131\202\345\102\106\353\043\366
\213\132\042\261\317\066\347\163\155\024\155\367\111\224\136\357
\347\064\131\147\366\250\317\126\131\043\204\125\342\373\032\021
\312\243\371\212\253\147\036\202\023\320\213\071\232\277\017\302
\017\074\326\141\330\352\233\317\025\016\276\324\360\314\077\163
\234\004\364\242\161\163\175\200\260\235\061\361\006\371\260\023
\345\210\111\060\366\026\175\210\127\051\072\054\242\214\220\230
\316\021\026\316\115\121\017\374\307\262\314\362\146\030\041\200
\005\210\255\271\320\305\013\170\001\376\116\322\010\213\066\361
\126\317\156\272\163\046\013\326\367\245\106\152\151\116\226\266
\247\006\126\314\346\056\061\237\156\213\355\234\000\125\107\364
\173\246\172\266\337\001\035\110\004\013\253\102\302\160\112\224
\275\374\254\121\362\253\077\326\353\140\337\010\377\365\022\262
\211\052\172\271\105\231\045\175\174\357\317\025\320\110\054\020
\326\324\274\010\047\265\206\051\324\343\323\304\052\220\022\366
\242\052\371\213\257\026\377\002\363\172\156\317\242\313\152\264
\340\162\013\373\076\205\177\342\207\340\057\103\043\370\205\311
\231\352\326\100\336\240\373\347\336\166\377\217\200\071\353\147
\022\023\246\373\345\243\374\046\200\131\143\362\322\043\353\037
\306\110\163\121\235\267\263\240\133\253\152\210\371\277\373\161
\121\334\156\266\166\357\260\133\362\313\210\060\272\006\333\033
\101\323\125\264\255\264\352\040\041\374\324\167\266\075\133\241
\014\055\045\041\122\043\122\327\064\123\155\026\004\122\146\370
\325\352\361\054\130\362\073\261\361\176\103\265\334\202\270\136
\343\207\341\243\244\137\347\211\016\274\234\351\051\072\045\247
\330\117\152\207\324\226\104\227\030\026\207\302\161\122\205\316
\172\214\255\036\147\276\272\055\277\243\041\047\305\347\060\351
\006\231\033\260\014\343\276\122\145\223\115\141\113\362\070\346
\217\030\361\002\122\230\056\246\016\035\005\317\046\354\001\043

\007\066\366\340\023\067\251\107\210\003\207\107\313\335\262\001
\037\137\144\033\004\233\305\002\003\001\000\001\243\143\060\141
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\037\006\003\125\035\043\004\030\060\026\200\024\177\043
\166\267\203\052\161\367\054\321\210\017\335\114\137\062\012\150
\273\177\060\035\006\003\125\035\016\004\026\004\024\177\043\166
\267\203\052\161\367\054\321\210\017\335\114\137\062\012\150\273
\177\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000
\003\202\002\001\000\015\145\034\132\007\251\236\254\114\311\137
\117\335\061\154\331\342\123\035\077\221\215\132\263\214\275\064
\236\056\115\312\130\323\257\131\142\111\066\163\260\141\166\021
\276\213\066\307\224\252\370\066\151\007\040\337\134\057\013\366
\216\002\026\357\122\006\070\335\355\064\140\252\207\136\027\316
\070\155\120\115\345\337\345\121\276\035\004\226\364\334\352\345
\331\352\216\336\237\164\313\202\224\123\201\154\373\136\054\325
\241\165\226\115\373\060\134\315\141\240\236\241\314\202\271\122
\162\013\207\143\141\173\141\064\164\266\056\335\342\341\207\265
\111\024\141\025\107\112\113\076\167\271\010\322\066\117\130\147
\102\211\200\170\132\022\043\355\105\073\335\277\040\046\124\374
\133\077\140\001\030\101\343\147\165\023\267\052\025\160\314\313
\171\322\024\370\363\302\340\052\020\367\371\102\330\334\332\012
\323\001\005\333\127\230\311\266\353\014\231\012\312\214\175\357
\073\026\050\300\367\137\341\107\121\323\370\006\105\007\360\013
\272\302\234\230\354\322\177\115\176\375\006\374\163\302\302\125
\022\142\320\043\104\337\042\344\370\171\347\245\020\116\076\311
\216\252\203\351\066\352\253\171\306\005\204\315\226\150\174\164
\254\077\062\377\256\311\100\354\217\120\277\120\250\267\116\325
\255\066\152\327\047\063\372\347\330\055\331\067\230\205\033\246
\014\352\173\020\023\160\036\236\210\305\334\076\216\271\015\125
\337\001\316\320\111\166\121\333\020\142\170\101\255\151\143\245
\225\011\267\030\006\157\375\004\147\324\020\017\116\333\073\137
\014\143\174\353\144\275\156\113\000\250\201\372\222\062\206\060
\214\011\277\175\130\077\145\015\251\067\321\105\343\146\151\304
\150\364\142\251\250\036\067\331\056\231\111\240\260\006\214\100
\177\205\261\365\361\114\113\070\240\010\314\052\331\226\300\354
\300\015\074\056\105\127\303\357\225\332\266\313\356\133\145\250
\053\062\257\311\047\371\025\123\067\165\130\037\113\352\227\242
\042\134\147\126\342\240\314\065\304\254\303\061\100\271\234\003
\172\275\311\110\016\352\152\025\332\234\274\170\157\311\025\347
\144\003\331\111\023\146\105\113\055\364\204\231\263\352\247\022
\225\345\223\056\374
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Thailand National Root Certification Authority - G1"
Issuer: CN=Thailand National Root
Certification Authority - G1,OU=Thailand National Root Certification Authority,O=Electronic Transactions
Development Agency (Public Organization),C=TH
Serial Number:51:52:c5:8c
Subject: CN=Thailand National Root Certification Authority - G1,OU=Thailand National Root Certification
Authority,O=Electronic Transactions Development Agency (Public Organization),C=TH
Not Valid Before: Wed Mar 27 09:40:22 2013
Not Valid After: Thu Mar 27 10:10:22 2036
Fingerprint (MD5): da:9d:b6:26:4a:e5:22:a0:bb:8d:a4:f7:bc:0d:25:cc
Fingerprint (SHA1): 66:f2:dc:fb:3f:81:4d:de:e9:b3:20:6f:11:de:fe:1b:fb:df:e1:32
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thailand National Root Certification Authority - G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\146\362\334\373\077\201\115\336\351\263\040\157\021\336\376\033
\373\337\341\062
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\332\235\266\046\112\345\042\240\273\215\244\367\274\015\045\314
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\124\110
\061\111\060\107\006\003\125\004\012\014\100\105\154\145\143\164
\162\157\156\151\143\040\124\162\141\156\163\141\143\164\151\157
\156\163\040\104\145\166\145\154\157\160\155\145\156\164\040\101
\147\145\156\143\171\040\050\120\165\142\154\151\143\040\117\162
\147\141\156\151\172\141\164\151\157\156\051\061\067\060\065\006
\003\125\004\013\014\056\124\150\141\151\154\141\156\144\040\116
\141\164\151\157\156\141\154\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\061\074\060\072\006\003\125\004\003\014\063\124
\150\141\151\154\141\156\144\040\116\141\164\151\157\156\141\154
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\121\122\305\214
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certification Authority of WoSign"
Issuer: CN=Certification Authority of WoSign,O=WoSign CA Limited,C=CN
Serial Number:5e:68:d6:11:71:94:63:50:56:00:68:f3:3e:c9:c5:91
Subject: CN=Certification Authority of WoSign,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Aug 08 01:00:01 2009
Not Valid After: Mon Aug 08 01:00:01 2039
Fingerprint (MD5): a1:f2:f9:b5:d2:c8:7a:74:b8:f3:05:f1:d7:e1:84:8d
Fingerprint (SHA1): b9:42:94:bf:91:ea:8f:b6:4b:e6:10:97:c7:fb:00:13:59:b6:76:cb
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certification Authority of WoSign"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\052\060\050\006
\003\125\004\003\023\041\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\052\060\050\006
\003\125\004\003\023\041\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\136\150\326\021\161\224\143\120\126\000\150\363\076\311
\305\221
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\166\060\202\003\136\240\003\002\001\002\002\020\136
\150\326\021\161\224\143\120\126\000\150\363\076\311\305\221\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\125
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\032\060
\030\006\003\125\004\012\023\021\127\157\123\151\147\156\040\103
\101\040\114\151\155\151\164\145\144\061\052\060\050\006\003\125
\004\003\023\041\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\157\146\040\127

\157\123\151\147\156\060\036\027\015\060\071\060\070\060\070\060
\061\060\060\060\061\132\027\015\063\071\060\070\060\070\060\061
\060\060\060\061\132\060\125\061\013\060\011\006\003\125\004\006
\023\002\103\116\061\032\060\030\006\003\125\004\012\023\021\127
\157\123\151\147\156\040\103\101\040\114\151\155\151\164\145\144
\061\052\060\050\006\003\125\004\003\023\041\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\157\146\040\127\157\123\151\147\156\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\275\312\215
\254\270\221\025\126\227\173\153\134\172\302\336\153\331\241\260
\303\020\043\372\247\241\262\314\061\372\076\331\246\051\157\026
\075\340\153\370\270\100\137\333\071\250\000\172\213\240\115\124
\175\302\042\170\374\216\011\270\250\205\327\314\225\227\113\164
\330\236\176\360\000\344\016\211\256\111\050\104\032\020\231\062
\017\045\210\123\244\015\263\017\022\010\026\013\003\161\047\034
\177\341\333\322\375\147\150\304\005\135\012\016\135\160\327\330
\227\240\274\123\101\232\221\215\364\236\066\146\172\176\126\301
\220\137\346\261\150\040\066\244\214\044\054\054\107\013\131\166
\146\060\265\276\336\355\217\370\235\323\273\001\060\346\362\363
\016\340\054\222\200\363\205\371\050\212\264\124\056\232\355\367
\166\374\025\150\026\353\112\154\353\056\022\217\324\317\376\014
\307\134\035\013\176\005\062\276\136\260\011\052\102\325\311\116
\220\263\131\015\273\172\176\315\325\010\132\264\177\330\034\151
\021\371\047\017\173\006\257\124\203\030\173\341\335\124\172\121
\150\156\167\374\306\277\122\112\146\106\241\262\147\032\273\243
\117\167\240\276\135\377\374\126\013\103\162\167\220\312\236\371
\362\071\365\015\251\364\352\327\347\263\020\057\060\102\067\041
\314\060\160\311\206\230\017\314\130\115\203\273\175\345\032\245
\067\215\266\254\062\227\000\072\143\161\044\036\236\067\304\377
\164\324\067\300\342\376\210\106\140\021\335\010\077\120\066\253
\270\172\244\225\142\152\156\260\312\152\041\132\151\363\363\373
\035\160\071\225\363\247\156\246\201\211\241\210\305\073\161\312
\243\122\356\203\273\375\240\167\364\344\157\347\102\333\155\112
\231\212\064\110\274\027\334\344\200\010\042\266\362\061\300\077
\004\076\353\237\040\171\326\270\006\144\144\002\061\327\251\315
\122\373\204\105\151\011\000\052\334\125\213\304\006\106\113\300
\112\035\011\133\071\050\375\251\253\316\000\371\056\110\113\046
\346\060\114\245\130\312\264\104\202\117\347\221\036\063\303\260
\223\377\021\374\201\322\312\037\161\051\335\166\117\222\045\257
\035\201\267\017\057\214\303\006\314\057\047\243\112\344\016\231
\272\174\036\105\037\177\252\031\105\226\375\374\075\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\341\146\317\016\321\361\263\113\267\006\040\024\376\207
\022\325\366\376\373\076\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\002\001\000\250\313\162\100\262\166

\301\176\173\374\255\144\343\062\173\314\074\266\135\106\323\365
\054\342\160\135\310\056\330\006\175\230\321\013\041\240\211\131
\044\001\235\371\257\011\175\012\043\202\064\325\374\174\162\231
\271\243\327\124\364\352\122\160\016\305\365\326\073\341\072\011
\062\346\041\071\223\275\263\025\352\117\152\364\365\213\077\057
\174\215\130\056\305\341\071\240\076\307\075\112\163\236\100\172
\300\053\141\251\147\311\363\044\271\263\155\125\054\132\035\236
\045\162\316\013\255\252\307\125\142\013\276\373\143\263\141\104
\043\243\313\341\032\016\367\232\006\115\336\324\043\116\041\226
\133\071\133\127\035\057\135\010\136\011\171\377\174\227\265\115
\203\256\015\326\346\243\171\340\063\320\231\226\002\060\247\076
\377\322\243\103\077\005\132\006\352\104\002\332\174\370\110\320
\063\251\371\007\307\225\341\365\076\365\135\161\272\362\225\251
\164\210\141\131\343\277\312\132\023\272\162\264\214\135\066\207
\351\246\305\074\023\277\336\320\104\046\356\267\354\056\160\372
\327\235\267\254\345\305\100\132\346\327\154\173\054\303\126\233
\107\315\013\316\372\033\264\041\327\267\146\270\364\045\060\213
\134\015\271\352\147\262\364\155\256\325\241\236\117\330\237\351
\047\002\260\035\006\326\217\343\373\110\022\237\177\021\241\020
\076\114\121\072\226\260\321\023\361\307\330\046\256\072\312\221
\304\151\235\337\001\051\144\121\157\150\332\024\354\010\101\227
\220\215\320\262\200\362\317\302\075\277\221\150\305\200\147\036
\304\140\023\125\325\141\231\127\174\272\225\017\141\111\072\312
\165\274\311\012\223\077\147\016\022\362\050\342\061\033\300\127
\026\337\010\174\031\301\176\017\037\205\036\012\066\174\133\176
\047\274\172\277\340\333\364\332\122\275\336\014\124\160\061\221
\103\225\310\274\360\076\335\011\176\060\144\120\355\177\001\244
\063\147\115\150\117\276\025\357\260\366\002\021\242\033\023\045
\072\334\302\131\361\343\134\106\273\147\054\002\106\352\036\110
\246\346\133\331\265\274\121\242\222\226\333\252\306\067\042\246
\376\314\040\164\243\055\251\056\153\313\300\202\021\041\265\223
\171\356\104\206\276\327\036\344\036\373
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certification Authority of WoSign"
Issuer: CN=Certification Authority of WoSign,O=WoSign CA Limited,C=CN
Serial Number:5e:68:d6:11:71:94:63:50:56:00:68:f3:3e:c9:c5:91
Subject: CN=Certification Authority
 of WoSign,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Aug 08 01:00:01 2009
Not Valid After: Mon Aug 08 01:00:01 2039
Fingerprint (MD5): a1:f2:f9:b5:d2:c8:7a:74:b8:f3:05:f1:d7:e1:84:8d
Fingerprint (SHA1): b9:42:94:bf:91:ea:8f:b6:4b:e6:10:97:c7:fb:00:13:59:b6:76:cb

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certification Authority of WoSign"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\271\102\224\277\221\352\217\266\113\346\020\227\307\373\000\023
\131\266\166\313
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\362\371\265\322\310\172\164\270\363\005\361\327\341\204\215
END
CKA_ISSUER MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\052\060\050\006
\003\125\004\003\023\041\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\157\146
\040\127\157\123\151\147\156
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\136\150\326\021\161\224\143\120\126\000\150\363\076\311
\305\221
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CA "
Issuer: CN=CA ,O=WoSign CA Limited,C=CN
Serial Number:50:70:6b:cd:d8:13:fc:1b:4e:3b:33:72:d2:11:48:8d
Subject: CN=CA ,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Aug 08 01:00:01 2009
Not Valid After: Mon Aug 08 01:00:01 2039
Fingerprint (MD5): 78:83:5b:52:16:76:c4:24:3b:83:78:e8:ac:da:9a:93
Fingerprint (SHA1): 16:32:47:8d:89:f9:21:3a:92:00:85:63:f5:a4:a7:d3:12:40:8a:d6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "CA "
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061

\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\014\022\103\101\040\346\262\203\351\200\232\346
\240\271\350\257\201\344\271\246
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\014\022\103\101\040\346\262\203\351\200\232\346
\240\271\350\257\201\344\271\246
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\160\153\315\330\023\374\033\116\073\063\162\322\021
\110\215
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\130\060\202\003\100\240\003\002\001\002\002\020\120
\160\153\315\330\023\374\033\116\073\063\162\322\021\110\215\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\106
\061\013\060\011\006\003\125\004\006\023\002\103\116\061\032\060
\030\006\003\125\004\012\023\021\127\157\123\151\147\156\040\103
\101\040\114\151\155\151\164\145\144\061\033\060\031\006\003\125
\004\003\014\022\103\101\040\346\262\203\351\200\232\346\240\271
\350\257\201\344\271\246\060\036\027\015\060\071\060\070\060\070
\060\061\060\060\060\061\132\027\015\063\071\060\070\060\070\060
\061\060\060\060\061\132\060\106\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\032\060\030\006\003\125\004\012\023\021
\127\157\123\151\147\156\040\103\101\040\114\151\155\151\164\145
\144\061\033\060\031\006\003\125\004\003\014\022\103\101\040\346
\262\203\351\200\232\346\240\271\350\257\201\344\271\246\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\320
\111\041\036\045\374\207\301\052\302\254\333\166\206\006\116\347
\320\164\064\334\355\145\065\374\120\326\210\077\244\360\177\353
\017\137\171\057\211\261\375\274\143\130\067\223\233\070\370\267
\133\251\372\330\161\307\264\274\200\227\215\154\113\361\120\325
\052\051\252\250\031\172\226\346\225\216\164\355\227\012\127\165
\364\005\333\155\013\071\271\001\177\252\366\326\332\154\346\005
\340\244\115\122\374\333\320\164\267\021\214\173\215\117\377\207
\203\256\377\005\003\023\127\120\067\376\214\226\122\020\114\137
\277\224\161\151\331\226\076\014\103\117\276\060\300\237\071\164
\117\006\105\135\243\326\126\071\150\007\314\207\117\120\167\223
\161\331\104\010\261\212\064\351\211\254\333\233\116\341\331\344
\122\105\214\056\024\037\221\153\031\035\150\051\054\126\304\342
\036\023\127\144\360\141\343\271\021\337\260\341\127\240\033\255
\327\137\321\257\333\053\055\077\320\150\216\017\352\237\017\213

\065\130\033\023\034\364\336\065\241\012\135\326\352\337\022\157
\300\373\151\007\106\162\334\201\366\004\043\027\340\115\165\341
\162\157\260\050\353\233\341\341\203\241\237\112\135\257\314\233
\372\002\040\266\030\142\167\221\073\243\325\145\255\334\174\220
\167\034\104\101\244\112\213\353\225\162\351\366\011\144\334\250
\055\237\164\170\350\301\242\011\143\234\357\240\333\117\235\225
\253\040\117\267\260\367\207\134\246\240\344\067\070\307\134\343
\065\017\054\255\243\200\242\354\056\135\300\317\355\213\005\302
\346\163\156\366\211\325\365\322\106\216\352\155\143\033\036\212
\311\175\246\370\234\353\345\325\143\205\115\163\146\151\021\376
\310\016\364\301\307\146\111\123\176\344\031\153\361\351\172\131
\243\155\176\305\027\346\047\306\357\033\333\157\374\015\115\006
\001\264\016\134\060\106\125\140\257\070\145\072\312\107\272\254
\054\314\106\037\262\106\226\077\363\355\046\005\356\167\241\152
\153\176\055\155\130\134\112\324\216\147\270\361\332\325\106\212
\047\371\021\362\311\102\376\116\336\337\037\134\304\244\206\207
\026\063\241\247\027\030\245\015\344\005\345\053\302\053\013\242
\225\220\271\375\140\074\116\211\076\347\234\356\037\273\001\002
\003\001\000\001\243\102\060\100\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\340\115\277\334\233\101\135\023\350\144\360\247
\351\025\244\341\201\301\272\061\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\152\212\160\070
\131\266\332\213\030\310\276\052\323\266\031\325\146\051\172\135
\315\133\057\163\034\046\116\243\175\157\253\267\051\115\246\351
\245\021\203\247\071\163\257\020\104\222\346\045\135\117\141\372
\310\006\276\116\113\357\376\363\061\376\306\174\160\012\101\130
\332\350\231\113\226\311\170\274\230\174\002\051\355\011\200\346
\012\072\202\002\052\342\311\057\310\126\031\046\356\170\034\043
\375\367\223\145\116\347\363\230\230\257\315\335\331\236\100\210
\061\050\072\253\056\013\260\254\014\044\372\172\046\230\363\022
\141\020\364\135\027\367\176\342\170\227\124\342\214\350\051\272
\214\020\062\275\335\063\153\070\206\176\071\075\016\003\162\247
\135\171\217\105\212\131\256\133\041\156\061\106\325\131\215\317
\025\137\335\061\045\317\333\140\326\201\104\162\051\002\127\366
\226\324\326\377\352\051\333\071\305\270\054\212\032\215\316\313
\347\102\061\206\005\150\016\236\024\335\000\220\272\151\105\010
\333\156\220\201\206\247\052\005\077\346\204\071\370\267\371\127
\137\114\244\171\132\020\014\136\325\153\377\065\137\005\121\036
\154\243\165\251\317\120\203\323\174\364\146\367\202\215\075\014
\175\350\337\173\250\016\033\054\234\256\100\160\207\332\355\247
\026\202\132\276\065\154\040\116\042\141\331\274\121\172\315\172
\141\334\113\021\371\376\147\064\317\056\004\146\141\134\127\227
\043\214\363\206\033\110\337\052\257\247\301\377\330\216\076\003
\273\330\052\260\372\024\045\262\121\153\206\103\205\056\007\043
\026\200\215\114\373\264\143\073\314\303\164\355\033\243\036\376
\065\017\137\174\035\026\206\365\016\303\225\361\057\257\135\045

\073\121\346\327\166\101\070\321\113\003\071\050\245\036\221\162
\324\175\253\227\063\304\323\076\340\151\266\050\171\240\011\215
\034\321\377\101\162\110\006\374\232\056\347\040\371\233\242\336
\211\355\256\074\011\257\312\127\263\222\211\160\100\344\057\117
\302\160\203\100\327\044\054\153\347\011\037\323\325\307\301\010
\364\333\016\073\034\007\013\103\021\204\041\206\351\200\324\165
\330\253\361\002\142\301\261\176\125\141\317\023\327\046\260\327
\234\313\051\213\070\112\013\016\220\215\272\241
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CA "
Issuer: CN=CA ,O=WoSign CA Limited,C=CN
Serial Number:50:70:6b:cd:d8:13:fc:1b:4e:3b:33:72:d2:11:48:8d
Subject: CN=CA ,O=WoSign CA Limited,C=CN
Not Valid Before: Sat Aug 08 01:00:01 2009
Not Valid After: Mon Aug 08 01:00:01 2039
Fingerprint (MD5): 78:83:5b:52:16:76:c4:24:3b:83:78:e8:ac:da:9a:93
Fingerprint
(SHA1): 16:32:47:8d:89:f9:21:3a:92:00:85:63:f5:a4:a7:d3:12:40:8a:d6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA "
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\026\062\107\215\211\371\041\072\222\000\205\143\365\244\247\323
\022\100\212\326
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\170\203\133\122\026\166\304\044\073\203\170\350\254\332\232\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\032\060\030\006\003\125\004\012\023\021\127\157\123\151\147\156
\040\103\101\040\114\151\155\151\164\145\144\061\033\060\031\006
\003\125\004\003\014\022\103\101\040\346\262\203\351\200\232\346
\240\271\350\257\201\344\271\246
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\160\153\315\330\023\374\033\116\073\063\162\322\021
\110\215
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSC GDL CA Root B"
Issuer: CN=SSC GDL CA Root B,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:3e:8c:4f:bc:e4:29:83:82:4d:84:55:8e:d5:35:80:cf
Subject: CN=SSC GDL CA Root B,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Tue Jun 04 14:20:15 2013
Not Valid After: Sat Jun 04 14:21:55 2033
Fingerprint (MD5): ca:b5:ab:b2:55:7b:93:36:32:53:23:ed:79:27:30:4a
Fingerprint (SHA1): c8:60:a3:18:fc:f5:b7:13:0b:10:07:ad:7f:61:4a:40:ff:ff:18:5f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC GDL CA Root B"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\102
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\076\214\117\274\344\051\203\202\115\204\125\216\325\065
\200\317
END
CKA_VALUE

MULTILINE_OCTAL
\060\202\005\256\060\202\003\226\240\003\002\001\002\002\020\076
\214\117\274\344\051\203\202\115\204\125\216\325\065\200\317\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\161
\061\013\060\011\006\003\125\004\006\023\002\114\124\061\053\060
\051\006\003\125\004\012\023\042\123\153\141\151\164\155\145\156
\151\156\151\157\040\163\145\162\164\151\146\151\153\141\166\151
\155\157\040\143\145\156\164\162\141\163\061\031\060\027\006\003
\125\004\013\023\020\103\101\040\122\117\117\124\040\123\145\162
\166\151\143\145\163\061\032\060\030\006\003\125\004\003\023\021
\123\123\103\040\107\104\114\040\103\101\040\122\157\157\164\040
\102\060\036\027\015\061\063\060\066\060\064\061\064\062\060\061
\065\132\027\015\063\063\060\066\060\064\061\064\062\061\065\065
\132\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124
\061\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164
\155\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153
\141\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060
\027\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040
\123\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004
\003\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157
\157\164\040\102\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\217\225\351\322\353\301\163\045\307\070\147
\360\203\216\123\274\266\313\316\272\163\333\117\047\366\042\220
\077\102\277\041\326\336\142\202\264\157\004\005\111\011\073\167
\001\327\113\137\122\322\331\031\307\155\174\014\251\072\011\142
\344\052\030\151\214\240\335\353\254\023\266\016\071\021\200\151
\116\143\137\334\074\015\372\331\214\142\276\144\205\062\062\131
\227\120\223\211\337\373\377\324\330\145\161\307\106\125\242\033
\231\141\037\334\120\000\310\027\171\350\120\260\014\136\346\376
\166\246\001\116\011\310\160\154\372\220\263\136\334\075\007\315
\111\243\116\126\136\022\117\144\101\177\176\014\025\303\240\336
\263\243\051\006\111\104\241\137\157\077\201\240\104\115\360\173
\012\070\050\355\022\356\143\227\303\173\135\214\117\161\335\225
\072\332\056\250\001\106\012\363\154\350\265\361\037\010\000\361
\100\222\033\046\000\061\165\071\106\111\046\271\244\324\161\167
\021\244\117\063\314\011\333\331\321\041\113\222\104\254\316\170
\142\202\027\373\372\022\264\175\325\362\206\355\364\176\226\024
\346\215\003\122\257\315\027\242\325\034\245\376\201\246\232\355
\175\344\331\016\062\146\020\217\333\331\063\061\201\176\051\127
\357\314\262\241\140\356\212\133\271\145\333\177\033\232\054\217
\047\061\211\212\050\265\257\261\126\324\003\042\356\045\117\330
\232\275\322\154\127\274\203\246\110\037\054\125\007\011\064\053
\271\171\054\002\245\240\137\174\166\237\044\062\074\055\222\337
\353\110\127\207\241\366\376\043\372\064\253\211\365\150\033\216
\037\252\156\016\245\322\041\322\357\271\321\261\111\127\065\132
\204\323\036\342\002\155\122\020\177\342\214\115\041\333\062\062
\034\175\314\226\042\003\055\152\247\006\102\155\156\220\207\372

\034\134\260\117\320\003\101\023\372\013\123\346\301\020\002\110
\013\167\143\364\245\234\121\173\230\146\327\305\166\062\345\157
\135\024\141\175\014\273\155\225\100\332\251\046\307\367\251\313
\322\376\047\301\053\366\261\150\206\376\343\142\122\231\120\216
\053\336\101\041\007\033\207\365\100\035\160\255\317\375\302\103
\250\065\126\021\102\305\313\136\146\241\310\250\150\367\376\114
\127\141\066\122\201\002\003\001\000\001\243\102\060\100\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\162\003\106\207\141\366
\035\263\324\225\143\271\120\167\156\015\253\230\376\057\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002
\001\000\010\333\212\062\201\164\063\161\026\354\041\205\123\110
\012\157\037\162\343\343\004\370\056\267\077\363\044\225\117\234
\355\023\341\210\202\002\366\146\367\267\261\055\200\047\255\256
\270\155\376\043\007\021\010\253\164\141\214\050\022\371\366\020
\064\360\317\266\174\243\165\055\022\324\224\337\164\356\261\230
\253\261\356\042\142\113\131\037\177\376\032\145\255\115\342\244
\021\077\023\041\264\330\065\213\166\100\246\137\275\063\021\337
\230\343\041\136\035\243\273\170\066\002\073\330\375\144\204\332
\067\315\131\355\374\014\320\164\244\153\161\074\066\022\104\236
\176\156\117\012\041\034\145\037\113\022\154\277\216\162\326\335
\076\000\160\230\001\105\053\354\225\220\343\323\151\070\347\053
\235\176\145\131\133\341\333\205\312\143\376\253\277\344\320\375
\344\122\272\032\346\376\306\220\272\173\316\361\244\142\305\107
\276\044\307\240\172\345\041\341\306\010\340\014\211\203\217\200
\151\375\356\240\337\172\114\072\323\110\052\026\277\256\246\225
\265\335\150\037\373\016\265\005\214\321\262\104\174\140\060\126
\166\027\265\065\117\250\325\012\353\302\265\156\002\356\234\137
\016\243\261\001\250\345\123\157\176\203\101\037\025\330\377\341
\302\266\032\361\106\234\144\240\032\340\112\312\270\246\264\211
\044\356\173\225\231\142\324\342\100\273\316\243\232\175\035\162
\363\033\201\101\167\000\136\354\074\242\060\005\074\315\174\110
\066\023\310\062\260\153\157\237\070\050\070\151\134\173\346\342
\255\203\273\155\023\321\056\267\321\166\157\135\060\136\271\120
\105\110\326\110\200\223\121\311\026\251\020\135\147\306\313\176
\147\175\005\117\364\040\357\044\045\136\355\147\103\306\373\156
\171\373\262\362\310\311\316\101\174\005\340\255\213\315\012\105
\056\342\142\237\227\221\364\371\143\354\362\302\140\212\334\033
\377\041\250\377\043\207\214\163\215\260\072\314\037\217\061\162
\012\375\226\241\337\032\123\323\066\266\260\167\106\336\003\366
\302\200\056\157\227\043\341\021\314\121\230\077\356\100\377\364
\075\233\210\177\214\273\341\131\206\275\011\064\047\134\236\012
\223\062\073\125\052\251\136\013\015\017\251\246\121\004\342\233
\052\021
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL
CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSC GDL CA Root B"
Issuer: CN=SSC GDL CA Root B,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:3e:8c:4f:bc:e4:29:83:82:4d:84:55:8e:d5:35:80:cf
Subject: CN=SSC GDL CA Root B,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Tue Jun 04 14:20:15 2013
Not Valid After: Sat Jun 04 14:21:55 2033
Fingerprint (MD5): ca:b5:ab:b2:55:7b:93:36:32:53:23:ed:79:27:30:4a
Fingerprint (SHA1): c8:60:a3:18:fc:f5:b7:13:0b:10:07:ad:7f:61:4a:40:ff:ff:18:5f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC GDL CA Root B"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\310\140\243\030\374\365\267\023\013\020\007\255\177\141\112\100
\377\377\030\137
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\265\253\262\125\173\223\066\062\123\043\355\171\047\060\112
END
CKA_ISSUER
MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\076\214\117\274\344\051\203\202\115\204\125\216\325\065
\200\317
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SAPO Class 2 Root CA"

Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 2 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 2 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): 0a:7b:e7:df:15:44:93:ed:92:72:42:1a:28:4b:0c:ee
Fingerprint (SHA1): e4:55:01:60:8a:a1:ef:89:e2:7b:8c:d3:c3:b3:4c:03:b0:38:e6:d7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SAPO Class 2 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\062\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\062\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172

\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\130\060\202\003\100\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145\162
\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007\023
\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061\052
\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040\101
\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146\151
\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006\003
\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164\040
\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003\023
\024\123\101\120\117\040\103\154\141\163\163\040\062\040\122\157
\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206\367
\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100\164
\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172\141
\060\036\027\015\061\060\060\071\061\065\060\060\060\060\060\060
\132\027\015\063\060\060\071\061\064\060\060\060\060\060\060\132
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\062\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\267\174\151\174\140\365\154\046\364\252\034\027\177\135
\324\021\113\347\363\332\347\163\247\372\244\102\111\150\077\332
\245\100\134\006\150\137\116\314\275\276\201\070\044\055\314\046
\240\104\155\003\313\043\340\273\336\205\123\113\224\137\137\173
\252\310\032\227\376\327\043\223\355\260\152\275\330\374\000\076
\263\222\004\340\113\276\117\073\230\247\235\355\315\143\360\201
\347\154\230\324\154\140\125\000\345\271\074\346\064\225\135\340
\375\161\207\351\377\201\356\345\167\157\030\377\363\311\174\245
\225\335\202\334\024\331\242\341\276\315\047\163\273\105\133\077

\164\261\142\170\146\020\042\054\365\150\363\027\210\026\073\232
\033\035\373\024\256\015\272\362\220\125\242\325\060\326\053\225
\062\307\071\156\173\145\322\167\070\316\156\126\245\331\043\253
\070\262\073\121\205\300\035\033\267\021\057\005\151\107\330\002
\312\222\250\341\063\336\205\010\233\355\220\325\330\041\231\161
\277\266\365\163\357\147\010\230\144\322\362\052\172\113\041\026
\341\037\130\141\336\221\107\037\041\237\037\376\214\043\206\203
\030\047\002\003\001\000\001\243\077\060\075\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\014\006\003\125
\035\023\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\253\235\043\223\375\037\063\112\062\055\252\044
\132\362\055\144\251\001\232\101\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\126\122\121\271
\017\002\341\366\056\234\261\061\132\246\370\316\274\356\002\204
\025\011\361\050\122\137\347\341\054\275\333\171\012\172\277\353
\142\236\325\206\107\051\356\164\060\354\114\165\265\036\343\252
\063\357\255\341\152\114\277\067\001\276\125\203\114\251\122\330
\067\230\120\157\150\335\107\101\267\054\060\310\156\114\007\054
\306\323\111\271\265\134\322\313\314\324\066\306\007\015\030\117
\077\143\000\304\354\266\210\373\001\144\143\255\321\367\167\174
\144\124\053\022\075\064\025\205\360\240\272\171\051\137\230\233
\102\352\256\301\250\237\023\211\212\155\351\270\070\311\141\355
\140\354\367\052\130\005\233\241\140\170\203\027\341\176\137\350
\375\170\340\153\126\052\206\166\256\133\302\136\353\105\344\060
\270\061\355\144\261\135\056\300\075\200\015\307\047\023\323\166
\342\206\373\334\333\200\012\201\341\375\010\371\013\304\061\264
\143\133\347\214\063\345\006\266\122\152\263\327\351\153\343\062
\170\062\146\224\116\335\215\167\155\323\044\050\133\124\141\167
\002\147\165\224\113\127\113\346\154\305\071\157
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SAPO Class 2 Root CA"
Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 2 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 2 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): 0a:7b:e7:df:15:44:93:ed:92:72:42:1a:28:4b:0c:ee
Fingerprint (SHA1): e4:55:01:60:8a:a1:ef:89:e2:7b:8c:d3:c3:b3:4c:03:b0:38:e6:d7
CKA_CLASS

CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SAPO Class 2 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\344\125\001\140\212\241\357\211\342\173\214\323\303\263\114\003
\260\070\346\327
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\012\173\347\337\025\104\223\355\222\162\102\032\050\113\014\356
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\062\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SAPO Class 3 Root CA"
Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 3 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Serial Number: 2 (0x2)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 3 Root CA,OU=SAPO Trust Centre,O=South African Post
Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): 54:e5:eb:35:d1:75:05:3c:7c:df:30:d6:bf:f3:ff:53

Fingerprint (SHA1): 38:dd:76:59:c7:35:10:0b:00:a2:37:e4:91:b7:bc:0f:fc:d2:31:6c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SAPO Class 3 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\063\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\063\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\130\060\202\004\100\240\003\002\001\002\002\001\002
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060

\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145\162
\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007\023
\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061\052
\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040\101
\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146\151
\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006\003
\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164\040
\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003\023
\024\123\101\120\117\040\103\154\141\163\163\040\063\040\122\157
\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206\367
\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100\164
\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172\141
\060\036\027\015\061\060\060\071\061\065\060\060\060\060\060\060
\132\027\015\063\060\060\071\061\064\060\060\060\060\060\060\132
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\063\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\312\170\032\007\274\366\373\264\267\211\274\320\031\126
\070\052\131\235\007\352\032\371\370\370\150\147\136\217\357\312
\367\365\152\211\346\243\225\177\251\333\051\044\034\065\320\070
\226\154\076\126\044\377\136\142\121\220\056\207\350\234\307\332
\274\063\361\236\241\157\013\216\012\044\364\370\115\220\246\262
\315\136\021\323\302\227\114\365\137\100\035\046\044\115\215\011
\020\013\377\273\040\033\223\046\031\014\103\077\351\216\274\061
\067\020\156\221\312\110\202\126\106\307\274\271\072\236\106\201
\146\317\331\350\134\020\317\071\236\145\303\236\305\132\364\113
\314\104\231\146\206\364\162\033\243\123\111\352\256\107\315\062
\015\160\346\240\240\166\007\235\377\130\357\344\074\221\300\265
\344\334\270\001\014\323\376\263\102\240\073\141\002\324\067\133
\327\114\105\225\322\165\135\365\156\060\137\127\121\213\262\377
\176\310\213\234\252\243\101\067\014\020\221\250\246\205\134\271
\307\217\005\121\262\320\170\322\342\113\111\351\324\032\247\073
\254\252\063\346\232\052\003\100\230\157\164\122\023\061\224\321
\022\301\264\313\060\371\377\104\270\222\133\122\326\060\331\063
\321\165\343\031\245\026\025\267\124\127\361\126\120\316\116\276

\003\073\057\354\266\060\356\024\140\136\137\172\065\364\116\144
\007\021\352\245\007\146\033\156\223\342\260\117\136\326\340\104
\340\263\334\256\357\270\375\250\263\354\354\345\071\210\104\264
\241\273\024\140\144\217\326\222\223\313\363\314\120\335\351\007
\310\147\147\371\360\207\204\221\262\000\142\351\277\112\025\164
\305\277\004\114\005\106\135\012\313\345\352\141\000\341\157\101
\261\064\216\246\000\242\174\246\245\246\372\154\114\103\345\250
\046\232\064\230\036\207\230\347\114\170\321\217\237\005\125\135
\212\113\311\317\240\013\175\006\220\234\030\222\262\304\262\327
\343\105\331\153\163\303\227\071\277\051\036\006\011\125\100\272
\274\332\110\165\103\355\376\104\176\075\054\346\142\221\003\375
\075\211\357\176\364\135\044\217\245\013\053\263\076\172\051\050
\274\273\077\277\353\167\205\004\046\213\224\262\220\365\353\215
\117\242\104\042\120\250\234\052\104\110\000\170\031\253\235\010
\226\025\002\003\001\000\001\243\077\060\075\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\014\006\003\125
\035\023\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\141\263\171\122\235\112\225\222\121\216\202\044
\160\323\216\100\310\305\146\320\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\177\306\263\044
\204\120\067\371\304\260\305\060\074\026\351\120\015\172\272\264
\073\322\043\345\351\211\170\152\345\343\033\005\036\221\034\316
\006\227\215\146\026\007\104\357\201\271\010\176\243\307\071\064
\270\277\232\155\215\260\301\040\102\056\015\367\013\006\003\117
\156\313\274\267\260\057\031\161\215\216\257\012\115\130\061\213
\104\231\052\050\146\205\307\200\046\146\260\107\302\071\262\372
\117\076\125\275\334\211\047\113\163\063\004\376\173\107\220\311
\005\300\055\063\370\267\010\202\051\101\103\375\046\123\346\372
\037\067\126\215\117\027\272\330\375\072\204\160\330\076\360\063
\256\304\005\110\124\241\271\325\041\077\352\076\307\251\061\107
\367\233\256\112\142\230\321\147\040\145\336\171\341\261\062\036
\153\337\373\200\153\107\134\071\307\016\010\252\307\243\356\051
\351\064\342\233\371\165\270\046\353\210\235\264\071\021\056\160
\375\121\004\062\273\017\171\204\120\041\105\174\057\344\331\377
\045\070\006\043\253\116\261\016\334\073\061\012\255\332\113\000
\151\153\056\342\303\014\311\005\001\105\146\341\245\211\141\034
\144\231\215\013\230\220\263\176\146\073\013\330\253\350\165\016
\331\177\232\156\175\311\203\047\311\274\350\064\070\302\132\207
\062\162\007\014\376\325\224\321\360\300\170\362\200\250\106\365
\153\232\354\342\331\026\216\212\372\204\366\321\122\311\234\262
\041\126\140\103\246\020\367\177\111\277\276\007\323\120\144\155
\002\272\052\125\054\317\331\302\156\257\174\013\110\320\361\341
\247\302\255\164\217\206\344\355\252\372\134\203\175\102\350\175
\007\035\007\125\314\053\151\062\271\167\202\150\306\167\362\042
\151\246\311\012\135\207\231\345\161\236\175\057\023\036\322\364
\375\011\171\047\130\053\012\207\201\052\373\152\043\055\113\044
\205\164\026\107\030\017\011\305\376\251\110\044\343\254\320\151
\075\137\123\230\062\275\354\340\121\301\123\112\261\366\073\360

\064\110\365\232\336\334\321\340\343\275\045\263\104\350\072\163
\311\171\320\254\321\355\342\000\012\137\241\035\146\131\112\163
\150\324\005\162\063\070\247\153\257\221\333\015\307\214\100\350
\236\220\210\311\373\376\044\327\201\254\363\336
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SAPO Class 3 Root CA"
Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 3 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Serial Number: 2 (0x2)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 3 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): 54:e5:eb:35:d1:75:05:3c:7c:df:30:d6:bf:f3:ff:53
Fingerprint (SHA1): 38:dd:76:59:c7:35:10:0b:00:a2:37:e4:91:b7:bc:0f:fc:d2:31:6c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SAPO Class 3 Root CA"
CKA_CERT_SHA1_HASH
MULTILINE_OCTAL
\070\335\166\131\307\065\020\013\000\242\067\344\221\267\274\017
\374\322\061\154
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\124\345\353\065\321\165\005\074\174\337\060\326\277\363\377\123
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\063\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172

\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SAPO Class 4 Root CA"
Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 4 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Serial Number: 3 (0x3)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 4 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): f8:a7:f6:89:94:8c:61:f7:43:98:36:df:22:82:9b:3b
Fingerprint (SHA1):
 20:a8:f5:ff:c4:3a:f4:a9:bc:89:88:1e:bf:99:20:ff:91:e9:fd:0a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SAPO Class 4 Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\064\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\064\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\003
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\130\060\202\004\100\240\003\002\001\002\002\001\003
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145\162
\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007\023
\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061\052
\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040\101
\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146\151
\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006\003
\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164\040
\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003\023
\024\123\101\120\117\040\103\154\141\163\163\040\064\040\122\157
\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206\367
\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100\164
\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172\141
\060\036\027\015\061\060\060\071\061\065\060\060\060\060\060\060
\132\027\015\063\060\060\071\061\064\060\060\060\060\060\060\132
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\064\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206

\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\333\334\355\110\232\240\243\237\340\021\216\331\310\222
\165\072\125\301\121\042\312\013\172\244\065\015\305\346\127\055
\203\360\052\157\042\070\067\061\155\174\205\044\242\006\057\103
\202\075\105\060\100\045\034\356\130\107\101\346\360\236\000\036
\370\364\057\021\273\222\262\230\105\055\323\037\200\311\166\024
\023\303\314\100\346\255\353\071\140\374\317\310\337\052\375\214
\022\121\357\317\014\144\306\127\350\043\121\135\347\146\122\352
\146\275\223\177\235\172\050\361\031\160\156\204\237\060\107\267
\260\071\153\023\054\353\113\115\056\257\077\277\375\002\023\112
\071\347\076\063\305\020\221\121\276\017\107\235\115\122\374\054
\363\343\023\242\000\202\341\024\014\315\322\236\263\362\340\201
\332\276\231\222\123\343\175\231\167\103\341\341\110\051\201\236
\326\005\127\072\161\334\076\230\255\130\160\157\106\273\176\062
\003\342\203\233\131\127\367\370\263\315\124\026\354\266\255\241
\034\032\222\321\324\051\236\217\315\263\350\175\120\361\302\202
\254\272\275\264\165\126\240\365\105\135\030\175\054\214\361\173
\101\314\206\261\232\204\113\012\052\135\233\226\341\315\372\253
\026\047\101\347\225\065\246\313\212\247\226\363\245\314\121\371
\055\175\036\103\373\334\155\265\271\070\275\005\373\130\372\056
\323\354\136\144\055\257\130\001\112\174\042\106\323\101\313\075
\344\226\136\111\103\070\273\211\353\364\234\151\071\022\003\134
\204\273\345\214\036\352\340\146\273\300\277\214\376\236\012\115
\075\150\077\100\166\326\062\251\352\105\270\152\007\122\216\315
\121\361\135\050\143\014\323\131\070\374\311\375\202\311\105\040
\274\346\350\314\242\014\313\173\144\071\111\106\105\365\163\034
\152\227\040\353\041\102\367\264\040\122\267\112\375\165\274\313
\017\014\147\021\127\037\367\060\361\253\220\314\135\074\226\005
\142\323\312\125\001\113\106\305\200\207\034\162\320\163\124\041
\352\327\243\234\323\256\177\324\123\331\050\374\127\336\345\077
\122\112\273\310\046\044\107\123\034\163\272\317\306\264\060\315
\136\161\307\126\274\111\070\045\346\305\020\011\170\331\324\035
\134\315\156\355\333\221\134\241\123\024\126\252\215\047\251\246
\216\033\002\003\001\000\001\243\077\060\075\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\014\006\003\125
\035\023\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\026\204\055\373\033\347\264\036\150\230\323\102
\040\032\156\176\117\221\127\002\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\173\343\015\143
\072\144\040\155\314\374\054\270\351\326\253\333\327\253\046\051
\107\242\014\126\355\165\314\225\231\122\066\313\040\373\021\064
\027\102\116\165\005\260\330\344\270\260\204\057\230\031\271\373
\320\071\154\162\006\030\311\134\212\172\164\010\067\110\151\375
\042\241\135\305\327\170\023\360\050\102\101\303\311\303\071\011
\007\324\241\370\067\042\151\344\337\062\125\157\302\174\271\223

\361\262\067\165\314\256\322\063\226\214\066\367\001\355\343\144
\351\013\150\133\020\252\001\066\231\174\317\232\224\135\375\032
\131\141\242\145\025\175\236\027\144\324\237\123\230\001\375\161
\127\320\135\100\021\026\077\077\104\322\257\311\374\010\062\175
\166\370\325\103\350\334\066\150\007\303\116\303\226\227\127\306
\175\066\136\333\160\255\376\256\324\210\235\265\244\140\326\243
\142\276\174\371\064\036\374\273\364\112\162\305\203\036\106\150
\303\016\227\203\030\075\323\016\012\021\065\174\151\225\305\253
\052\365\310\071\020\115\014\211\060\051\211\111\033\104\227\221
\364\352\145\041\033\077\012\103\162\202\034\155\021\135\340\042
\105\137\141\114\242\246\372\337\243\106\272\341\201\140\154\062
\264\374\344\334\066\005\344\063\367\353\217\167\111\252\215\012
\357\110\212\346\101\227\176\073\253\103\207\362\010\140\013\157
\327\131\146\375\053\273\057\316\063\117\162\340\266\327\263\123
\127\211\360\073\274\156\342\020\277\163\076\142\217\245\010\351
\123\147\301\116\301\056\102\103\247\262\244\371\026\213\102\356
\334\064\177\110\263\220\333\044\342\310\344\123\065\123\234\352
\067\205\317\277\230\006\065\107\046\327\256\155\335\204\251\143
\130\046\101\365\165\062\056\141\236\117\223\122\122\366\132\043
\353\301\240\163\046\045\042\102\221\221\221\200\117\377\210\316
\136\163\347\226\302\355\011\022\367\166\226\251\171\142\220\111
\201\203\237\014\062\062\342\133\312\335\110\064\254\207\216\161
\225\256\114\344\174\170\035\247\121\303\275\021\372\002\321\225
\211\163\010\106\042\211\151\000\317\117\200\301\115\133\224\304
\312\231\121\230\057\015\275\175\124\144\324\012\332\047\131\247
\067\273\126\014\320\006\242\162\271\022\271\133
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SAPO Class 4 Root CA"
Issuer: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO
Class 4 Root CA,OU=SAPO Trust Centre,O=South African Post Office Limited,L=Somerset West,ST=Western
Cape,C=ZA
Serial Number: 3 (0x3)
Subject: 1.2.840.113549.1.9.1=pkiadmin@trustcentre.co.za,CN=SAPO Class 4 Root CA,OU=SAPO Trust
Centre,O=South African Post Office Limited,L=Somerset West,ST=Western Cape,C=ZA
Not Valid Before: Wed Sep 15 00:00:00 2010
Not Valid After: Sat Sep 14 00:00:00 2030
Fingerprint (MD5): f8:a7:f6:89:94:8c:61:f7:43:98:36:df:22:82:9b:3b
Fingerprint (SHA1): 20:a8:f5:ff:c4:3a:f4:a9:bc:89:88:1e:bf:99:20:ff:91:e9:fd:0a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "SAPO Class 4 Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\040\250\365\377\304\072\364\251\274\211\210\036\277\231\040\377
\221\351\375\012
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\247\366\211\224\214\141\367\103\230\066\337\042\202\233\073
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\026\060\024\006\003\125\004\007
\023\015\123\157\155\145\162\163\145\164\040\127\145\163\164\061
\052\060\050\006\003\125\004\012\023\041\123\157\165\164\150\040
\101\146\162\151\143\141\156\040\120\157\163\164\040\117\146\146
\151\143\145\040\114\151\155\151\164\145\144\061\032\060\030\006
\003\125\004\013\023\021\123\101\120\117\040\124\162\165\163\164
\040\103\145\156\164\162\145\061\035\060\033\006\003\125\004\003
\023\024\123\101\120\117\040\103\154\141\163\163\040\064\040\122
\157\157\164\040\103\101\061\051\060\047\006\011\052\206\110\206
\367\015\001\011\001\026\032\160\153\151\141\144\155\151\156\100
\164\162\165\163\164\143\145\156\164\162\145\056\143\157\056\172
\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\003
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CA Disig Root R1"
Issuer: CN=CA Disig Root R1,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:c3:03:9a:ee:50:90:6e:28
Subject: CN=CA Disig Root R1,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:06:56 2012
Not Valid After: Sat Jul 19 09:06:56 2042
Fingerprint (MD5): be:ec:11:93:9a:f5:69:21:bc:d7:c1:c0:67:89:cc:2a
Fingerprint (SHA1): 8e:1c:74:f8:a6:20:b9:e5:8a:f4:61:fa:ec:2b:47:56:51:1a:52:c6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R1"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157
\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\303\003\232\356\120\220\156\050
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\151\060\202\003\121\240\003\002\001\002\002\011\000
\303\003\232\356\120\220\156\050\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\122\061\013\060\011\006\003\125
\004\006\023\002\123\113\061\023\060\021\006\003\125\004\007\023
\012\102\162\141\164\151\163\154\141\166\141\061\023\060\021\006
\003\125\004\012\023\012\104\151\163\151\147\040\141\056\163\056
\061\031\060\027\006\003\125\004\003\023\020\103\101\040\104\151
\163\151\147\040\122\157\157\164\040\122\061\060\036\027\015\061
\062\060\067\061\071\060\071\060\066\065\066\132\027\015\064\062
\060\067\061\071\060\071\060\066\065\066\132\060\122\061\013\060
\011\006\003\125\004\006\023\002\123\113\061\023\060\021\006\003
\125\004\007\023\012\102\162\141\164\151\163\154\141\166\141\061
\023\060\021\006\003\125\004\012\023\012\104\151\163\151\147\040
\141\056\163\056\061\031\060\027\006\003\125\004\003\023\020\103
\101\040\104\151\163\151\147\040\122\157\157\164\040\122\061\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\252\303\170\367\334\230\243\247\132\136\167\030\262\335\004\144
\017\143\375\233\226\011\200\325\350\252\245\342\234\046\224\072
\350\231\163\214\235\337\327\337\203\363\170\117\100\341\177\322
\247\322\345\312\023\223\347\355\306\167\137\066\265\224\257\350
\070\216\333\233\345\174\273\314\215\353\165\163\341\044\315\346
\247\055\031\056\330\326\212\153\024\353\010\142\012\330\334\263
\000\115\303\043\174\137\103\010\043\062\022\334\355\014\255\300
\175\017\245\172\102\331\132\160\331\277\247\327\001\034\366\233

\253\216\267\112\206\170\240\036\126\061\256\357\202\012\200\101
\367\033\311\256\253\062\046\324\054\153\355\175\153\344\342\136
\042\012\105\313\204\061\115\254\376\333\321\107\272\371\140\227
\071\261\145\307\336\373\231\344\012\042\261\055\115\345\110\046
\151\253\342\252\363\373\374\222\051\062\351\263\076\115\037\047
\241\315\216\271\027\373\045\076\311\156\363\167\332\015\022\366
\135\307\273\066\020\325\124\326\363\340\342\107\110\346\336\024
\332\141\122\257\046\264\365\161\117\311\327\322\006\337\143\312
\377\041\350\131\006\340\010\325\204\025\123\367\103\345\174\305
\240\211\230\153\163\306\150\316\145\336\275\177\005\367\261\356
\366\127\241\140\225\305\314\352\223\072\276\231\256\233\002\243
\255\311\026\265\316\335\136\231\170\176\032\071\176\262\300\005
\244\300\202\245\243\107\236\214\352\134\266\274\147\333\346\052
\115\322\004\334\243\256\105\367\274\213\234\034\247\326\325\003
\334\010\313\056\026\312\134\100\063\350\147\303\056\347\246\104
\352\021\105\034\065\145\055\036\105\141\044\033\202\056\245\235
\063\135\145\370\101\371\056\313\224\077\037\243\014\061\044\104
\355\307\136\255\120\272\306\101\233\254\360\027\145\300\370\135
\157\133\240\012\064\074\356\327\352\210\237\230\371\257\116\044
\372\227\262\144\166\332\253\364\355\343\303\140\357\325\371\002
\310\055\237\203\257\147\151\006\247\061\125\325\317\113\157\377
\004\005\307\130\254\137\026\033\345\322\243\353\061\333\037\063
\025\115\320\362\245\123\365\313\341\075\116\150\055\330\022\335
\252\362\346\115\233\111\345\305\050\241\272\260\132\306\240\265
\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125\035
\016\004\026\004\024\211\012\264\070\223\032\346\253\356\233\221
\030\371\365\074\076\065\320\323\202\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\062\213\366
\235\112\311\276\024\345\214\254\070\312\072\011\324\033\316\206
\263\335\353\324\272\050\276\022\256\105\054\004\164\254\023\121
\305\130\030\146\115\202\332\325\334\223\300\047\341\276\174\237
\122\236\022\126\366\325\234\251\364\165\234\372\067\022\217\034
\223\354\127\376\007\017\253\325\022\367\017\256\141\136\126\200
\111\365\374\060\365\233\117\037\101\057\034\204\323\211\307\342
\332\002\166\355\011\317\154\301\270\034\203\034\026\372\224\315
\175\240\310\030\322\310\235\156\365\275\151\324\155\075\065\350
\036\242\117\140\327\007\051\374\262\243\244\235\156\025\222\126
\031\114\012\260\351\174\322\031\115\102\106\354\275\375\366\127
\133\335\230\176\244\115\314\162\003\203\130\135\357\223\072\101
\172\143\252\174\072\250\365\254\244\321\335\242\055\266\052\374
\237\001\216\342\020\261\304\312\344\147\333\125\045\031\077\375
\350\066\176\263\341\341\201\257\021\026\213\120\227\140\031\202
\000\300\153\115\163\270\321\023\007\076\352\266\061\117\360\102
\232\155\342\021\164\345\224\254\215\204\225\074\041\257\305\332
\107\310\337\071\142\142\313\133\120\013\327\201\100\005\234\233
\355\272\266\213\036\004\157\226\040\071\355\244\175\051\333\110

\316\202\334\324\002\215\035\004\061\132\307\113\360\154\141\122
\327\264\121\302\201\154\315\341\373\247\241\322\222\166\317\261
\017\067\130\244\362\122\161\147\077\014\210\170\200\211\301\310
\265\037\222\143\276\247\172\212\126\054\032\250\246\234\265\135
\263\143\320\023\040\241\353\221\154\320\215\175\257\337\013\344
\027\271\206\236\070\261\224\014\130\214\340\125\252\073\143\155
\232\211\140\270\144\052\222\306\067\364\176\103\103\267\163\350
\001\347\177\227\017\327\362\173\031\375\032\327\217\311\372\205
\153\172\235\236\211\266\246\050\231\223\210\100\367\076\315\121
\243\312\352\357\171\107\041\265\376\062\342\307\303\121\157\276
\200\164\360\244\303\072\362\117\351\137\337\031\012\362\073\023
\103\254\061\244\263\347\353\374\030\326\001\251\363\052\217\066
\016\353\264\261\274\267\114\311\153\277\241\363\331\364\355\342
\360\343\355\144\236\075\057\226\122\117\200\123\213
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CA Disig Root R1"
Issuer: CN=CA Disig Root R1,O=Disig a.s.,L=Bratislava,C=SK
Serial Number:c3:03:9a:ee:50:90:6e:28
Subject: CN=CA Disig Root R1,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Thu Jul 19 09:06:56 2012
Not Valid After: Sat Jul 19 09:06:56 2042
Fingerprint (MD5): be:ec:11:93:9a:f5:69:21:bc:d7:c1:c0:67:89:cc:2a
Fingerprint (SHA1): 8e:1c:74:f8:a6:20:b9:e5:8a:f4:61:fa:ec:2b:47:56:51:1a:52:c6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig Root R1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\216\034\164\370\246\040\271\345\212\364\141\372\354\053\107\126
\121\032\122\306
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\276\354\021\223\232\365\151\041\274\327\301\300\147\211\314\052
END
CKA_ISSUER MULTILINE_OCTAL
\060\122\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\031\060\027\006\003\125
\004\003\023\020\103\101\040\104\151\163\151\147\040\122\157\157

\164\040\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\303\003\232\356\120\220\156\050
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Autoridad Certificadora Raíz Nacional de Uruguay"
Issuer: C=UY,O=AGESIC,CN=Autoridad Certificadora Raíz Nacional de Uruguay
Serial Number:02:ee:00:9b:66:d8:6a:1d:67:fe:da:8a:25:6f:21:5a:75:1b
Subject: C=UY,O=AGESIC,CN=Autoridad Certificadora Raíz Nacional de Uruguay
Not Valid Before: Thu Nov 03 15:02:49 2011
Not Valid After: Wed Oct 29 15:02:49 2031
Fingerprint (MD5): 7b:b7:e7:2e:64:18:e4:11:0c:f7:42:78:3e:65:a2:ae
Fingerprint (SHA1): 7a:1c:dd:e3:d2:19:7e:71:37:43:3d:3f:99:c0:b3:69:f7:06:c7:49
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad Certificadora Raíz Nacional de Uruguay"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\072\060\070\006\003\125\004\003\014\061\101\165\164
\157\162\151\144\141\144\040\103\145\162\164\151\146\151\143\141
\144\157\162\141\040\122\141\303\255\172\040\116\141\143\151\157
\156\141\154\040\144\145\040\125\162\165\147\165\141\171\061\017
\060\015\006\003\125\004\012\023\006\101\107\105\123\111\103\061
\013\060\011\006\003\125\004\006\023\002\125\131
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\072\060\070\006\003\125\004\003\014\061\101\165\164
\157\162\151\144\141\144\040\103\145\162\164\151\146\151\143\141
\144\157\162\141\040\122\141\303\255\172\040\116\141\143\151\157
\156\141\154\040\144\145\040\125\162\165\147\165\141\171\061\017
\060\015\006\003\125\004\012\023\006\101\107\105\123\111\103\061
\013\060\011\006\003\125\004\006\023\002\125\131
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\002\356\000\233\146\330\152\035\147\376\332\212\045\157
\041\132\165\033
END

CKA_VALUE MULTILINE_OCTAL
\060\202\006\235\060\202\004\205\240\003\002\001\002\002\022\002
\356\000\233\146\330\152\035\147\376\332\212\045\157\041\132\165
\033\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\132\061\072\060\070\006\003\125\004\003\014\061\101\165\164
\157\162\151\144\141\144\040\103\145\162\164\151\146\151\143\141
\144\157\162\141\040\122\141\303\255\172\040\116\141\143\151\157
\156\141\154\040\144\145\040\125\162\165\147\165\141\171\061\017
\060\015\006\003\125\004\012\023\006\101\107\105\123\111\103\061
\013\060\011\006\003\125\004\006\023\002\125\131\060\036\027\015
\061\061\061\061\060\063\061\065\060\062\064\071\132\027\015\063
\061\061\060\062\071\061\065\060\062\064\071\132\060\132\061\072
\060\070\006\003\125\004\003\014\061\101\165\164\157\162\151\144
\141\144\040\103\145\162\164\151\146\151\143\141\144\157\162\141
\040\122\141\303\255\172\040\116\141\143\151\157\156\141\154\040
\144\145\040\125\162\165\147\165\141\171\061\017\060\015\006\003
\125\004\012\023\006\101\107\105\123\111\103\061\013\060\011\006
\003\125\004\006\023\002\125\131\060\202\002\040\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\015\000
\060\202\002\010\002\202\002\001\000\227\304\037\052\104\241\201
\113\110\221\165\335\353\332\217\312\033\213\362\264\074\054\306
\345\364\301\036\321\270\060\023\157\134\237\345\121\226\177\032
\244\026\376\322\324\035\045\366\320\346\067\140\137\000\243\031
\251\354\047\277\120\055\005\240\134\136\223\353\343\150\375\233
\075\271\024\066\055\347\045\025\020\220\032\222\311\021\261\051
\227\223\126\125\142\255\107\254\177\325\014\167\226\322\223\150
\152\061\335\124\357\223\362\012\117\240\137\002\132\357\266\104
\076\347\231\262\216\105\336\240\367\300\350\110\260\107\354\336
\102\024\333\065\173\240\151\374\036\300\001\051\026\332\063\241
\041\241\062\062\020\166\175\250\307\300\056\163\203\144\374\132
\367\233\066\214\151\355\040\125\043\171\315\363\363\154\153\140
\134\170\215\374\075\205\054\274\251\367\160\350\245\312\115\330
\174\230\357\206\166\030\204\325\100\051\020\047\062\347\357\003
\104\013\117\311\052\361\266\264\053\240\325\003\224\204\041\323
\164\363\051\155\170\360\005\152\256\001\017\141\037\306\245\360
\307\202\025\331\073\373\335\213\164\151\356\344\307\307\364\021
\334\024\121\301\204\032\045\126\023\153\133\316\137\054\375\213
\033\055\017\310\300\125\252\030\117\230\234\317\242\167\010\264
\065\225\330\271\213\234\111\016\264\020\013\374\374\107\115\324
\232\127\371\237\172\275\351\127\273\264\017\137\025\220\330\150
\154\325\205\045\203\055\206\014\107\142\227\263\171\115\271\145
\010\167\122\157\112\343\156\200\300\254\243\325\274\352\111\342
\145\342\114\131\152\202\336\053\365\252\076\376\145\350\121\160
\115\067\204\006\004\077\222\203\324\126\050\343\045\325\124\312
\205\356\126\300\056\316\371\160\020\022\137\135\236\306\274\113
\020\035\126\155\312\162\301\123\011\052\023\075\330\265\371\034
\073\105\306\207\024\320\070\176\236\041\137\374\166\035\377\013
\051\102\333\241\304\171\071\341\115\325\206\120\343\362\340\263

\327\131\233\336\077\036\032\003\363\324\151\206\113\107\034\062
\177\074\007\011\023\020\247\233\007\060\167\063\274\151\021\321
\064\075\174\020\052\270\036\216\275\107\336\371\262\171\125\146
\041\002\007\373\071\054\012\027\241\002\001\003\243\202\001\135
\060\202\001\131\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\142\006\003\125\035\037\004\133\060\131
\060\054\240\052\240\050\206\046\150\164\164\160\072\057\057\167
\167\167\056\141\147\145\163\151\143\056\147\165\142\056\165\171
\057\141\143\162\156\057\141\143\162\156\056\143\162\154\060\051
\240\047\240\045\206\043\150\164\164\160\072\057\057\167\167\167
\056\165\143\145\056\147\165\142\056\165\171\057\141\143\162\156
\057\141\143\162\156\056\143\162\154\060\201\262\006\003\125\035
\040\004\201\252\060\201\247\060\134\006\013\140\206\132\204\342
\256\035\204\210\005\000\060\115\060\113\006\010\053\006\001\005
\005\007\002\001\026\077\150\164\164\160\072\057\057\167\167\167
\056\165\143\145\056\147\165\142\056\165\171\057\151\156\146\157
\162\155\141\143\151\157\156\055\164\145\143\156\151\143\141\057
\160\157\154\151\164\151\143\141\163\057\143\160\137\141\143\162
\156\056\160\144\146\060\107\006\013\140\206\132\204\342\256\035
\204\210\005\001\060\070\060\066\006\010\053\006\001\005\005\007
\002\001\026\052\150\164\164\160\072\057\057\167\167\167\056\141
\147\145\163\151\143\056\147\165\142\056\165\171\057\141\143\162
\156\057\143\160\163\137\141\143\162\156\056\160\144\146\060\035
\006\003\125\035\016\004\026\004\024\222\236\221\270\125\050\075
\167\102\054\063\245\230\137\320\311\254\215\265\243\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\135\347\253\131\352\111\334\277\106\103\375\224\273\230\160
\224\024\372\316\003\135\361\175\061\023\222\116\205\044\060\024
\153\154\323\347\316\346\171\325\333\116\125\116\027\053\327\223
\105\337\023\014\047\147\035\307\102\220\124\060\306\361\250\151
\050\264\116\246\155\245\065\246\120\226\150\111\243\356\057\013
\253\374\003\002\120\150\361\225\051\076\161\054\334\332\345\055
\331\166\056\356\126\063\176\027\241\047\002\341\241\047\050\041
\212\277\001\347\142\307\273\262\045\004\332\033\246\043\214\174
\223\272\311\213\353\012\371\067\267\224\071\375\115\217\176\242
\334\201\157\033\255\024\017\133\040\003\170\101\163\147\236\322
\227\027\220\052\212\124\113\247\171\177\044\022\221\237\073\054
\307\067\244\014\134\162\152\023\236\062\011\047\353\103\062\165
\137\327\107\303\052\105\123\025\126\166\117\273\011\350\204\140
\021\357\163\325\347\120\156\151\050\375\353\306\313\312\116\023
\143\015\016\067\054\061\037\333\247\130\240\262\375\015\027\207
\263\222\256\033\050\200\037\266\222\176\206\021\341\366\114\230
\177\146\213\037\023\111\003\102\374\373\230\234\356\206\226\251
\056\005\176\160\034\301\167\310\351\135\202\270\016\316\133\144
\005\143\356\077\006\055\066\014\351\037\162\133\036\254\335\046
\365\034\070\156\375\214\075\115\206\353\047\313\312\003\215\100
\363\052\321\212\330\064\016\302\255\265\210\355\207\232\212\205

\242\207\357\351\271\070\347\150\226\243\001\317\202\075\034\113
\050\235\047\365\371\231\226\173\110\375\254\320\360\062\367\070
\004\335\115\231\256\016\222\202\303\372\074\033\023\307\150\267
\135\340\223\106\270\270\270\244\014\304\033\306\272\106\226\335
\236\125\017\107\235\366\201\245\254\145\131\330\335\256\006\154
\340\103\202\306\147\330\160\002\065\365\066\004\343\112\071\251
\165\002\036\346\077\106\317\234\054\036\204\210\027\252\046\251
\246\103\200\340\300\133\243\144\203\233\232\355\153\001\145\266
\301\075\030\354\223\031\146\224\250\323\021\120\231\172\210\175
\257\076\177\224\220\073\012\303\152\267\215\137\322\247\121\321
\062\037\271\362\062\175\167\223\155\103\354\101\151\253\317\311
\141
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Autoridad Certificadora Raíz Nacional de Uruguay"
Issuer: C=UY,O=AGESIC,CN=Autoridad
Certificadora Raíz Nacional de Uruguay
Serial Number:02:ee:00:9b:66:d8:6a:1d:67:fe:da:8a:25:6f:21:5a:75:1b
Subject: C=UY,O=AGESIC,CN=Autoridad Certificadora Raíz Nacional de Uruguay
Not Valid Before: Thu Nov 03 15:02:49 2011
Not Valid After: Wed Oct 29 15:02:49 2031
Fingerprint (MD5): 7b:b7:e7:2e:64:18:e4:11:0c:f7:42:78:3e:65:a2:ae
Fingerprint (SHA1): 7a:1c:dd:e3:d2:19:7e:71:37:43:3d:3f:99:c0:b3:69:f7:06:c7:49
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad Certificadora Raíz Nacional de Uruguay"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\172\034\335\343\322\031\176\161\067\103\075\077\231\300\263\151
\367\006\307\111
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\173\267\347\056\144\030\344\021\014\367\102\170\076\145\242\256
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\072\060\070\006\003\125\004\003\014\061\101\165\164
\157\162\151\144\141\144\040\103\145\162\164\151\146\151\143\141
\144\157\162\141\040\122\141\303\255\172\040\116\141\143\151\157
\156\141\154\040\144\145\040\125\162\165\147\165\141\171\061\017
\060\015\006\003\125\004\012\023\006\101\107\105\123\111\103\061
\013\060\011\006\003\125\004\006\023\002\125\131
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\022\002\356\000\233\146\330\152\035\147\376\332\212\045\157
\041\132\165\033
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "E-Tugra Certification Authority"
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tura EBG Biliim Teknolojileri ve Hizmetleri A..,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tura EBG Biliim Teknolojileri ve
Hizmetleri A..,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After: Fri Mar 03 12:09:48 2023
Fingerprint (MD5): b8:a1:03:63:b0:bd:21:71:70:8a:6f:13:3a:bb:79:49
Fingerprint (SHA1): 51:c6:e7:08:49:06:6e:f3:92:d4:5c:a0:0d:6d:a3:62:8f:c3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165

\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\113\060\202\004\063\240\003\002\001\002\002\010\152
\150\076\234\121\233\313\123\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\201\262\061\013\060\011\006\003\125
\004\006\023\002\124\122\061\017\060\015\006\003\125\004\007\014
\006\101\156\153\141\162\141\061\100\060\076\006\003\125\004\012
\014\067\105\055\124\165\304\237\162\141\040\105\102\107\040\102
\151\154\151\305\237\151\155\040\124\145\153\156\157\154\157\152
\151\154\145\162\151\040\166\145\040\110\151\172\155\145\164\154
\145\162\151\040\101\056\305\236\056\061\046\060\044\006\003\125
\004\013\014\035\105\055\124\165\147\162\141\040\123\145\162\164
\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145\172
\151\061\050\060\046\006\003\125\004\003\014\037\105\055\124\165
\147\162\141\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\063\060\063\060\065\061\062\060\071\064\070\132\027\015\062\063
\060\063\060\063\061\062\060\071\064\070\132\060\201\262\061\013
\060\011\006\003\125\004\006\023\002\124\122\061\017\060\015\006
\003\125\004\007\014\006\101\156\153\141\162\141\061\100\060\076
\006\003\125\004\012\014\067\105\055\124\165\304\237\162\141\040
\105\102\107\040\102\151\154\151\305\237\151\155\040\124\145\153
\156\157\154\157\152\151\154\145\162\151\040\166\145\040\110\151
\172\155\145\164\154\145\162\151\040\101\056\305\236\056\061\046
\060\044\006\003\125\004\013\014\035\105\055\124\165\147\162\141
\040\123\145\162\164\151\146\151\153\141\163\171\157\156\040\115
\145\162\153\145\172\151\061\050\060\046\006\003\125\004\003\014
\037\105\055\124\165\147\162\141\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\342\365\077\223\005\121\036\205\142\124\136\172\013\365\030
\007\203\256\176\257\174\367\324\212\153\245\143\103\071\271\113
\367\303\306\144\211\075\224\056\124\200\122\071\071\007\113\113
\335\205\007\166\207\314\277\057\225\114\314\175\247\075\274\107

\017\230\160\370\214\205\036\164\216\222\155\033\100\321\231\015
\273\165\156\310\251\153\232\300\204\061\257\312\103\313\353\053
\064\350\217\227\153\001\233\325\016\112\010\252\133\222\164\205
\103\323\200\256\241\210\133\256\263\352\136\313\026\232\167\104
\310\241\366\124\150\316\336\217\227\053\272\133\100\002\014\144
\027\300\265\223\315\341\361\023\146\316\014\171\357\321\221\050
\253\137\240\022\122\060\163\031\216\217\341\214\007\242\303\273
\112\360\352\037\025\250\356\045\314\244\106\370\033\042\357\263
\016\103\272\054\044\270\305\054\134\324\034\370\135\144\275\303
\223\136\050\247\077\047\361\216\036\323\052\120\005\243\125\331
\313\347\071\123\300\230\236\214\124\142\213\046\260\367\175\215
\174\344\306\236\146\102\125\202\107\347\262\130\215\146\367\007
\174\056\066\346\120\034\077\333\103\044\305\277\206\107\171\263
\171\034\367\132\364\023\354\154\370\077\342\131\037\225\356\102
\076\271\255\250\062\205\111\227\106\376\113\061\217\132\313\255
\164\107\037\351\221\267\337\050\004\042\240\324\017\135\342\171
\117\352\154\205\206\275\250\246\316\344\372\303\341\263\256\336
\074\121\356\313\023\174\001\177\204\016\135\121\224\236\023\014
\266\056\245\114\371\071\160\066\157\226\312\056\014\104\125\305
\312\372\135\002\243\337\326\144\214\132\263\001\012\251\265\012
\107\027\377\357\221\100\052\216\241\106\072\061\230\345\021\374
\314\273\111\126\212\374\271\320\141\232\157\145\154\346\303\313
\076\165\111\376\217\247\342\211\305\147\327\235\106\023\116\061
\166\073\044\263\236\021\145\206\253\177\357\035\324\370\274\347
\254\132\134\267\132\107\134\125\316\125\264\042\161\133\133\013
\360\317\334\240\141\144\352\251\327\150\012\143\247\340\015\077
\240\257\323\252\322\176\357\121\240\346\121\053\125\222\025\027
\123\313\267\146\016\146\114\370\371\165\114\220\347\022\160\307
\105\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035
\016\004\026\004\024\056\343\333\262\111\320\234\124\171\134\372
\047\052\376\314\116\322\350\116\124\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\056\343\333\262\111\320\234\124\171
\134\372\047\052\376\314\116\322\350\116\124\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\005
\067\072\364\115\267\105\342\105\165\044\217\266\167\122\350\034
\330\020\223\145\363\362\131\006\244\076\036\051\354\135\321\320
\253\174\340\012\220\110\170\355\116\230\003\231\376\050\140\221
\035\060\035\270\143\174\250\346\065\265\372\323\141\166\346\326
\007\113\312\151\232\262\204\172\167\223\105\027\025\237\044\320
\230\023\022\377\273\240\056\375\116\114\207\370\316\134\252\230
\033\005\340\000\106\112\202\200\245\063\213\050\334\355\070\323
\337\345\076\351\376\373\131\335\141\204\117\322\124\226\023\141
\023\076\217\200\151\276\223\107\265\065\103\322\132\273\075\134
\357\263\102\107\315\073\125\023\006\260\011\333\375\143\366\072
\210\012\231\157\176\341\316\033\123\152\104\146\043\121\010\173
\274\133\122\242\375\006\067\070\100\141\217\112\226\270\220\067

\370\146\307\170\220\000\025\056\213\255\121\065\123\007\250\153
\150\256\371\116\074\007\046\315\010\005\160\314\071\077\166\275
\245\323\147\046\001\206\246\123\322\140\073\174\103\177\125\212
\274\225\032\301\050\071\114\037\103\322\221\364\162\131\212\271
\126\374\077\264\235\332\160\234\166\132\214\103\120\356\216\060
\162\115\337\377\111\367\306\251\147\331\155\254\002\021\342\072
\026\045\247\130\010\313\157\123\101\234\110\070\107\150\063\321
\327\307\217\324\164\041\324\303\005\220\172\377\316\226\210\261
\025\051\135\043\253\320\140\241\022\117\336\364\027\315\062\345
\311\277\310\103\255\375\056\216\361\257\342\364\230\372\022\037
\040\330\300\247\014\205\305\220\364\073\055\226\046\261\054\276
\114\253\353\261\322\212\311\333\170\023\017\036\011\235\155\217
\000\237\002\332\301\372\037\172\172\011\304\112\346\210\052\227
\237\211\213\375\067\137\137\072\316\070\131\206\113\257\161\013
\264\330\362\160\117\237\062\023\343\260\247\127\345\332\332\103
\313\204\064\362\050\304\352\155\364\052\357\301\153\166\332\373
\176\273\205\074\322\123\302\115\276\161\341\105\321\375\043\147
\015\023\165\373\317\145\147\042\235\256\260\011\321\011\377\035
\064\277\376\043\227\067\322\071\372\075\015\006\013\264\333\073
\243\253\157\134\035\266\176\350\263\202\064\355\006\134\044
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "E-Tugra Certification Authority"
Issuer: CN=E-Tugra Certification Authority,OU=E-Tugra
Sertifikasyon Merkezi,O=E-Tura EBG Biliim Teknolojileri ve Hizmetleri A..,L=Ankara,C=TR
Serial Number:6a:68:3e:9c:51:9b:cb:53
Subject: CN=E-Tugra Certification Authority,OU=E-Tugra Sertifikasyon Merkezi,O=E-Tura EBG Biliim
Teknolojileri ve Hizmetleri A..,L=Ankara,C=TR
Not Valid Before: Tue Mar 05 12:09:48 2013
Not Valid After: Fri Mar 03 12:09:48 2023
Fingerprint (MD5): b8:a1:03:63:b0:bd:21:71:70:8a:6f:13:3a:bb:79:49
Fingerprint (SHA1): 51:c6:e7:08:49:06:6e:f3:92:d4:5c:a0:0d:6d:a3:62:8f:c3:52:39
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\121\306\347\010\111\006\156\363\222\324\134\240\015\155\243\142
\217\303\122\071
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\241\003\143\260\275\041\161\160\212\157\023\072\273\171\111

END
CKA_ISSUER MULTILINE_OCTAL
\060\201\262\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\014\006\101\156\153\141\162
\141\061\100\060\076\006\003\125\004\012\014\067\105\055\124\165
\304\237\162\141\040\105\102\107\040\102\151\154\151\305\237\151
\155\040\124\145\153\156\157\154\157\152\151\154\145\162\151\040
\166\145\040\110\151\172\155\145\164\154\145\162\151\040\101\056
\305\236\056\061\046\060\044\006\003\125\004\013\014\035\105\055
\124\165\147\162\141\040\123\145\162\164\151\146\151\153\141\163
\171\157\156\040\115\145\162\153\145\172\151\061\050\060\046\006
\003\125\004\003\014\037\105\055\124\165\147\162\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\152\150\076\234\121\233\313\123
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
 Microsoft Code Signing Only Certificate
Certificate "ApplicationCA2 Root"
Issuer: CN=ApplicationCA2 Root,OU=GPKI,O=Japanese Government,C=JP
Serial Number:31:32:35:33:37:32:38:32:38:32:38
Subject: CN=ApplicationCA2 Root,OU=GPKI,O=Japanese Government,C=JP
Not Valid Before: Tue Mar 12 15:00:00 2013
Not Valid After: Sat Mar 12 15:00:00 2033
Fingerprint (MD5): 7b:4c:15:74:3b:54:96:07:aa:95:3b:60:10:23:cf:f3
Fingerprint (SHA1): f0:0f:c3:7d:6a:1c:92:61:fb:6b:c1:c2:18:49:8c:5a:a4:dc:51:fb
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ApplicationCA2 Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\015\060
\013\006\003\125\004\013\023\004\107\120\113\111\061\034\060\032
\006\003\125\004\003\023\023\101\160\160\154\151\143\141\164\151
\157\156\103\101\062\040\122\157\157\164
END

CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\015\060
\013\006\003\125\004\013\023\004\107\120\113\111\061\034\060\032
\006\003\125\004\003\023\023\101\160\160\154\151\143\141\164\151
\157\156\103\101\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\061\062\065\063\067\062\070\062\070\062\070
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\367\060\202\002\337\240\003\002\001\002\002\013\061
\062\065\063\067\062\070\062\070\062\070\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\130\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\034\060\032\006\003\125\004
\012\023\023\112\141\160\141\156\145\163\145\040\107\157\166\145
\162\156\155\145\156\164\061\015\060\013\006\003\125\004\013\023
\004\107\120\113\111\061\034\060\032\006\003\125\004\003\023\023
\101\160\160\154\151\143\141\164\151\157\156\103\101\062\040\122
\157\157\164\060\036\027\015\061\063\060\063\061\062\061\065\060
\060\060\060\132\027\015\063\063\060\063\061\062\061\065\060\060
\060\060\132\060\130\061\013\060\011\006\003\125\004\006\023\002
\112\120\061\034\060\032\006\003\125\004\012\023\023\112\141\160
\141\156\145\163\145\040\107\157\166\145\162\156\155\145\156\164
\061\015\060\013\006\003\125\004\013\023\004\107\120\113\111\061
\034\060\032\006\003\125\004\003\023\023\101\160\160\154\151\143
\141\164\151\157\156\103\101\062\040\122\157\157\164\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\246\252
\255\045\145\326\000\021\326\350\172\166\252\364\346\264\113\363
\314\303\122\264\215\254\246\117\265\222\161\157\106\265\325\255
\213\022\042\027\045\316\105\350\024\172\205\232\344\043\020\250
\372\261\147\120\345\155\107\340\152\211\023\343\256\256\065\361
\364\102\305\005\367\115\227\176\074\050\374\260\046\221\036\214
\036\070\032\226\334\130\104\227\142\343\062\310\321\025\101\115
\165\230\170\276\253\150\251\136\355\107\276\244\272\216\241\002
\227\336\223\164\231\155\147\264\005\045\356\224\310\355\252\244
\272\062\154\102\021\353\276\313\027\006\220\341\223\205\310\144
\050\316\037\107\307\300\135\140\356\166\066\334\063\073\121\353
\173\317\162\330\017\170\250\031\202\010\220\076\032\230\215\216
\264\317\025\066\246\156\335\267\342\115\100\040\123\331\166\052
\320\170\254\211\360\117\213\062\155\104\352\056\272\260\251\353
\211\335\267\157\171\017\253\201\156\270\346\213\051\013\131\257
\266\111\015\121\054\251\375\235\050\143\146\270\160\225\163\232
\330\372\073\063\274\102\102\033\062\254\261\062\373\075\002\003

\001\000\001\243\201\301\060\201\276\060\035\006\003\125\035\016
\004\026\004\024\126\247\254\252\002\035\262\254\075\220\016\240
\157\056\101\306\166\347\173\332\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\174\006\003\125\035\021\004
\165\060\163\244\161\060\157\061\013\060\011\006\003\125\004\006
\023\002\112\120\061\030\060\026\006\003\125\004\012\014\017\346
\227\245\346\234\254\345\233\275\346\224\277\345\272\234\061\033
\060\031\006\003\125\004\013\014\022\346\224\277\345\272\234\350
\252\215\350\250\274\345\237\272\347\233\244\061\051\060\047\006
\003\125\004\003\014\040\343\202\242\343\203\227\343\203\252\343
\202\261\343\203\274\343\202\267\343\203\247\343\203\263\103\101
\062\040\122\157\157\164\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\003\202\001\001\000\177\232\011\165\254
\007\321\162\164\056\167\127\060\302\004\234\324\200\246\203\347
\245\240\033\237\376\253\363\200\275\325\112\243\241\217\266\114
\140\021\347\312\341\140\201\327\110\301\040\131\245\141\062\213
\235\236\227\323\146\203\332\145\056\130\076\333\345\057\245\315
\214\163\246\121\276\130\050\240\171\134\151\057\103\337\143\262
\211\107\312\273\336\271\064\021\143\240\016\045\027\345\207\364
\035\260\260\245\317\101\250\164\306\350\123\325\102\364\202\055
\123\011\021\150\046\161\224\165\023\115\252\166\210\074\164\261
\326\343\114\117\142\303\111\114\116\155\361\160\176\303\177\246
\005\314\170\233\351\201\333\250\310\307\134\236\374\222\222\055
\246\227\362\070\265\156\163\225\014\300\077\316\246\224\060\265
\372\005\267\336\236\040\252\374\023\144\311\212\272\144\357\342
\143\344\330\230\256\153\265\076\246\125\270\063\076\054\162\373
\054\021\000\373\133\026\057\204\322\023\236\372\005\305\301\313
\162\116\042\335\204\312\113\274\322\055\206\032\004\166\131\037
\111\102\142\073\023\037\026\350\272\327\375
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ApplicationCA2
Root"
Issuer: CN=ApplicationCA2 Root,OU=GPKI,O=Japanese Government,C=JP
Serial Number:31:32:35:33:37:32:38:32:38:32:38
Subject: CN=ApplicationCA2 Root,OU=GPKI,O=Japanese Government,C=JP
Not Valid Before: Tue Mar 12 15:00:00 2013
Not Valid After: Sat Mar 12 15:00:00 2033
Fingerprint (MD5): 7b:4c:15:74:3b:54:96:07:aa:95:3b:60:10:23:cf:f3
Fingerprint (SHA1): f0:0f:c3:7d:6a:1c:92:61:fb:6b:c1:c2:18:49:8c:5a:a4:dc:51:fb
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ApplicationCA2 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\360\017\303\175\152\034\222\141\373\153\301\302\030\111\214\132
\244\334\121\373
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\173\114\025\164\073\124\226\007\252\225\073\140\020\043\317\363
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\015\060
\013\006\003\125\004\013\023\004\107\120\113\111\061\034\060\032
\006\003\125\004\003\023\023\101\160\160\154\151\143\141\164\151
\157\156\103\101\062\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\061\062\065\063\067\062\070\062\070\062\070
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ADOCA02"
Issuer: CN=ADOCA02,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Serial Number: 1813 (0x715)
Subject: CN=ADOCA02,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Not Valid Before: Thu Sep 01 04:26:07 2011
Not Valid After: Sun Jan 27 02:31:24 2019
Fingerprint (MD5): c4:4f:6a:cd:50:fd:44:c4:36:e0:b3:38:d3:7c:c0:97
Fingerprint (SHA1): 84:42:9d:9f:e2:e7:3a:0d:c8:aa:0a:e0:a9:02:f2:74:99:33:fe:02
CKA_CLASS CK_OBJECT_CLASS
 CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ADOCA02"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125

\004\013\023\003\103\101\163\061\020\060\016\006\003\125\004\003
\023\007\101\104\117\103\101\060\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\020\060\016\006\003\125\004\003
\023\007\101\104\117\103\101\060\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\002\007\025
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\331\060\202\002\301\240\003\002\001\002\002\002\007
\025\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\127\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\020\060\016\006\003\125\004\003
\023\007\101\104\117\103\101\060\062\060\036\027\015\061\061\060
\071\060\061\060\064\062\066\060\067\132\027\015\061\071\060\061
\062\067\060\062\063\061\062\064\132\060\127\061\013\060\011\006
\003\125\004\006\023\002\101\125\061\014\060\012\006\003\125\004
\012\023\003\107\117\126\061\014\060\012\006\003\125\004\013\023
\003\104\157\104\061\014\060\012\006\003\125\004\013\023\003\120
\113\111\061\014\060\012\006\003\125\004\013\023\003\103\101\163
\061\020\060\016\006\003\125\004\003\023\007\101\104\117\103\101
\060\062\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\344\120\205\110\167\217\276\377\111\321\273\165\256
\207\040\012\226\101\045\053\274\106\007\335\313\004\206\225\054
\111\056\275\106\014\016\367\130\240\140\026\205\332\135\073\343
\165\136\102\175\144\154\217\301\135\051\144\101\262\205\267\033
\106\275\205\332\327\072\035\262\264\361\112\075\376\036\332\310
\356\206\235\243\152\121\013\344\105\230\257\330\033\110\274\074
\024\042\355\053\237\073\177\157\063\074\326\175\254\340\171\117
\277\145\223\313\027\052\157\274\172\017\351\133\137\341\014\052
\373\100\122\066\112\135\145\070\313\131\301\110\263\244\221\205
\026\135\170\175\302\317\055\063\356\131\112\310\346\141\263\206
\037\204\310\270\032\154\236\321\140\264\202\065\353\275\043\250
\057\223\124\120\316\044\136\061\256\323\152\064\054\141\207\067
\106\036\103\211\306\200\313\042\003\323\311\205\056\037\233\261
\254\071\113\115\140\362\212\141\033\377\203\261\054\163\217\210

\102\300\055\261\312\236\300\225\147\164\173\226\344\152\172\216
\101\105\240\064\363\316\270\347\342\217\363\120\125\144\157\271
\040\053\223\002\003\001\000\001\243\201\256\060\201\253\060\014
\006\003\125\035\023\004\005\060\003\001\001\377\060\113\006\003
\125\035\040\004\104\060\102\060\070\006\011\052\044\001\202\116
\001\001\001\001\060\053\060\051\006\010\053\006\001\005\005\007
\002\001\026\035\150\164\164\160\072\057\057\167\167\167\056\144
\145\146\145\156\143\145\056\147\157\166\056\141\165\057\160\153
\151\060\006\006\004\125\035\040\000\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\306\060\037\006\003\125\035\043
\004\030\060\026\200\024\351\347\235\353\065\275\270\262\053\111
\130\364\274\222\175\213\161\212\021\132\060\035\006\003\125\035
\016\004\026\004\024\351\347\235\353\065\275\270\262\053\111\130
\364\274\222\175\213\161\212\021\132\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\126\320\250
\310\154\311\264\254\361\073\201\165\053\021\304\366\126\264\127
\256\302\222\031\134\226\163\012\355\056\103\234\144\052\131\170
\023\265\120\214\116\152\220\124\363\031\076\026\030\317\103\023
\311\062\163\370\125\340\312\320\222\031\076\145\243\336\200\022
\034\121\245\030\054\300\151\335\267\206\062\257\360\255\317\340
\303\043\304\345\374\266\077\013\005\327\226\072\144\136\167\214
\204\316\361\334\315\004\012\334\227\361\041\034\307\175\060\045
\135\327\040\065\225\303\207\035\266\077\333\123\342\052\244\370
\031\027\072\014\025\356\263\005\070\061\356\105\161\335\227\373
\170\161\206\002\364\237\064\031\163\111\020\053\240\177\361\311
\372\240\362\130\043\061\026\370\020\120\202\273\135\322\352\357
\151\335\147\166\125\070\307\250\016\003\200\070\117\000\040\153
\337\053\145\223\333\010\257\140\154\064\040\250\255\110\077\020
\176\246\303\224\001\225\341\201\054\240\355\214\256\124\116\072
\113\303\322\302\317\176\002\174\357\052\054\273\354\332\336\305
\001\257\224\111\355\017\302\277\016\220\151\055\153
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ADOCA02"
Issuer: CN=ADOCA02,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Serial Number: 1813 (0x715)
Subject: CN=ADOCA02,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Not Valid Before: Thu Sep 01 04:26:07 2011
Not Valid After: Sun Jan 27 02:31:24 2019
Fingerprint (MD5): c4:4f:6a:cd:50:fd:44:c4:36:e0:b3:38:d3:7c:c0:97
Fingerprint (SHA1): 84:42:9d:9f:e2:e7:3a:0d:c8:aa:0a:e0:a9:02:f2:74:99:33:fe:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ADOCA02"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\204\102\235\237\342\347\072\015\310\252\012\340\251\002\362\164
\231\063\376\002
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\304\117\152\315\120\375\104\304\066\340\263\070\323\174\300\227
END
CKA_ISSUER
MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\020\060\016\006\003\125\004\003
\023\007\101\104\117\103\101\060\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\007\025
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "StartCom Certification Authority G2"
Issuer: CN=StartCom Certification Authority G2,O=StartCom Ltd.,C=IL
Serial Number: 59 (0x3b)
Subject: CN=StartCom Certification Authority G2,O=StartCom Ltd.,C=IL
Not Valid
Before: Fri Jan 01 01:00:01 2010
Not Valid After: Sat Dec 31 23:59:01 2039
Fingerprint (MD5): 78:4b:fb:9e:64:82:0a:d3:b8:4c:62:f3:64:f2:90:64
Fingerprint (SHA1): 31:f1:fd:68:22:63:20:ee:c6:3b:3f:9d:ea:4a:3e:53:7c:7c:39:17
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "StartCom Certification Authority G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\054\060\052\006\003\125\004\003
\023\043\123\164\141\162\164\103\157\155\040\103\145\162\164\151

\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\054\060\052\006\003\125\004\003
\023\043\123\164\141\162\164\103\157\155\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\073
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\143\060\202\003\113\240\003\002\001\002\002\001\073
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\123\061\013\060\011\006\003\125\004\006\023\002\111\114\061\026
\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103\157
\155\040\114\164\144\056\061\054\060\052\006\003\125\004\003\023
\043\123\164\141\162\164\103\157\155\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\107\062\060\036\027\015\061\060\060\061\060\061\060\061
\060\060\060\061\132\027\015\063\071\061\062\063\061\062\063\065
\071\060\061\132\060\123\061\013\060\011\006\003\125\004\006\023
\002\111\114\061\026\060\024\006\003\125\004\012\023\015\123\164
\141\162\164\103\157\155\040\114\164\144\056\061\054\060\052\006
\003\125\004\003\023\043\123\164\141\162\164\103\157\155\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\107\062\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\266\211\066\133\007\267
\040\066\275\202\273\341\026\040\003\225\172\257\016\243\125\311
\045\231\112\305\320\126\101\207\220\115\041\140\244\024\207\073
\315\375\262\076\264\147\003\152\355\341\017\113\300\221\205\160
\105\340\102\236\336\051\043\324\001\015\240\020\171\270\333\003
\275\363\251\057\321\306\340\017\313\236\212\024\012\270\275\366
\126\142\361\305\162\266\062\045\331\262\363\275\145\305\015\054
\156\325\222\157\030\213\000\101\024\202\157\100\040\046\172\050
\017\365\036\177\047\367\224\261\067\075\267\307\221\367\342\001
\354\375\224\211\341\314\156\323\066\326\012\031\171\256\327\064
\202\145\377\174\102\273\266\335\013\246\064\257\113\140\376\177
\103\111\006\213\214\103\270\126\362\331\177\041\103\027\352\247
\110\225\001\165\165\352\053\245\103\225\352\025\204\235\010\215
\046\156\125\233\253\334\322\071\322\061\035\140\342\254\314\126
\105\044\365\034\124\253\356\206\335\226\062\205\370\114\117\350

\225\166\266\005\335\066\043\147\274\377\025\342\312\073\346\246
\354\073\354\046\021\064\110\215\366\200\053\032\043\002\353\212
\034\072\166\052\173\126\026\034\162\052\263\252\343\140\245\000
\237\004\233\342\157\036\024\130\133\245\154\213\130\074\303\272
\116\072\134\367\341\226\053\076\357\007\274\244\345\135\314\115
\237\015\341\334\252\273\341\156\032\354\217\341\266\114\115\171
\162\135\027\065\013\035\327\301\107\332\226\044\340\320\162\250
\132\137\146\055\020\334\057\052\023\256\046\376\012\034\031\314
\320\076\013\234\310\011\056\371\133\226\172\107\234\351\172\363
\005\120\164\225\163\236\060\011\363\227\202\136\346\217\071\010
\036\131\345\065\024\102\023\377\000\234\367\276\252\120\317\342
\121\110\327\270\157\257\370\116\176\063\230\222\024\142\072\165
\143\317\173\372\336\202\073\251\273\071\342\304\275\054\000\016
\310\027\254\023\357\115\045\216\330\263\220\057\251\332\051\175
\035\257\164\072\262\047\300\301\036\076\165\243\026\251\257\172
\042\135\237\023\032\317\247\240\353\343\206\012\323\375\346\226
\225\327\043\310\067\335\304\174\252\066\254\230\032\022\261\340
\116\350\261\073\365\326\157\361\060\327\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\113
\305\264\100\153\255\034\263\245\034\145\156\106\066\211\207\005
\014\016\266\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\163\127\077\054\325\225\062\176\067
\333\226\222\353\031\136\176\123\347\101\354\021\266\107\357\265
\336\355\164\134\305\361\216\111\340\374\156\231\023\315\237\212
\332\315\072\012\330\072\132\011\077\137\064\320\057\003\322\146
\035\032\275\234\220\067\310\014\216\007\132\224\105\106\052\346
\276\172\332\241\251\244\151\022\222\260\175\066\324\104\207\327
\121\361\051\143\326\165\315\026\344\047\211\035\370\302\062\110
\375\333\231\320\217\137\124\164\314\254\147\064\021\142\331\014
\012\067\207\321\243\027\110\216\322\027\035\366\327\375\333\145
\353\375\250\324\365\326\117\244\133\165\350\305\322\140\262\333
\011\176\045\213\173\272\122\222\236\076\350\305\167\241\074\340
\112\163\153\141\317\206\334\103\377\377\041\376\043\135\044\112
\365\323\155\017\142\004\005\127\202\332\156\244\063\045\171\113
\056\124\031\213\314\054\075\060\351\321\006\377\350\062\106\276
\265\063\166\167\250\001\135\226\301\301\325\276\256\045\300\311
\036\012\011\040\210\241\016\311\363\157\115\202\124\000\040\247
\322\217\344\071\124\027\056\215\036\270\033\273\033\275\232\116
\073\020\064\334\234\210\123\357\242\061\133\130\117\221\142\310
\302\232\232\315\025\135\070\251\326\276\370\023\265\237\022\151
\362\120\142\254\373\027\067\364\356\270\165\147\140\020\373\203
\120\371\104\265\165\234\100\027\262\376\375\171\135\156\130\130
\137\060\374\000\256\257\063\301\016\116\154\272\247\246\241\177
\062\333\070\340\261\162\027\012\053\221\354\152\143\046\355\211
\324\170\314\164\036\005\370\153\376\214\152\166\071\051\256\145
\043\022\225\010\042\034\227\316\133\006\356\014\342\273\274\037

\104\223\366\330\070\105\005\041\355\344\255\253\022\266\003\244
\102\056\055\304\011\072\003\147\151\204\232\341\131\220\212\050
\205\325\135\164\261\321\016\040\130\233\023\245\260\143\246\355
\173\107\375\105\125\060\244\356\232\324\346\342\207\357\230\311
\062\202\021\051\042\274\000\012\061\136\055\017\300\216\351\153
\262\217\056\006\330\321\221\307\306\022\364\114\375\060\027\303
\301\332\070\133\343\251\352\346\241\272\171\357\163\330\266\123
\127\055\366\320\341\327\110
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "StartCom Certification Authority G2"
Issuer: CN=StartCom Certification Authority G2,O=StartCom Ltd.,C=IL
Serial Number: 59 (0x3b)
Subject: CN=StartCom Certification Authority G2,O=StartCom Ltd.,C=IL
Not Valid Before: Fri Jan 01 01:00:01 2010
Not Valid After: Sat Dec 31 23:59:01 2039
Fingerprint (MD5): 78:4b:fb:9e:64:82:0a:d3:b8:4c:62:f3:64:f2:90:64
Fingerprint (SHA1): 31:f1:fd:68:22:63:20:ee:c6:3b:3f:9d:ea:4a:3e:53:7c:7c:39:17
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "StartCom Certification Authority G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\061\361\375\150\042\143\040\356\306\073\077\235\352\112\076\123
\174\174\071\027
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\170\113\373\236\144\202\012\323\270\114\142\363\144\362\220\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\054\060\052\006\003\125\004\003
\023\043\123\164\141\162\164\103\157\155\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\073
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Symantec Class 3 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 3 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:65:63:71:85:d3:6f:45:c6:8f:7f:31:f9:09:87:92:82
Subject: CN=Symantec Class 3 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Thu Oct 18 00:00:00 2012
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): 8d:d1:96:24:c4:4c:8f:5d:26:f4:6c:8d:52:41:1a:c6
Fingerprint (SHA1): 26:a1:6c:23:5a:24:72:22:9b:23:62:80:25:bc:80:97:c8:85:24:a1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 3 Public Primary Certification Authority - G6"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\145\143\161\205\323\157\105\306\217\177\061\371\011\207
\222\202
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\366\060\202\003\336\240\003\002\001\002\002\020\145
\143\161\205\323\157\105\306\217\177\061\371\011\207\222\202\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\224\061\013\060\011\006\003\125\004\006\023\002\125\123\061\035
\060\033\006\003\125\004\012\023\024\123\171\155\141\156\164\145
\143\040\103\157\162\160\157\162\141\164\151\157\156\061\037\060
\035\006\003\125\004\013\023\026\123\171\155\141\156\164\145\143
\040\124\162\165\163\164\040\116\145\164\167\157\162\153\061\105
\060\103\006\003\125\004\003\023\074\123\171\155\141\156\164\145
\143\040\103\154\141\163\163\040\063\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\066\060\036\027\015\061\062\061\060\061\070\060
\060\060\060\060\060\132\027\015\063\067\061\062\060\061\062\063
\065\071\065\071\132\060\201\224\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\035\060\033\006\003\125\004\012\023\024
\123\171\155\141\156\164\145\143\040\103\157\162\160\157\162\141
\164\151\157\156\061\037\060\035\006\003\125\004\013\023\026\123
\171\155\141\156\164\145\143\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\105\060\103\006\003\125\004\003\023\074
\123\171\155\141\156\164\145\143\040\103\154\141\163\163\040\063
\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\055\040\107\066\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\267\016\262
\372\115\274\232\162\025\373\167\133\333\375\103\017\313\013\367
\140\056\263\053\176\014\273\123\362\314\116\145\363\031\273\377
\065\035\367\323\251\273\100\055\265\335\170\324\246\371\067\352
\205\005\173\155\267\346\023\113\006\174\373\166\143\217\040\035
\055\070\053\004\205\362\350\260\321\137\115\112\041\311\152\330
\224\352\036\002\120\246\252\220\007\240\107\041\352\146\371\004
\240\346\203\360\304\365\136\226\342\047\115\141\303\263\301\214
\042\266\146\241\000\321\126\051\373\355\301\177\044\312\075\372
\132\224\260\204\303\307\272\103\034\375\144\016\361\050\373\107
\131\362\046\341\061\271\104\371\253\335\373\276\276\054\067\343
\254\013\030\323\374\001\242\361\244\012\065\202\107\114\253\275
\212\136\337\023\205\374\040\314\110\131\257\257\101\157\313\043
\315\312\223\247\335\325\137\310\144\073\377\001\003\240\012\117
\055\156\075\204\276\257\310\062\262\123\051\220\025\367\260\005
\232\012\074\366\271\006\220\311\245\341\135\240\073\260\376\250
\266\277\365\211\050\127\044\072\041\206\161\344\334\212\213\101

\125\354\036\060\044\131\321\300\131\270\170\257\252\132\164\336
\045\200\060\230\355\060\104\157\041\160\034\333\022\123\016\326
\246\050\146\223\054\037\314\117\074\033\201\305\271\366\170\157
\320\062\072\010\162\333\153\016\106\027\205\224\363\274\357\274
\367\244\136\216\351\351\265\144\345\267\113\105\022\054\114\067
\267\140\103\012\115\161\006\000\224\046\065\164\037\273\172\071
\134\116\073\346\270\003\342\307\223\213\204\054\045\111\105\335
\177\043\224\140\037\313\351\315\366\253\227\367\141\347\373\177
\142\201\310\334\012\060\134\030\174\346\316\357\307\156\036\207
\174\263\351\312\310\173\152\364\150\374\203\245\014\126\264\272
\262\215\112\012\307\227\227\305\210\060\025\075\020\010\124\025
\162\162\147\063\063\364\174\267\316\000\047\123\145\316\044\361
\132\144\347\066\057\362\056\002\302\227\337\162\350\002\036\240
\367\075\265\373\150\140\003\372\063\251\346\022\155\006\341\251
\250\135\116\074\376\331\347\000\145\254\266\031\115\173\203\177
\064\107\352\341\030\155\261\213\034\171\253\347\235\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\071\161\010\000\076\336\310\206\347\220\377\344\375\041
\017\316\044\031\026\366\060\015\006\011\052\206\110\206\367\015
\001\001\014\005\000\003\202\002\001\000\120\153\210\115\140\110
\316\132\343\042\316\147\174\204\247\315\034\375\351\014\003\214
\066\257\012\207\016\152\256\127\256\001\320\066\273\362\375\271
\163\301\137\265\250\256\114\242\372\111\313\007\106\026\066\275
\343\310\127\070\176\070\344\277\045\063\140\306\334\067\234\143
\273\136\230\036\032\262\202\360\256\246\167\021\200\104\107\241
\051\305\360\263\072\316\230\360\270\354\323\016\200\006\167\043
\060\114\377\171\144\143\042\133\167\223\103\113\165\263\333\073
\156\073\112\335\361\310\256\265\067\212\225\210\072\020\150\160
\070\271\133\160\176\325\103\311\374\137\117\345\346\173\066\356
\360\040\355\107\127\023\046\020\136\024\006\015\173\166\007\302
\306\055\026\364\256\247\154\017\274\210\017\117\054\002\266\243
\327\042\346\231\107\065\330\215\245\117\201\022\072\021\175\263
\314\013\165\363\036\160\243\033\003\352\372\232\350\346\056\066
\071\314\231\316\072\077\014\267\256\370\103\231\260\223\156\157
\252\331\017\152\061\221\273\234\323\264\050\373\203\114\172\163
\202\120\147\322\016\254\355\140\305\262\135\065\230\317\207\176
\036\131\035\044\274\126\272\332\244\132\330\314\346\274\036\020
\217\033\214\216\363\301\333\267\276\324\260\133\145\217\026\150
\363\126\305\052\031\026\115\017\270\145\207\155\044\203\270\142
\334\340\107\141\032\210\173\316\116\177\375\334\306\015\132\232
\244\363\265\114\366\335\061\246\350\035\021\041\063\060\004\141
\175\034\340\076\117\215\077\265\213\022\000\132\175\251\241\000
\324\203\353\160\273\030\370\244\322\034\201\055\267\010\021\310
\046\173\266\324\345\017\003\106\162\324\045\100\036\276\111\135
\155\223\361\134\262\073\165\124\151\072\240\356\114\042\272\254
\232\342\010\255\105\143\005\112\122\065\166\304\064\365\136\007

\062\255\334\174\046\321\133\217\255\344\346\252\033\165\237\353
\135\264\350\300\251\025\174\116\112\007\162\337\106\311\324\221
\222\165\126\260\341\356\067\066\145\050\305\025\310\053\166\314
\155\157\031\203\364\375\332\025\342\101\347\063\171\106\203\127
\371\361\245\266\155\323\274\327\123\347\356\161\155\170\251\227
\247\356\040\234\031\025\162\025\075\004
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Symantec Class 3 Public Primary Certification Authority - G6"
Issuer: CN=Symantec Class 3 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:65:63:71:85:d3:6f:45:c6:8f:7f:31:f9:09:87:92:82
Subject: CN=Symantec Class 3 Public Primary Certification Authority - G6,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Thu Oct 18 00:00:00 2012
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): 8d:d1:96:24:c4:4c:8f:5d:26:f4:6c:8d:52:41:1a:c6
Fingerprint (SHA1): 26:a1:6c:23:5a:24:72:22:9b:23:62:80:25:bc:80:97:c8:85:24:a1
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 3 Public Primary Certification Authority - G6"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\046\241\154\043\132\044\162\042\233\043\142\200\045\274\200\227
\310\205\044\241
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\215\321\226\044\304\114\217\135\046\364\154\215\122\101\032\306
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\066
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\145\143\161\205\323\157\105\306\217\177\061\371\011\207
\222\202
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Symantec Class 3 Public Primary Certification Authority - G4"
Issuer: CN=Symantec Class 3 Public Primary Certification Authority - G4,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Serial Number:4c:79:b5:9a:28:9c:76:31:64:f5:89:44:d0:91:02:de
Subject: CN=Symantec Class 3 Public Primary Certification Authority - G4,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Thu Oct 18 00:00:00 2012
Not Valid After: Tue Dec 01 23:59:59 2037
#
Fingerprint (MD5): 36:c9:b7:4b:6c:b0:21:4c:c7:11:17:b1:18:fe:2b:4d
Fingerprint (SHA1): 58:d5:2d:b9:33:01:a4:fd:29:1a:8c:96:45:a0:8f:ee:7f:52:92:82
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 3 Public Primary Certification Authority - G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\064
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153

\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\064
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\114\171\265\232\050\234\166\061\144\365\211\104\320\221
\002\336
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\247\060\202\002\055\240\003\002\001\002\002\020\114
\171\265\232\050\234\166\061\144\365\211\104\320\221\002\336\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\224\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\035\060\033\006
\003\125\004\012\023\024\123\171\155\141\156\164\145\143\040\103
\157\162\160\157\162\141\164\151\157\156\061\037\060\035\006\003
\125\004\013\023\026\123\171\155\141\156\164\145\143\040\124\162
\165\163\164\040\116\145\164\167\157\162\153\061\105\060\103\006
\003\125\004\003\023\074\123\171\155\141\156\164\145\143\040\103
\154\141\163\163\040\063\040\120\165\142\154\151\143\040\120\162
\151\155\141\162\171\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040
\107\064\060\036\027\015\061\062\061\060\061\070\060\060\060\060
\060\060\132\027\015\063\067\061\062\060\061\062\063\065\071\065
\071\132\060\201\224\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\035\060\033\006\003\125\004\012\023\024\123\171\155
\141\156\164\145\143\040\103\157\162\160\157\162\141\164\151\157
\156\061\037\060\035\006\003\125\004\013\023\026\123\171\155\141
\156\164\145\143\040\124\162\165\163\164\040\116\145\164\167\157
\162\153\061\105\060\103\006\003\125\004\003\023\074\123\171\155
\141\156\164\145\143\040\103\154\141\163\163\040\063\040\120\165
\142\154\151\143\040\120\162\151\155\141\162\171\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\107\064\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\127\317\352\263\071\115\077\241\041\340\156\057\070\162\306
\207\227\363\205\013\107\347\017\121\310\321\364\231\233\312\131
\145\377\114\371\352\013\267\045\325\322\366\354\061\055\062\142
\022\327\166\206\247\372\070\311\145\324\376\163\342\204\071\370
\114\111\142\023\335\272\325\210\240\137\075\310\117\260\077\217
\241\120\021\344\223\106\255\303\137\313\361\244\152\225\126\350
\300\243\102\060\100\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\044\235\274\322\161\367\035\302\045\276\042\361\211\245\054
\025\073\064\036\136\060\012\006\010\052\206\110\316\075\004\003
\003\003\150\000\060\145\002\061\000\271\146\150\145\333\005\320

\070\175\016\363\310\165\141\270\320\050\304\261\112\063\121\130
\373\362\074\020\310\256\107\170\166\312\146\044\027\206\076\120
\126\156\245\055\231\210\270\275\044\002\060\003\352\247\347\250
\074\352\235\142\306\137\124\332\230\364\167\275\117\217\030\234
\221\134\107\153\100\115\020\035\263\341\211\312\013\042\310\032
\305\305\376\213\335\301\337\157\170\237\221
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Symantec Class 3 Public Primary Certification Authority - G4"
Issuer: CN=Symantec Class 3 Public Primary Certification Authority - G4,OU=Symantec Trust Network,O=Symantec
Corporation,C=US
Serial Number:4c:79:b5:9a:28:9c:76:31:64:f5:89:44:d0:91:02:de
Subject: CN=Symantec Class 3 Public Primary Certification Authority - G4,OU=Symantec Trust Network,O=Symantec Corporation,C=US
Not Valid Before: Thu Oct 18 00:00:00 2012
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): 36:c9:b7:4b:6c:b0:21:4c:c7:11:17:b1:18:fe:2b:4d
Fingerprint (SHA1): 58:d5:2d:b9:33:01:a4:fd:29:1a:8c:96:45:a0:8f:ee:7f:52:92:82
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Symantec Class 3 Public Primary Certification Authority - G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\325\055\271\063\001\244\375\051\032\214\226\105\240\217\356
\177\122\222\202
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\066\311\267\113\154\260\041\114\307\021\027\261\030\376\053\115
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\035\060\033\006\003\125\004\012\023\024\123\171\155\141\156
\164\145\143\040\103\157\162\160\157\162\141\164\151\157\156\061
\037\060\035\006\003\125\004\013\023\026\123\171\155\141\156\164
\145\143\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\105\060\103\006\003\125\004\003\023\074\123\171\155\141\156
\164\145\143\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\064
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\114\171\265\232\050\234\166\061\144\365\211\104\320\221
\002\336
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Hellenic Academic and Research Institutions RootCA 2011"
Issuer: CN=Hellenic
Academic and Research Institutions RootCA 2011,O=Hellenic Academic and Research Institutions Cert.
Authority,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2011,O=Hellenic Academic and Research
Institutions Cert. Authority,C=GR
Not Valid Before: Tue Dec 06 13:49:52 2011
Not Valid After: Mon Dec 01 13:49:52 2031
Fingerprint (MD5): 73:9f:4c:4b:73:5b:79:e9:fa:ba:1c:ef:6e:cb:d5:c9
Fingerprint (SHA1): fe:45:65:9b:79:03:5b:98:a1:61:b5:51:2e:ac:da:58:09:48:22:4d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164
\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
\164\103\101\040\062\060\061\061
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164

\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
\164\103\101\040\062\060\061\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\061\060\202\003\031\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\225\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164\150
\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023\067
\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155\151
\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040\111
\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157\164
\103\101\040\062\060\061\061\060\036\027\015\061\061\061\062\060
\066\061\063\064\071\065\062\132\027\015\063\061\061\062\060\061
\061\063\064\071\065\062\132\060\201\225\061\013\060\011\006\003
\125\004\006\023\002\107\122\061\104\060\102\006\003\125\004\012
\023\073\110\145\154\154\145\156\151\143\040\101\143\141\144\145
\155\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150
\040\111\156\163\164\151\164\165\164\151\157\156\163\040\103\145
\162\164\056\040\101\165\164\150\157\162\151\164\171\061\100\060
\076\006\003\125\004\003\023\067\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\122\157\157\164\103\101\040\062\060\061\061\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\251\123\000\343\056\246\366\216\372\140\330\055\225\076\370\054
\052\124\116\315\271\204\141\224\130\117\217\075\213\344\103\363
\165\211\215\121\344\303\067\322\212\210\115\171\036\267\022\335
\103\170\112\212\222\346\327\110\325\017\244\072\051\104\065\270
\007\366\150\035\125\315\070\121\360\214\044\061\205\257\203\311
\175\351\167\257\355\032\173\235\027\371\263\235\070\120\017\246
\132\171\221\200\257\067\256\246\323\061\373\265\046\011\235\074
\132\357\121\305\053\337\226\135\353\062\036\002\332\160\111\354
\156\014\310\232\067\215\367\361\066\140\113\046\054\202\236\320
\170\363\015\017\143\244\121\060\341\371\053\047\022\007\330\352
\275\030\142\230\260\131\067\175\276\356\363\040\121\102\132\203
\357\223\272\151\025\361\142\235\237\231\071\202\241\267\164\056

\213\324\305\013\173\057\360\310\012\332\075\171\012\232\223\034
\245\050\162\163\221\103\232\247\321\115\205\204\271\251\164\217
\024\100\307\334\336\254\101\144\154\264\031\233\002\143\155\044
\144\217\104\262\045\352\316\135\164\014\143\062\134\215\207\345
\002\003\001\000\001\243\201\211\060\201\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\035\006\003\125\035\016
\004\026\004\024\246\221\102\375\023\141\112\043\236\010\244\051
\345\330\023\004\043\356\101\045\060\107\006\003\125\035\036\004
\100\060\076\240\074\060\005\202\003\056\147\162\060\005\202\003
\056\145\165\060\006\202\004\056\145\144\165\060\006\202\004\056
\157\162\147\060\005\201\003\056\147\162\060\005\201\003\056\145
\165\060\006\201\004\056\145\144\165\060\006\201\004\056\157\162
\147\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\037\357\171\101\341\173\156\077\262\214\206
\067\102\112\116\034\067\036\215\146\272\044\201\311\117\022\017
\041\300\003\227\206\045\155\135\323\042\051\250\154\242\015\251
\353\075\006\133\231\072\307\314\303\232\064\177\253\016\310\116
\034\341\372\344\334\315\015\276\277\044\376\154\347\153\302\015
\310\006\236\116\215\141\050\246\152\375\345\366\142\352\030\074
\116\240\123\235\262\072\234\353\245\234\221\026\266\115\202\340
\014\005\110\251\154\365\314\370\313\235\111\264\360\002\245\375
\160\003\355\212\041\245\256\023\206\111\303\063\163\276\207\073
\164\213\027\105\046\114\026\221\203\376\147\175\315\115\143\147
\372\363\003\022\226\170\006\215\261\147\355\216\077\276\237\117
\002\365\263\011\057\363\114\207\337\052\313\225\174\001\314\254
\066\172\277\242\163\172\367\217\301\265\232\241\024\262\217\063
\237\015\357\042\334\146\173\204\275\105\027\006\075\074\312\271
\167\064\217\312\352\317\077\061\076\343\210\343\200\111\045\310
\227\265\235\232\231\115\260\074\370\112\000\233\144\335\237\071
\113\321\047\327\270
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Hellenic Academic and Research Institutions RootCA 2011"
Issuer: CN=Hellenic Academic and Research Institutions RootCA 2011,O=Hellenic Academic and Research Institutions Cert. Authority,C=GR
Serial Number: 0 (0x0)
Subject: CN=Hellenic Academic and Research Institutions RootCA 2011,O=Hellenic Academic and Research Institutions Cert. Authority,C=GR
Not Valid Before: Tue Dec 06 13:49:52 2011
Not Valid After: Mon Dec 01 13:49:52 2031
Fingerprint (MD5): 73:9f:4c:4b:73:5b:79:e9:fa:ba:1c:ef:6e:cb:d5:c9
Fingerprint (SHA1): fe:45:65:9b:79:03:5b:98:a1:61:b5:51:2e:ac:da:58:09:48:22:4d

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Hellenic Academic and Research Institutions RootCA 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\376\105\145\233\171\003\133\230\241\141\265\121\056\254\332\130
\011\110\042\115
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\163\237\114\113\163\133\171\351\372\272\034\357\156\313\325\311
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\107\122
\061\104\060\102\006\003\125\004\012\023\073\110\145\154\154\145
\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144
\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164
\165\164\151\157\156\163\040\103\145\162\164\056\040\101\165\164
\150\157\162\151\164\171\061\100\060\076\006\003\125\004\003\023
\067\110\145\154\154\145\156\151\143\040\101\143\141\144\145\155
\151\143\040\141\156\144\040\122\145\163\145\141\162\143\150\040
\111\156\163\164\151\164\165\164\151\157\156\163\040\122\157\157
\164\103\101\040\062\060\061\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ATHEX Root CA"
Issuer: CN=ATHEX Root CA,O=Athens Exchange S.A.,C=GR
Serial Number: 10012 (0x271c)
Subject: CN=ATHEX Root CA,O=Athens Exchange S.A.,C=GR
Not Valid Before: Mon Oct 18 15:56:03 2010
Not Valid After: Thu Oct 17 21:00:00 2030
Fingerprint
 (MD5): af:2b:7a:55:2d:3a:35:02:a4:92:40:16:0c:fa:98:26
Fingerprint (SHA1): db:2b:7b:43:4d:fb:7f:c1:cb:59:26:ec:5d:95:21:fe:35:0f:f2:79
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ATHEX Root CA"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\035\060\033\006\003\125\004\012\023\024\101\164\150\145\156\163
\040\105\170\143\150\141\156\147\145\040\123\056\101\056\061\026
\060\024\006\003\125\004\003\023\015\101\124\110\105\130\040\122
\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\035\060\033\006\003\125\004\012\023\024\101\164\150\145\156\163
\040\105\170\143\150\141\156\147\145\040\123\056\101\056\061\026
\060\024\006\003\125\004\003\023\015\101\124\110\105\130\040\122
\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\002\047\034
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\067\060\202\002\037\240\003\002\001\002\002\002\047
\034\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\060\104\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\035\060\033\006\003\125\004\012\023\024\101\164\150\145\156\163
\040\105\170\143\150\141\156\147\145\040\123\056\101\056\061\026
\060\024\006\003\125\004\003\023\015\101\124\110\105\130\040\122
\157\157\164\040\103\101\060\036\027\015\061\060\061\060\061\070
\061\065\065\066\060\063\132\027\015\063\060\061\060\061\067\062
\061\060\060\060\060\132\060\104\061\013\060\011\006\003\125\004
\006\023\002\107\122\061\035\060\033\006\003\125\004\012\023\024
\101\164\150\145\156\163\040\105\170\143\150\141\156\147\145\040
\123\056\101\056\061\026\060\024\006\003\125\004\003\023\015\101
\124\110\105\130\040\122\157\157\164\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\315\032\075
\060\265\263\070\262\277\172\273\256\241\326\327\205\360\042\072
\244\211\151\304\341\142\004\311\160\323\074\063\022\342\346\070
\345\167\244\044\104\144\015\267\256\114\132\335\341\030\006\076
\355\233\132\005\365\341\336\022\355\066\052\334\107\331\221\121
\231\355\261\277\152\163\241\012\010\044\250\212\215\034\013\131
\323\277\160\043\125\104\240\214\060\305\316\155\117\260\354\276
\363\214\061\337\012\132\334\323\127\134\005\240\063\225\073\227
\217\124\013\270\365\153\175\307\305\254\265\171\216\006\070\361
\250\051\125\075\232\066\320\047\137\064\152\022\170\027\050\331
\230\111\354\331\132\122\332\046\072\372\356\114\246\046\216\250
\076\125\037\262\037\341\265\233\371\072\065\366\355\221\034\375
\013\020\044\375\037\371\323\343\000\045\261\013\045\300\267\175

\232\074\007\072\200\013\326\250\376\221\105\350\301\322\305\042
\157\323\345\161\037\266\054\066\264\130\240\355\315\112\150\344
\152\127\364\241\165\354\327\000\231\325\366\231\134\353\116\311
\273\327\032\243\105\131\000\017\214\073\333\164\065\002\003\001
\000\001\243\063\060\061\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\021\006\003\125\035\016\004\012
\004\010\103\342\200\350\273\322\267\301\060\013\006\003\125\035
\017\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\077\001\143\165\007
\062\053\137\165\377\166\216\323\251\270\157\314\120\075\204\127
\117\050\203\350\174\243\156\242\274\367\302\272\256\072\253\116
\320\017\222\050\270\335\133\054\333\345\326\037\072\223\341\221
\016\327\252\137\001\141\054\076\141\117\336\225\025\115\314\075
\352\062\342\243\376\370\026\251\362\274\051\374\051\236\175\162
\245\135\241\153\002\325\137\110\364\240\073\313\030\106\360\075
\027\125\203\320\051\141\221\273\232\101\111\321\023\276\101\224
\362\076\303\044\253\237\307\153\102\220\102\171\176\132\121\373
\074\136\013\041\037\313\331\110\023\025\261\152\177\003\304\321
\272\121\322\160\211\252\010\112\207\034\366\172\230\261\324\121
\005\125\306\220\027\157\303\340\004\300\172\364\057\030\242\126
\102\163\056\266\262\233\321\071\276\011\302\002\112\044\027\371
\367\254\275\161\007\277\225\342\227\345\241\204\010\215\262\342
\104\241\334\211\060\073\250\014\005\172\135\166\000\117\036\157
\161\177\053\071\332\105\102\071\061\322\251\062\100\324\070\143
\023\226\067\232\111\135\331\307\375\270\114
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ATHEX Root CA"
Issuer: CN=ATHEX Root CA,O=Athens Exchange S.A.,C=GR
Serial Number: 10012 (0x271c)
Subject: CN=ATHEX Root CA,O=Athens Exchange S.A.,C=GR
Not Valid Before: Mon Oct 18 15:56:03 2010
Not Valid After: Thu Oct 17 21:00:00 2030
Fingerprint (MD5): af:2b:7a:55:2d:3a:35:02:a4:92:40:16:0c:fa:98:26
Fingerprint (SHA1): db:2b:7b:43:4d:fb:7f:c1:cb:59:26:ec:5d:95:21:fe:35:0f:f2:79
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ATHEX Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\333\053\173\103\115\373\177\301\313\131\046\354\135\225\041\376

\065\017\362\171
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\257\053\172\125\055\072\065\002\244\222\100\026\014\372\230\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\035\060\033\006\003\125\004\012\023\024\101\164\150\145\156\163
\040\105\170\143\150\141\156\147\145\040\123\056\101\056\061\026
\060\024\006\003\125\004\003\023\015\101\124\110\105\130\040\122
\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\047\034
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Halcom Root CA"
Issuer: CN=Halcom Root CA,O=Halcom,C=SI
Serial Number: 504275 (0x7b1d3)
Subject: CN=Halcom Root CA,O=Halcom,C=SI
Not Valid Before: Wed Feb 08 09:55:41 2012
Not Valid After: Sun Feb 08 09:55:41 2032
Fingerprint (MD5): c3:8b:d2:53:ac:00:ec:d1:db:97:61:a5:38:d9:7d:87
Fingerprint (SHA1): 53:5b:00:16:72:ab:bf:7b:6c:c2:54:05:ae:4d:24:fe:03:3f:d1:cc
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Halcom Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\122\157\157\164\040\103\101

END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\007\261\323
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\036\060\202\002\006\240\003\002\001\002\002\003\007
\261\323\060\015\006\011\052\206\110\206\367\015\001\001\015\005
\000\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111
\061\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157
\155\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143
\157\155\040\122\157\157\164\040\103\101\060\036\027\015\061\062
\060\062\060\070\060\071\065\065\064\061\132\027\015\063\062\060
\062\060\070\060\071\065\065\064\061\132\060\067\061\013\060\011
\006\003\125\004\006\023\002\123\111\061\017\060\015\006\003\125
\004\012\023\006\110\141\154\143\157\155\061\027\060\025\006\003
\125\004\003\023\016\110\141\154\143\157\155\040\122\157\157\164
\040\103\101\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\211\271\205\312\376\364\165\175\177\354\235\102
\067\272\272\215\274\354\075\027\003\375\331\105\145\326\315\311
\116\137\214\110\134\227\010\127\024\213\055\234\074\220\111\231
\317\151\257\111\215\333\034\001\260\156\351\364\352\221\147\135
\312\263\151\117\330\314\301\015\075\356\252\003\166\340\311\160
\242\237\376\353\233\320\266\311\226\323\360\373\133\320\360\007
\253\114\136\115\244\342\107\136\005\150\164\246\216\042\107\356
\176\323\147\204\124\067\222\107\016\363\243\354\025\032\363\155
\173\277\031\065\041\217\202\113\254\124\234\011\315\156\266\301
\127\275\320\111\075\157\237\163\216\261\154\176\275\376\326\273
\075\003\350\346\114\032\264\356\257\264\203\116\062\220\124\366
\116\033\341\057\316\245\064\032\216\243\040\371\331\076\042\153
\157\156\343\372\331\063\134\010\240\367\025\000\075\234\020\222
\112\125\315\200\262\006\252\375\327\217\267\132\222\047\044\017
\063\074\050\272\361\037\150\265\167\051\136\256\302\332\215\066
\160\342\172\062\033\043\246\336\305\141\015\232\245\022\040\265
\363\226\131\265\002\003\001\000\001\243\063\060\061\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\021
\006\003\125\035\016\004\012\004\010\116\224\330\212\143\302\317
\171\060\013\006\003\125\035\017\004\004\003\002\001\006\060\015
\006\011\052\206\110\206\367\015\001\001\015\005\000\003\202\001
\001\000\051\276\347\261\344\372\003\242\017\257\166\131\235\370
\116\123\115\074\004\203\237\241\342\214\366\224\331\264\256\150
\052\126\153\062\123\050\203\007\162\114\260\116\250\035\201\203
\041\147\003\067\321\214\306\301\116\204\351\064\073\323\365\365
\047\266\215\043\005\122\270\114\062\362\056\332\321\052\175\076
\203\003\052\322\261\343\232\351\212\203\102\360\054\012\241\123
\017\300\053\342\217\032\116\225\271\105\274\113\147\072\275\062
\363\255\245\217\217\303\056\352\366\364\173\142\320\156\156\305

\141\061\023\146\346\147\111\231\073\057\200\117\172\174\163\212
\003\015\137\365\263\062\050\012\212\300\341\371\270\243\046\356
\334\033\127\317\166\032\117\123\276\366\112\213\127\027\053\057
\231\206\252\336\214\332\266\250\154\337\150\066\326\141\213\156
\300\163\116\267\071\105\364\175\316\111\304\363\035\371\251\167
\154\357\357\222\025\023\047\231\106\350\237\251\212\033\237\051
\057\242\035\076\326\053\307\344\125\020\072\030\367\263\173\117
\056\307\000\042\355\344\061\320\347\270\344\124\117\301\200\105
\045\156
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Halcom Root CA"
Issuer: CN=Halcom Root CA,O=Halcom,C=SI
Serial Number: 504275 (0x7b1d3)
Subject: CN=Halcom Root CA,O=Halcom,C=SI
Not Valid Before: Wed Feb 08 09:55:41 2012
Not Valid After: Sun Feb 08 09:55:41 2032
Fingerprint (MD5): c3:8b:d2:53:ac:00:ec:d1:db:97:61:a5:38:d9:7d:87
#
Fingerprint (SHA1): 53:5b:00:16:72:ab:bf:7b:6c:c2:54:05:ae:4d:24:fe:03:3f:d1:cc
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Halcom Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\123\133\000\026\162\253\277\173\154\302\124\005\256\115\044\376
\003\077\321\314
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\303\213\322\123\254\000\354\321\333\227\141\245\070\331\175\207
END
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\007\261\323
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swisscom Root EV CA 2"
Issuer: CN=Swisscom Root EV CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:f2:fa:64:e2:74:63:d3:8d:fd:10:1d:04:1f:76:ca:58
Subject: CN=Swisscom Root EV CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Fri Jun 24 09:45:08 2011
Not Valid After: Wed Jun 25 08:45:08 2031
Fingerprint (MD5): 7b:30:34:9f:dd:0a:4b:6b:35:ca:31:51:28:5d:ae:ec
Fingerprint (SHA1): e7:a1:90:29:d3:d5:52:dc:0d:0f:c6:92:d3:ea:88:0d:15:2e:1a:6b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root EV CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\036\060\034\006\003\125
\004\003\023\025\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\105\126\040\103\101\040\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\036\060\034\006\003\125
\004\003\023\025\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\105\126\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\362\372\144\342\164\143\323\215\375\020\035\004\037
\166\312\130
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\340\060\202\003\310\240\003\002\001\002\002\021\000
\362\372\144\342\164\143\323\215\375\020\035\004\037\166\312\130
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\147\061\013\060\011\006\003\125\004\006\023\002\143\150\061\021

\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143\157
\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147\151
\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145\040
\123\145\162\166\151\143\145\163\061\036\060\034\006\003\125\004
\003\023\025\123\167\151\163\163\143\157\155\040\122\157\157\164
\040\105\126\040\103\101\040\062\060\036\027\015\061\061\060\066
\062\064\060\071\064\065\060\070\132\027\015\063\061\060\066\062
\065\060\070\064\065\060\070\132\060\147\061\013\060\011\006\003
\125\004\006\023\002\143\150\061\021\060\017\006\003\125\004\012
\023\010\123\167\151\163\163\143\157\155\061\045\060\043\006\003
\125\004\013\023\034\104\151\147\151\164\141\154\040\103\145\162
\164\151\146\151\143\141\164\145\040\123\145\162\166\151\143\145
\163\061\036\060\034\006\003\125\004\003\023\025\123\167\151\163
\163\143\157\155\040\122\157\157\164\040\105\126\040\103\101\040
\062\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\304\367\035\057\127\352\127\154\367\160\135\143\260\161
\122\011\140\104\050\063\243\172\116\012\372\330\352\154\213\121
\026\032\125\256\124\046\304\314\105\007\101\117\020\171\177\161
\322\172\116\077\070\116\263\000\306\225\312\133\315\301\052\203
\327\047\037\061\016\043\026\267\045\313\034\264\271\200\062\136
\032\235\223\361\350\074\140\054\247\136\127\031\130\121\136\274
\054\126\013\270\330\357\213\202\264\074\270\302\044\250\023\307
\240\041\066\033\172\127\051\050\247\056\277\161\045\220\363\104
\203\151\120\244\344\341\033\142\031\224\011\243\363\303\274\357
\364\275\354\333\023\235\317\235\110\011\122\147\300\067\051\021
\036\373\322\021\247\205\030\164\171\344\117\205\024\353\122\067
\342\261\105\330\314\015\103\177\256\023\322\153\053\077\247\302
\342\250\155\166\133\103\237\276\264\235\263\046\206\073\037\177
\345\362\350\146\050\026\045\320\113\227\070\247\344\317\011\321
\066\303\013\276\332\073\104\130\215\276\361\236\011\153\076\363
\062\307\053\207\306\354\136\234\366\207\145\255\063\051\304\057
\211\331\271\313\311\003\235\373\154\224\121\227\020\033\206\013
\032\033\077\366\002\176\173\324\305\121\144\050\235\365\323\254
\203\201\210\323\164\264\131\235\301\353\141\063\132\105\321\313
\071\320\006\152\123\140\035\257\366\373\151\274\152\334\001\317
\275\371\217\331\275\133\301\072\137\216\332\017\113\251\233\235
\052\050\153\032\012\174\074\253\042\013\345\167\055\161\366\202
\065\201\256\370\173\201\346\352\376\254\364\032\233\164\134\350
\217\044\366\135\235\106\304\054\322\036\053\041\152\203\047\147
\125\112\244\343\310\062\227\146\220\162\332\343\324\144\056\137
\343\241\152\366\140\324\347\065\315\312\304\150\215\327\161\310
\323\044\063\163\261\154\371\152\341\050\333\137\306\075\350\276
\125\346\067\033\355\044\331\017\031\217\137\143\030\130\120\201
\121\145\157\362\237\176\152\004\347\064\044\161\272\166\113\130
\036\031\275\025\140\105\252\014\022\100\001\235\020\342\307\070
\007\162\012\145\300\266\273\045\051\332\026\236\213\065\213\141
\355\345\161\127\203\265\074\161\237\343\117\277\176\036\201\237

\101\227\002\003\001\000\001\243\201\206\060\201\203\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\035\006
\003\125\035\041\004\026\060\024\060\022\006\007\140\205\164\001
\123\002\002\006\007\140\205\164\001\123\002\002\060\022\006\003
\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001\003
\060\035\006\003\125\035\016\004\026\004\024\105\331\245\201\156
\075\210\115\215\161\322\106\301\156\105\036\363\304\200\235\060
\037\006\003\125\035\043\004\030\060\026\200\024\105\331\245\201
\156\075\210\115\215\161\322\106\301\156\105\036\363\304\200\235
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\224\072\163\006\237\122\113\060\134\324\376\261
\134\045\371\327\216\157\365\207\144\237\355\024\216\270\004\216
\050\113\217\252\173\216\071\264\331\130\366\173\241\065\012\241
\235\212\367\143\345\353\275\071\202\324\343\172\055\157\337\023
\074\272\376\176\126\230\013\363\124\237\315\104\116\156\074\341
\076\025\277\006\046\235\344\360\220\266\324\302\236\060\056\037
\357\307\172\304\120\307\352\173\332\120\313\172\046\313\000\264
\132\253\265\223\037\200\211\204\004\225\215\215\177\011\223\277
\324\250\250\344\143\155\331\144\344\270\051\132\010\277\120\341
\204\017\125\173\137\010\042\033\365\275\231\036\024\366\316\364
\130\020\202\263\012\075\031\301\277\133\253\252\231\330\362\061
\275\345\070\146\334\130\005\307\355\143\032\056\012\227\174\207
\223\053\262\212\343\361\354\030\345\165\266\051\207\347\334\213
\032\176\264\330\311\323\212\027\154\175\051\104\276\212\252\365
\176\072\056\150\061\223\271\152\332\232\340\333\351\056\245\204
\315\034\012\270\112\010\371\234\361\141\046\230\223\267\173\146
\354\221\136\335\121\077\333\163\017\255\004\130\011\335\004\002
\225\012\076\323\166\337\246\020\036\200\075\350\315\244\144\321
\063\307\222\307\342\116\104\343\011\311\116\302\135\207\016\022
\236\277\017\311\005\020\336\172\243\261\074\362\077\245\252\047
\171\255\061\175\037\375\374\031\151\305\335\271\077\174\315\306
\264\302\060\036\176\156\222\327\177\141\166\132\217\353\225\115
\274\021\156\041\174\131\067\231\320\006\274\371\006\155\062\026
\245\331\151\250\341\334\074\200\036\140\121\334\327\124\041\036
\312\142\167\117\372\330\217\263\053\072\015\170\162\311\150\101
\132\107\112\302\243\353\032\327\012\253\074\062\125\310\012\021
\234\337\164\326\360\100\025\035\310\271\217\265\066\305\257\370
\042\270\312\035\363\326\266\031\017\237\141\145\152\352\164\310
\174\217\303\117\135\145\202\037\331\015\211\332\165\162\373\357
\361\107\147\023\263\310\321\031\210\047\046\232\231\171\177\036
\344\054\077\173\356\361\336\115\213\226\227\303\325\077\174\033
\043\355\244\263\035\026\162\103\113\040\341\131\176\302\350\255
\046\277\242\367
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swisscom Root EV CA 2"
Issuer: CN=Swisscom Root EV CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:f2:fa:64:e2:74:63:d3:8d:fd:10:1d:04:1f:76:ca:58
Subject: CN=Swisscom Root EV CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Fri Jun 24 09:45:08 2011
Not Valid After: Wed Jun 25 08:45:08 2031
Fingerprint (MD5): 7b:30:34:9f:dd:0a:4b:6b:35:ca:31:51:28:5d:ae:ec
Fingerprint (SHA1): e7:a1:90:29:d3:d5:52:dc:0d:0f:c6:92:d3:ea:88:0d:15:2e:1a:6b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root EV CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\347\241\220\051\323\325\122\334\015\017\306\222\323\352\210\015
\025\056\032\153
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\173\060\064\237\335\012\113\153\065\312\061\121\050\135\256\354
END
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\036\060\034\006\003\125
\004\003\023\025\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\105\126\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\362\372\144\342\164\143\323\215\375\020\035\004\037
\166\312\130
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CFCA GT CA"
Issuer: O=CFCA
 GT CA,C=CN
Serial Number:19:99:3c:3f
Subject: O=CFCA GT CA,C=CN
Not Valid Before: Mon Jun 13 08:15:09 2011

Not Valid After: Tue Jun 09 08:15:09 2026
Fingerprint (MD5): 2c:cd:f3:c5:59:a6:84:64:a0:67:50:ff:4b:4c:d6:14
Fingerprint (SHA1): ea:bd:a2:40:44:0a:bb:d6:94:93:0a:01:d0:97:64:c6:c2:d7:79:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA GT CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\042\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\023\060\021\006\003\125\004\012\023\012\103\106\103\101\040\107
\124\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\042\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\023\060\021\006\003\125\004\012\023\012\103\106\103\101\040\107
\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\031\231\074\077
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\037\060\202\002\007\240\003\002\001\002\002\004\031
\231\074\077\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\042\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\023\060\021\006\003\125\004\012\023\012\103\106\103\101
\040\107\124\040\103\101\060\036\027\015\061\061\060\066\061\063
\060\070\061\065\060\071\132\027\015\062\066\060\066\060\071\060
\070\061\065\060\071\132\060\042\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\023\060\021\006\003\125\004\012\023\012
\103\106\103\101\040\107\124\040\103\101\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\277\163\306\132\053
\214\170\366\130\267\374\322\027\220\245\053\164\354\201\054\223
\315\122\314\156\344\052\313\044\241\061\344\255\060\156\343\230
\042\061\327\041\233\237\325\017\067\057\132\273\070\242\267\171
\046\147\326\015\305\027\052\234\271\124\004\341\015\165\206\156
\330\314\305\200\147\033\310\214\055\000\046\206\074\172\171\076
\266\251\302\116\040\260\067\227\306\205\166\022\202\012\347\124
\273\213\376\075\256\343\354\153\130\103\366\245\067\353\130\242
\275\220\304\345\373\312\153\312\060\154\267\173\211\366\061\322
\214\377\117\302\226\045\103\251\161\065\045\013\030\341\254\310
\243\044\266\161\223\214\361\135\374\234\020\005\173\377\300\133
\340\261\227\255\037\330\376\105\365\300\037\235\133\107\071\034
\006\372\333\146\205\333\044\043\352\173\322\071\040\370\353\052
\262\032\121\363\224\132\050\002\116\247\134\107\156\317\374\331

\350\346\141\132\026\047\307\025\015\230\331\350\323\003\065\220
\051\337\262\057\215\020\167\043\310\270\172\323\021\141\152\363
\377\201\222\245\354\102\113\150\116\200\327\002\003\001\000\001
\243\135\060\133\060\037\006\003\125\035\043\004\030\060\026\200
\024\214\166\120\316\045\323\171\053\074\364\155\235\232\341\236
\005\117\350\075\045\060\014\006\003\125\035\023\004\005\060\003
\001\001\377\060\013\006\003\125\035\017\004\004\003\002\001\306
\060\035\006\003\125\035\016\004\026\004\024\214\166\120\316\045
\323\171\053\074\364\155\235\232\341\236\005\117\350\075\045\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\276\273\226\130\324\335\211\211\017\054\315\372\143
\105\166\015\071\200\232\215\372\250\105\141\075\041\125\350\316
\150\307\031\351\302\261\007\302\213\073\057\317\141\205\220\247
\122\027\062\072\257\012\005\025\310\306\316\335\216\224\046\006
\370\320\140\356\263\156\324\015\272\132\335\253\240\174\120\162
\246\325\220\223\126\327\131\071\333\350\177\263\225\170\123\201
\122\122\137\364\222\201\002\301\373\042\271\321\003\127\247\176
\313\373\300\106\274\023\164\114\050\053\166\222\151\037\301\120
\221\021\305\114\336\013\224\214\027\203\214\257\067\207\264\352
\153\157\242\132\065\101\141\205\057\234\027\300\373\271\016\242
\141\006\107\166\274\220\011\230\164\015\322\010\057\275\344\015
\162\361\246\137\303\174\300\175\352\274\323\253\040\221\313\134
\005\214\235\250\065\372\066\126\273\011\363\204\135\326\361\342
\054\236\331\176\361\202\240\341\267\057\176\355\371\173\240\000
\270\262\336\035\171\341\201\363\122\131\232\024\135\347\302\021
\363\232\303\072\170\043\276\116\146\336\244\071\151\362\230\072
\054\012\000
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CFCA GT CA"
Issuer: O=CFCA GT CA,C=CN
Serial Number:19:99:3c:3f
Subject: O=CFCA GT CA,C=CN
Not Valid Before: Mon Jun 13 08:15:09 2011
Not Valid After: Tue Jun 09 08:15:09 2026
Fingerprint (MD5): 2c:cd:f3:c5:59:a6:84:64:a0:67:50:ff:4b:4c:d6:14
Fingerprint (SHA1): ea:bd:a2:40:44:0a:bb:d6:94:93:0a:01:d0:97:64:c6:c2:d7:79:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CFCA GT CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\352\275\242\100\104\012\273\326\224\223\012\001\320\227\144\306
\302\327\171\146
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\054\315\363\305\131\246\204\144\240\147\120\377\113\114\326\024
END
CKA_ISSUER MULTILINE_OCTAL
\060\042\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\023\060\021\006\003\125\004\012\023\012\103\106\103\101\040\107
\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\031\231\074\077
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Digidentity L3 Root CA - G2"
Issuer: CN=Digidentity L3 Root CA - G2,O=Digidentity B.V.,C=NL
Serial Number: 1 (0x1)
Subject: CN=Digidentity L3 Root CA - G2,O=Digidentity B.V.,C=NL
Not Valid Before: Fri Apr 29 10:44:19 2011
Not Valid After: Mon Nov 10 10:44:19 2031
Fingerprint (MD5): 26:8f:5b:c8:b6:3f:88:8c:4c:49:08:2e:18:c1:02:10
#
 Fingerprint (SHA1): f1:38:a3:30:a4:ea:98:6b:eb:52:0b:b1:10:35:87:6e:fb:9d:7f:1c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Digidentity L3 Root CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\031\060\027\006\003\125\004\012\023\020\104\151\147\151\144\145
\156\164\151\164\171\040\102\056\126\056\061\044\060\042\006\003
\125\004\003\023\033\104\151\147\151\144\145\156\164\151\164\171
\040\114\063\040\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\031\060\027\006\003\125\004\012\023\020\104\151\147\151\144\145
\156\164\151\164\171\040\102\056\126\056\061\044\060\042\006\003

\125\004\003\023\033\104\151\147\151\144\145\156\164\151\164\171
\040\114\063\040\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\241\060\202\003\211\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\114\061\031
\060\027\006\003\125\004\012\023\020\104\151\147\151\144\145\156
\164\151\164\171\040\102\056\126\056\061\044\060\042\006\003\125
\004\003\023\033\104\151\147\151\144\145\156\164\151\164\171\040
\114\063\040\122\157\157\164\040\103\101\040\055\040\107\062\060
\036\027\015\061\061\060\064\062\071\061\060\064\064\061\071\132
\027\015\063\061\061\061\061\060\061\060\064\064\061\071\132\060
\116\061\013\060\011\006\003\125\004\006\023\002\116\114\061\031
\060\027\006\003\125\004\012\023\020\104\151\147\151\144\145\156
\164\151\164\171\040\102\056\126\056\061\044\060\042\006\003\125
\004\003\023\033\104\151\147\151\144\145\156\164\151\164\171\040
\114\063\040\122\157\157\164\040\103\101\040\055\040\107\062\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\270\021\243\105\336\001\107\126\015\142\270\216\272\130\146\134
\372\062\306\153\200\156\270\177\370\123\337\176\337\142\250\301
\127\117\232\105\045\310\112\105\055\123\070\044\263\040\254\117
\352\255\377\232\020\257\177\342\016\312\264\016\044\045\221\316
\166\216\020\251\057\231\123\247\220\113\004\213\155\172\271\101
\033\323\001\171\214\237\101\153\271\220\327\201\022\032\007\226
\320\011\257\351\344\152\041\123\200\270\206\236\142\150\103\255
\263\152\025\372\366\155\003\062\152\065\261\120\023\110\307\172
\265\041\023\234\004\234\332\223\371\152\053\301\247\030\375\366
\300\176\131\366\373\347\016\021\265\334\043\352\034\357\147\005
\127\316\027\351\361\173\261\321\062\044\214\317\145\347\324\274
\066\031\160\174\242\047\041\326\200\322\055\025\117\112\265\340
\125\220\225\121\223\041\200\363\234\104\037\377\035\125\125\344
\342\020\021\224\026\123\320\376\257\363\357\227\272\106\342\167
\133\313\326\242\131\021\210\246\347\125\101\303\222\145\035\043
\024\142\024\177\045\162\040\366\244\207\051\157\007\374\376\340
\320\030\322\227\371\024\216\066\306\350\014\030\227\361\166\034
\364\044\332\343\112\371\267\114\022\031\147\363\360\341\123\373
\135\344\300\164\143\137\045\221\012\331\076\364\063\254\344\013
\165\137\316\346\230\274\124\015\235\242\061\305\025\124\135\042
\034\213\072\124\246\015\321\327\043\072\254\076\252\112\027\144
\166\055\015\373\124\345\353\202\074\071\101\103\235\341\256\171
\140\317\146\356\307\161\203\173\014\153\011\333\236\242\115\116
\106\223\150\267\372\147\341\332\277\337\221\200\332\243\242\211

\255\136\154\314\113\167\165\144\157\215\044\343\210\210\013\343
\077\351\277\247\345\126\142\015\203\177\275\152\141\310\220\211
\170\133\014\257\022\052\342\223\255\144\347\331\105\056\366\260
\310\253\105\356\160\070\157\273\065\076\026\376\253\236\303\146
\057\363\276\011\140\325\157\200\275\115\333\257\215\376\014\140
\063\153\017\350\235\153\304\060\167\237\054\120\070\320\230\151
\354\067\350\236\017\344\142\352\372\377\021\104\124\331\357\315
\223\165\221\114\341\211\145\246\224\271\123\371\371\111\143\305
\002\003\001\000\001\243\201\211\060\201\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\053\043\040\140\275\055\212\210\107
\254\255\053\276\002\071\272\230\324\354\230\060\104\006\003\125
\035\040\004\075\060\073\060\071\006\004\125\035\040\000\060\061
\060\057\006\010\053\006\001\005\005\007\002\001\026\043\150\164
\164\160\072\057\057\160\153\151\056\144\151\147\151\144\145\156
\164\151\164\171\056\145\165\057\166\141\154\151\144\141\164\151
\145\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\251\375\357\272\217\033\176\062\022\147\035
\101\015\055\246\213\317\362\364\255\126\170\176\012\230\330\233
\250\321\264\113\054\046\254\344\322\177\147\067\275\011\215\345
\271\163\021\072\156\011\307\127\144\007\041\064\370\016\135\052
\330\221\174\361\124\121\274\234\360\014\152\102\364\074\001\116
\223\105\101\075\254\363\230\113\036\161\036\063\131\062\377\174
\060\360\134\344\341\276\055\056\265\352\335\142\041\016\075\264
\015\225\374\311\270\331\272\240\367\142\247\355\303\003\256\010
\054\101\325\357\103\161\070\267\024\162\256\077\364\024\164\107
\330\336\214\121\171\316\357\261\124\254\160\107\226\176\055\056
\335\233\356\241\001\056\031\357\276\130\140\161\055\255\227\133
\132\140\060\313\062\202\142\116\126\345\147\152\264\322\061\124
\162\077\002\320\274\060\071\217\267\103\011\052\037\046\073\014
\307\174\035\233\200\140\204\016\351\056\322\371\025\273\133\340
\212\244\000\351\343\051\373\050\133\275\066\105\140\041\103\061
\377\160\241\137\134\203\133\227\174\015\267\123\131\354\230\265
\116\342\051\261\324\174\106\343\350\343\103\352\072\226\065\037
\123\361\004\026\045\343\054\363\150\241\246\221\337\025\373\275
\237\346\116\236\302\124\153\176\042\127\343\244\234\134\042\045
\037\201\257\231\310\337\021\025\110\103\370\263\063\251\043\177
\016\063\217\274\106\035\103\264\073\140\365\227\205\031\242\026
\260\125\334\032\160\051\145\332\331\176\011\027\064\353\211\272
\351\141\222\330\336\064\143\074\112\125\152\277\332\206\355\316
\063\336\273\123\157\317\034\332\224\117\166\124\254\145\125\020
\123\232\310\270\153\334\006\346\272\345\121\325\101\177\037\304
\300\101\241\140\221\064\363\023\202\321\241\167\323\367\114\344
\031\377\327\104\232\260\265\274\334\312\136\217\334\316\361\240
\151\066\340\104\222\056\231\372\274\257\263\307\170\072\125\146
\307\153\245\344\151\046\351\064\035\037\052\227\012\351\167\251
\167\133\163\110\062\201\277\377\321\354\203\305\160\203\151\236

\230\033\303\127\337\221\225\034\200\374\215\350\226\203\005\323
\237\172\210\173\372\350\127\361\301\204\050\275\315\326\034\314
\245\342\111\012\163
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Digidentity L3 Root CA - G2"
Issuer: CN=Digidentity L3 Root CA - G2,O=Digidentity B.V.,C=NL
Serial Number: 1 (0x1)
Subject: CN=Digidentity L3 Root CA - G2,O=Digidentity B.V.,C=NL
Not Valid Before: Fri Apr 29 10:44:19 2011
Not Valid After: Mon Nov 10 10:44:19 2031
Fingerprint (MD5): 26:8f:5b:c8:b6:3f:88:8c:4c:49:08:2e:18:c1:02:10
Fingerprint (SHA1): f1:38:a3:30:a4:ea:98:6b:eb:52:0b:b1:10:35:87:6e:fb:9d:7f:1c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Digidentity L3 Root CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\361\070\243\060\244\352\230\153\353\122\013\261\020\065\207\156
\373\235\177\034
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\046\217\133\310\266\077\210\214\114\111\010\056\030\301\002\020
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\031\060\027\006\003\125\004\012\023\020\104\151\147\151\144\145
\156\164\151\164\171\040\102\056\126\056\061\044\060\042\006\003
\125\004\003\023\033\104\151\147\151\144\145\156\164\151\164\171
\040\114\063\040\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SITHS Root CA v1"

```
# Issuer: CN=SITHS Root CA v1,O=Inera AB,C=SE
# Serial Number:90:66:61:a8:62:3d:65:44:77:04:3f:71:9a:c3:97:0c
# Subject: CN=SITHS Root CA v1,O=Inera AB,C=SE
# Not Valid Before: Thu Mar 29 07:54:49 2012
# Not Valid After: Mon Mar 29 07:54:49 2032
# Fingerprint
 (MD5): 7f:7b:02:6c:68:9f:32:03:c7:af:04:9d:ec:23:df:f3
# Fingerprint (SHA1): 58:5f:78:75:be:e7:43:3e:b0:79:ea:ab:7d:05:bb:0f:7a:f2:bc:cc
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SITHS Root CA v1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\111\156\145\162\141\040
\101\102\061\031\060\027\006\003\125\004\003\014\020\123\111\124
\110\123\040\122\157\157\164\040\103\101\040\166\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\111\156\145\162\141\040
\101\102\061\031\060\027\006\003\125\004\003\014\020\123\111\124
\110\123\040\122\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\220\146\141\250\142\075\145\104\167\004\077\161\232
\303\227\014
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\005\223\060\202\003\173\240\003\002\001\002\002\021\000
\220\146\141\250\142\075\145\104\167\004\077\161\232\303\227\014
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\073\061\013\060\011\006\003\125\004\006\023\002\123\105\061\021
\060\017\006\003\125\004\012\014\010\111\156\145\162\141\040\101
\102\061\031\060\027\006\003\125\004\003\014\020\123\111\124\110
\123\040\122\157\157\164\040\103\101\040\166\061\060\036\027\015
\061\062\060\063\062\071\060\067\065\064\064\071\132\027\015\063
\062\060\063\062\071\060\067\065\064\064\071\132\060\073\061\013
\060\011\006\003\125\004\006\023\002\123\105\061\021\060\017\006
\003\125\004\012\014\010\111\156\145\162\141\040\101\102\061\031
\060\027\006\003\125\004\003\014\020\123\111\124\110\123\040\122
\157\157\164\040\103\101\040\166\061\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\300\355\346\236\250\254
```

\250\377\330\065\271\374\373\360\225\117\077\075\107\043\321\222
\311\311\370\360\342\037\206\255\210\077\340\000\317\117\021\225
\141\075\245\326\040\031\321\210\322\302\126\011\105\040\241\052
\352\042\303\352\272\314\102\151\236\270\205\237\160\300\154\247
\276\157\243\134\335\103\210\007\315\312\051\337\151\172\037\055
\237\126\152\033\142\040\041\141\306\120\113\145\165\111\106\277
\134\327\051\036\302\036\205\102\341\016\070\115\303\066\161\102
\104\121\072\321\130\314\311\264\252\154\100\307\203\361\307\011
\237\112\363\153\363\007\026\065\364\202\216\136\213\204\334\161
\171\271\373\156\127\105\267\305\160\072\377\102\002\321\064\277
\205\160\155\117\217\347\037\031\041\367\325\064\274\356\131\346
\056\042\363\161\202\142\031\237\005\144\174\073\042\161\030\245
\055\301\170\130\231\321\257\336\224\100\006\031\166\023\120\207
\043\313\107\127\256\154\305\023\352\232\205\122\303\312\127\046
\037\336\026\155\255\161\176\362\330\141\375\346\066\116\161\032
\235\323\040\065\255\022\041\130\165\066\213\211\026\244\067\050
\317\240\203\072\100\243\312\021\357\264\345\220\033\343\145\222
\147\230\157\016\051\345\147\030\327\210\372\215\266\307\172\245
\240\177\221\036\253\266\371\164\230\166\122\140\057\132\067\231
\250\333\321\076\326\204\152\157\122\323\264\332\032\307\270\262
\321\224\021\037\305\210\211\351\133\251\243\224\346\242\175\115
\247\062\211\241\336\046\153\315\325\243\362\062\033\332\065\023
\211\021\111\115\277\106\061\273\351\055\023\370\016\000\245\376
\003\365\126\106\074\217\023\053\340\345\307\036\003\337\212\352
\106\205\105\206\331\355\136\013\270\144\223\364\320\130\056\051
\215\105\127\115\211\165\220\145\314\152\073\301\234\200\271\264
\200\065\003\216\337\156\052\223\276\246\276\012\001\104\157\100
\163\252\052\202\034\204\166\177\151\335\261\273\222\130\350\100
\121\162\134\367\076\071\104\372\245\231\240\177\215\213\260\101
\130\167\255\042\305\240\300\272\375\061\231\065\152\331\311\040
\032\136\363\275\274\010\177\335\111\055\057\235\221\020\015\133
\250\077\317\264\127\163\073\133\340\147\002\003\001\000\001\243
\201\221\060\201\216\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\114\006\003\125\035\040\004\105\060
\103\060\101\006\011\052\205\160\112\010\001\002\001\001\060\064
\060\062\006\010\053\006\001\005\005\007\002\001\026\046\150\164
\164\160\072\057\057\143\160\163\056\163\151\164\150\163\056\163
\145\057\163\151\164\150\163\162\157\157\164\143\141\166\061\056
\150\164\155\154\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\062
\371\235\117\151\351\230\215\240\326\214\175\371\035\316\243\074
\272\166\025\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\002\001\000\037\077\343\170\130\310\012\312\064
\042\011\330\262\005\213\321\145\234\341\327\327\175\012\300\034
\230\245\044\122\070\063\332\144\042\043\200\256\376\075\200\276
\117\217\335\203\366\015\114\063\132\325\243\073\120\212\122\132
\046\024\163\121\224\344\122\227\143\333\267\006\250\357\217\255
\342\355\336\243\277\040\321\106\333\055\170\350\054\047\104\234

\074\354\267\027\374\211\227\363\243\242\136\302\131\123\340\317
\344\265\001\073\143\123\050\323\257\146\113\064\071\257\141\016
\076\233\356\263\211\326\223\240\073\001\304\263\043\124\020\074
\115\327\252\260\332\331\154\312\060\104\055\335\262\050\142\212
\101\140\362\100\023\154\260\174\076\101\340\213\246\064\361\347
\256\121\207\003\216\231\177\331\150\242\366\234\015\171\202\262
\237\337\044\310\146\140\350\266\110\104\047\310\153\126\267\104
\205\316\002\267\323\212\161\134\127\121\127\041\214\352\302\121
\017\120\077\200\253\004\115\311\122\335\344\245\362\056\037\155
\165\272\207\035\220\013\356\030\204\200\163\273\213\225\204\212
\141\015\116\135\142\237\343\146\014\373\066\016\047\323\110\370
\006\210\006\245\137\356\176\134\335\255\012\035\075\034\252\100
\171\230\171\270\120\214\066\215\013\012\066\013\325\076\347\135
\201\335\154\334\155\261\157\015\164\236\054\057\302\005\362\104
\021\262\063\372\201\305\112\155\076\105\326\054\342\153\137\056
\344\103\225\121\033\231\061\005\337\045\033\163\321\173\234\304
\163\111\373\142\140\331\151\143\335\321\076\145\155\107\372\144
\114\003\130\120\331\246\276\345\052\150\353\077\213\020\361\346
\273\042\006\050\232\240\244\230\151\157\066\264\324\015\016\014
\175\300\051\061\273\054\003\047\341\147\247\275\321\213\056\266
\207\304\012\340\011\013\202\241\346\117\130\235\373\330\370\141
\341\312\227\304\270\267\120\071\314\061\116\375\055\034\032\366
\107\343\154\354\033\005\350\177\027\065\020\204\332\063\347\064
\346\265\244\353\304\042\007\112\366\233\130\330\017\234\100\373
\261\213\137\242\375\231\352\242\173\131\142\321\136\256\321\112
\162\030\053\113\066\071\162\007\232\132\360\143\072\317\033\371
\317\335\110\163\131\160\344
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SITHS Root CA v1"
Issuer: CN=SITHS Root CA v1,O=Inera AB,C=SE
Serial Number:90:66:61:a8:62:3d:65:44:77:04:3f:71:9a:c3:97:0c
Subject: CN=SITHS Root CA v1,O=Inera AB,C=SE
Not Valid Before: Thu Mar 29 07:54:49 2012
Not Valid After: Mon Mar 29 07:54:49 2032
Fingerprint (MD5): 7f:7b:02:6c:68:9f:32:03:c7:af:04:9d:ec:23:df:f3
Fingerprint (SHA1): 58:5f:78:75:be:e7:43:3e:b0:79:ea:ab:7d:05:bb:0f:7a:f2:bc:cc
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SITHS Root CA v1"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\130\137\170\165\276\347\103\076\260\171\352\253\175\005\273\017
\172\362\274\314
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\177\173\002\154\150\237\062\003\307\257\004\235\354\043\337\363
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\111\156\145\162\141\040
\101\102\061\031\060\027\006\003\125\004\003\014\020\123\111\124
\110\123\040\122\157\157\164\040\103\101\040\166\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\220\146\141\250\142\075\145\104\167\004\077\161\232
\303\227\014
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Macao Post eSignTrust Root Certification Authority (G02)"
Issuer: CN=Macao Post eSignTrust Root Certification Authority (G02),O=Macao Post,C=MO
Serial Number:52:ac:be:07:11:49:97:bb:1f:bf:87:1b:25:17:bf:a4
Subject: CN=Macao Post eSignTrust Root Certification Authority (G02),O=Macao Post,C=MO
Not Valid Before: Wed Jan 06 00:00:00 2010
Not Valid After: Sun Jan 05 23:59:59 2020
Fingerprint (MD5): a1:2d:ed:eb:8a:3b:88:2f:fa:38:f3:86:a4:fb:bc:f2
#
Fingerprint (SHA1): 06:14:31:51:e0:2b:45:dd:ba:dd:5d:8e:56:53:0d:aa:e3:28:cf:90
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Macao Post eSignTrust Root Certification Authority (G02)"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\115\117\061
\023\060\021\006\003\125\004\012\023\012\115\141\143\141\157\040
\120\157\163\164\061\101\060\077\006\003\125\004\003\023\070\115
\141\143\141\157\040\120\157\163\164\040\145\123\151\147\156\124
\162\165\163\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\050\107\060\062\051
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\115\117\061
\023\060\021\006\003\125\004\012\023\012\115\141\143\141\157\040
\120\157\163\164\061\101\060\077\006\003\125\004\003\023\070\115
\141\143\141\157\040\120\157\163\164\040\145\123\151\147\156\124
\162\165\163\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\050\107\060\062\051
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\122\254\276\007\021\111\227\273\037\277\207\033\045\027
\277\244
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\226\060\202\003\176\240\003\002\001\002\002\020\122
\254\276\007\021\111\227\273\037\277\207\033\045\027\277\244\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\145
\061\013\060\011\006\003\125\004\006\023\002\115\117\061\023\060
\021\006\003\125\004\012\023\012\115\141\143\141\157\040\120\157
\163\164\061\101\060\077\006\003\125\004\003\023\070\115\141\143
\141\157\040\120\157\163\164\040\145\123\151\147\156\124\162\165
\163\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\050\107\060\062\051\060\036\027\015\061\060\060\061\060\066\060
\060\060\060\060\060\132\027\015\062\060\060\061\060\065\062\063
\065\071\065\071\132\060\145\061\013\060\011\006\003\125\004\006
\023\002\115\117\061\023\060\021\006\003\125\004\012\023\012\115
\141\143\141\157\040\120\157\163\164\061\101\060\077\006\003\125
\004\003\023\070\115\141\143\141\157\040\120\157\163\164\040\145
\123\151\147\156\124\162\165\163\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\050\107\060\062\051\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\266\370\207
\247\164\314\135\043\136\256\253\226\334\327\044\050\035\244\024
\146\327\240\150\214\136\235\105\324\324\051\323\263\013\353\255
\026\352\235\122\021\311\244\341\160\345\335\276\016\034\021\167
\353\237\243\160\170\027\217\271\076\027\123\151\251\353\365\125
\371\225\227\351\337\071\166\236\037\122\027\264\033\000\022\320
\315\074\343\252\111\321\236\101\067\066\365\141\315\043\017\127
\261\366\115\323\333\015\102\123\002\210\364\360\251\206\213\127
\317\162\012\325\224\113\132\332\067\345\075\107\131\147\276\323
\216\126\325\127\071\320\047\333\237\111\117\250\026\124\277\170
\137\317\034\235\136\241\013\214\203\003\263\014\024\311\132\251
\273\377\306\256\131\317\365\145\037\043\211\001\123\212\325\133
\027\235\233\377\230\121\017\103\111\367\252\054\355\345\351\206

\072\063\120\163\334\122\245\153\143\204\351\023\242\174\307\167
\032\363\252\251\015\013\116\116\035\104\303\162\073\231\131\347
\101\042\073\054\124\136\022\061\226\150\101\031\325\355\165\247
\271\127\133\021\366\232\244\111\057\142\363\013\230\121\033\263
\063\102\322\314\324\141\031\303\323\334\233\373\223\262\142\315
\066\373\214\351\032\156\032\261\071\044\216\135\331\076\073\206
\174\210\346\267\047\003\370\225\121\260\277\120\067\376\370\116
\023\001\033\047\055\233\222\320\162\127\327\243\232\126\350\153
\243\367\125\336\100\135\342\010\037\134\273\121\246\236\264\335
\016\246\032\131\142\147\206\163\020\225\235\225\315\272\277\330
\234\052\016\213\166\231\223\324\113\260\350\124\077\015\330\212
\371\200\317\101\375\001\172\105\174\175\326\075\116\371\142\117
\101\045\174\252\155\130\126\033\007\264\163\252\037\021\037\074
\272\123\043\340\355\112\315\226\211\334\110\320\115\142\313\223
\007\366\240\256\123\027\174\137\134\007\034\005\114\253\114\152
\252\302\017\240\031\153\171\171\302\174\263\251\375\075\373\314
\174\161\305\273\276\045\155\041\247\373\326\276\140\363\265\251
\251\154\164\030\077\250\236\102\140\101\362\071\055\035\302\015
\163\362\340\261\266\112\032\030\275\167\151\031\327\322\172\261
\334\226\065\232\330\046\205\203\266\023\051\302\343\002\003\001
\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026
\004\024\002\201\267\266\146\370\222\105\155\302\161\322\237\354
\057\323\272\037\271\377\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\002\001\000\130\123\213\276\317\101
\262\117\266\325\336\112\150\315\145\317\306\100\212\254\113\232
\133\143\155\275\361\077\131\120\102\320\337\232\343\137\126\221
\263\133\233\331\105\006\103\357\223\033\375\063\167\035\006\124
\070\110\361\124\214\072\123\153\073\161\065\011\166\145\351\127
\017\103\366\221\232\336\020\273\272\150\222\052\045\313\147\104
\011\153\277\235\227\146\313\251\105\266\276\067\231\035\165\045
\276\075\074\143\154\277\251\023\107\307\162\214\313\303\317\364
\366\207\005\231\211\027\250\064\040\361\337\241\047\147\323\247
\043\357\253\131\203\075\032\330\052\315\302\255\112\060\014\006
\072\040\213\244\370\332\106\067\103\056\264\211\035\204\163\212
\140\276\144\061\047\102\300\353\162\141\155\314\336\174\163\053
\350\277\071\102\136\171\221\354\200\033\252\066\166\116\041\350
\206\004\227\011\050\313\107\347\100\324\054\136\032\136\110\372
\256\307\351\004\352\107\044\233\276\361\107\236\325\325\172\321
\136\324\205\362\013\043\004\230\324\053\232\126\162\106\114\101
\232\063\360\222\264\277\101\324\275\233\260\263\361\365\023\326
\257\133\324\362\321\101\360\107\135\172\274\172\131\361\175\140
\150\224\016\112\117\201\222\042\252\037\304\074\276\034\072\072
\114\360\160\241\177\273\237\334\322\305\244\361\046\156\341\363
\046\251\160\373\361\211\226\142\025\134\131\240\265\043\372\226
\152\262\032\222\075\015\044\112\053\270\010\376\157\337\334\302
\356\226\377\316\277\173\270\371\204\357\101\073\344\115\271\207

\221\272\306\137\310\355\360\313\213\323\017\221\366\040\336\221
\230\306\347\110\144\321\316\123\022\356\304\025\155\334\200\120
\033\023\140\117\171\133\374\032\234\376\242\237\240\021\063\221
\311\113\155\072\146\226\055\323\070\370\331\231\201\264\104\046
\177\261\347\236\160\155\035\155\365\042\011\344\254\031\066\373
\047\005\330\172\233\331\274\236\033\332\031\067\330\361\335\025
\230\144\033\217\123\360\050\235\254\024\272\137\151\317\226\043
\356\126\254\231\315\072\217\325\136\031\346\142\023\072\137\353
\213\137\026\300\073\341\321\223\217\126\141\067\005\320\171\033
\375\250\274\017\171\322\263\346\323\146
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Macao Post eSignTrust Root Certification Authority (G02)"
Issuer: CN=Macao Post eSignTrust Root Certification Authority (G02),O=Macao Post,C=MO
Serial Number:52:ac:be:07:11:49:97:bb:1f:bf:87:1b:25:17:bf:a4
Subject: CN=Macao Post eSignTrust Root Certification Authority (G02),O=Macao Post,C=MO
Not Valid Before: Wed Jan 06 00:00:00 2010
Not Valid After: Sun Jan 05 23:59:59 2020
Fingerprint (MD5): a1:2d:ed:eb:8a:3b:88:2f:fa:38:f3:86:a4:fb:bc:f2
Fingerprint (SHA1): 06:14:31:51:e0:2b:45:dd:ba:dd:5d:8e:56:53:0d:aa:e3:28:cf:90
CKA_CLASS CK_OBJECT_CLASS
 CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Macao Post eSignTrust Root Certification Authority (G02)"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\006\024\061\121\340\053\105\335\272\335\135\216\126\123\015\252
\343\050\317\220
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\241\055\355\353\212\073\210\057\372\070\363\206\244\373\274\362
END
CKA_ISSUER MULTILINE_OCTAL
\060\145\061\013\060\011\006\003\125\004\006\023\002\115\117\061
\023\060\021\006\003\125\004\012\023\012\115\141\143\141\157\040
\120\157\163\164\061\101\060\077\006\003\125\004\003\023\070\115
\141\143\141\157\040\120\157\163\164\040\145\123\151\147\156\124
\162\165\163\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\050\107\060\062\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\122\254\276\007\021\111\227\273\037\277\207\033\045\027
\277\244
END
CKA_TRUST_SERVER_AUTH CK_TRUST
CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Autoridade Certificadora Raiz Brasileira v2"
Issuer: CN=Autoridade Certificadora Raiz Brasileira v2,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Serial Number: 1 (0x1)
Subject: CN=Autoridade Certificadora Raiz Brasileira v2,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Not Valid Before: Mon Jun 21 19:04:57 2010
Not Valid After: Wed Jun 21 19:04:57 2023
Fingerprint (MD5): 00:11:ae:73:15:fb:2d:6d:88:d8:43:bd:b4:b6:4c:5f
Fingerprint (SHA1): a9:82:2e:6c:69:33:c6:3c:14:8c:2d:ca:a4:4a:5c:f1:aa:d2:c4:2e
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridade Certificadora Raiz
Brasileira v2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101
\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141
\163\151\154\145\151\162\141\040\166\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101

\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141
\163\151\154\145\151\162\141\040\166\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\241\060\202\004\211\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000\060
\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122\061
\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102\162
\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064\111
\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156\141
\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141\040
\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055\040
\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101\165
\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146\151
\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141\163
\151\154\145\151\162\141\040\166\062\060\036\027\015\061\060\060
\066\062\061\061\071\060\064\065\067\132\027\015\062\063\060\066
\062\061\061\071\060\064\065\067\132\060\201\227\061\013\060\011
\006\003\125\004\006\023\002\102\122\061\023\060\021\006\003\125
\004\012\023\012\111\103\120\055\102\162\141\163\151\154\061\075
\060\073\006\003\125\004\013\023\064\111\156\163\164\151\164\165
\164\157\040\116\141\143\151\157\156\141\154\040\144\145\040\124
\145\143\156\157\154\157\147\151\141\040\144\141\040\111\156\146
\157\162\155\141\143\141\157\040\055\040\111\124\111\061\064\060
\062\006\003\125\004\003\023\053\101\165\164\157\162\151\144\141
\144\145\040\103\145\162\164\151\146\151\143\141\144\157\162\141
\040\122\141\151\172\040\102\162\141\163\151\154\145\151\162\141
\040\166\062\060\202\002\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002
\202\002\001\000\272\106\244\016\335\347\100\362\265\240\174\122
\225\127\105\374\155\204\363\206\001\311\205\003\255\230\253\322
\362\136\005\231\311\273\157\142\147\375\167\104\271\003\007\074
\322\033\000\142\324\160\054\102\203\171\146\253\231\126\256\201
\274\152\111\275\363\164\017\142\267\353\133\007\146\224\102\044
\235\106\254\232\102\030\060\360\044\250\121\101\352\253\225\361
\250\053\002\170\151\265\051\047\136\234\056\163\306\376\043\245
\343\246\316\375\154\033\153\000\124\353\000\255\117\072\114\074
\347\012\210\133\332\136\232\013\126\344\265\124\070\035\362\012
\223\144\116\303\101\222\123\040\052\317\374\164\156\324\333\063
\070\142\344\376\216\114\130\034\367\217\052\115\377\305\222\331
\011\122\275\317\160\000\235\151\232\063\152\210\207\105\041\231
\026\121\015\064\337\202\275\264\151\250\174\174\324\335\323\362
\025\134\113\305\130\020\352\205\031\313\066\042\130\052\162\014

\232\226\336\312\317\010\121\141\277\264\005\051\006\053\206\220
\376\351\115\303\004\005\107\313\317\166\331\177\161\246\207\173
\025\100\344\063\200\170\007\035\244\362\216\233\100\073\311\162
\120\337\151\276\360\054\226\037\220\265\325\256\164\343\145\264
\214\032\351\152\033\373\162\134\305\202\124\352\340\123\007\304
\314\022\351\367\336\327\057\324\110\057\107\077\046\141\004\261
\022\232\063\153\265\206\113\023\053\320\206\235\107\355\151\373
\374\204\022\146\370\126\345\016\212\154\166\304\153\032\172\302
\240\132\022\321\043\211\130\001\174\010\130\332\025\216\025\331
\176\175\067\266\244\105\365\003\205\314\107\372\213\171\105\270
\146\142\063\323\046\112\336\034\351\324\177\346\155\046\271\074
\175\315\017\050\012\051\017\233\335\143\253\271\246\107\032\204
\327\205\244\003\145\006\004\113\122\215\203\064\102\177\061\216
\021\056\346\263\147\225\100\176\227\172\100\000\371\021\154\203
\070\130\255\003\063\133\246\304\301\305\260\254\015\251\006\360
\246\151\001\064\266\351\370\224\110\117\076\246\165\011\354\112
\305\073\340\311\136\260\062\377\237\151\131\317\074\060\157\015
\316\047\127\354\132\033\150\377\354\117\157\170\062\076\171\305
\264\135\225\177\002\003\001\000\001\243\201\365\060\201\362\060
\116\006\003\125\035\040\004\107\060\105\060\103\006\005\140\114
\001\001\000\060\072\060\070\006\010\053\006\001\005\005\007\002
\001\026\054\150\164\164\160\072\057\057\141\143\162\141\151\172
\056\151\143\160\142\162\141\163\151\154\056\147\157\166\056\142
\162\057\104\120\103\141\143\162\141\151\172\056\160\144\146\060
\077\006\003\125\035\037\004\070\060\066\060\064\240\062\240\060
\206\056\150\164\164\160\072\057\057\141\143\162\141\151\172\056
\151\143\160\142\162\141\163\151\154\056\147\157\166\056\142\162
\057\114\103\122\141\143\162\141\151\172\166\062\056\143\162\154
\060\037\006\003\125\035\043\004\030\060\026\200\024\014\071\040
\072\267\001\037\313\327\050\175\101\240\307\372\112\255\062\044
\276\060\035\006\003\125\035\016\004\026\004\024\014\071\040\072
\267\001\037\313\327\050\175\101\240\307\372\112\255\062\044\276
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\015\006\011\052\206\110\206\367\015\001\001\015\005\000
\003\202\002\001\000\131\232\024\151\030\155\175\051\103\160\175
\166\233\141\337\167\216\032\166\344\251\326\313\166\244\026\014
\114\224\022\306\220\321\201\003\305\255\006\331\055\104\274\262
\011\166\011\200\071\147\000\030\064\155\006\012\346\265\020\131
\110\272\165\140\374\077\216\035\030\125\160\053\236\113\225\254
\211\253\012\167\044\173\141\304\307\221\046\216\106\023\121\067
\266\214\047\012\323\015\360\232\053\042\203\203\263\275\203\065
\255\233\074\274\170\203\051\065\141\066\370\021\161\063\040\124
\143\123\105\001\330\023\132\204\073\327\146\023\044\267\304\106
\305\042\330\163\044\356\034\023\027\226\310\045\350\033\036\317
\337\205\120\155\074\352\367\120\236\033\227\336\247\153\333\326
\163\322\317\174\120\300\260\214\345\123\022\172\206\071\254\065
\133\147\307\352\324\373\321\302\135\352\016\227\163\230\256\051

\277\344\072\363\004\066\120\054\355\336\036\333\205\350\035\204
\011\356\363\246\203\063\133\157\107\171\117\110\265\374\270\046
\023\253\252\263\364\141\021\373\105\147\363\035\076\156\376\052
\113\046\104\032\237\261\242\340\074\332\340\344\005\072\170\254
\373\250\241\115\277\135\054\167\051\220\315\023\035\357\006\050
\330\267\024\363\133\310\311\236\247\176\061\022\212\170\142\304
\321\005\274\006\002\143\004\053\015\211\335\344\134\133\062\200
\104\324\102\354\052\363\362\100\207\061\325\076\342\012\062\014
\024\215\325\162\155\013\346\375\215\344\250\363\005\215\165\027
\167\233\012\271\372\220\222\231\145\210\062\147\103\005\216\055
\013\025\273\065\361\141\350\331\147\167\355\026\345\350\001\055
\153\064\077\216\203\263\367\352\017\112\036\076\065\204\235\214
\200\064\077\251\225\350\303\255\304\315\236\312\024\026\054\031
\236\344\066\213\271\271\243\102\045\007\076\303\345\325\150\117
\240\146\034\246\263\266\163\034\220\032\077\100\271\032\126\102
\160\207\377\157\055\017\021\375\036\377\367\205\060\025\016\343
\027\061\356\047\225\314\311\351\231\036\227\307\155\133\007\265
\005\152\075\362\105\337\272\202\171\044\160\056\233\202\037\146
\251\245\155\047\314\366\052\242\321\137\205\157\340\106\235\252
\322\245\116\125\016
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Autoridade Certificadora Raiz Brasileira v2"
Issuer: CN=Autoridade Certificadora Raiz Brasileira v2,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Serial Number: 1 (0x1)
Subject: CN=Autoridade Certificadora Raiz Brasileira v2,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Not Valid Before: Mon Jun 21 19:04:57 2010
Not Valid After: Wed Jun 21 19:04:57
2023
Fingerprint (MD5): 00:11:ae:73:15:fb:2d:6d:88:d8:43:bd:b4:b6:4c:5f
Fingerprint (SHA1): a9:82:2e:6c:69:33:c6:3c:14:8c:2d:ca:a4:4a:5c:f1:aa:d2:c4:2e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridade Certificadora Raiz Brasileira v2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\251\202\056\154\151\063\306\074\024\214\055\312\244\112\134\361
\252\322\304\056
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\000\021\256\163\025\373\055\155\210\330\103\275\264\266\114\137
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101
\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141
\163\151\154\145\151\162\141\040\166\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swisscom Root CA 2"
Issuer: CN=Swisscom Root CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:1e:9e:28:e8:48:f2:e5:ef:c3:7c:4a:1e:5a:18:67:b6
Subject: CN=Swisscom Root CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Fri Jun 24 08:38:14 2011
Not Valid After: Wed Jun 25 07:38:14 2031
Fingerprint (MD5): 5b:04:69:ec:a5:83:94:63:18:a7:86:d0:e4:f2:6e:19
Fingerprint (SHA1): 77:47:4f:c6:30:e4:0f:4c:47:64:3f:84:ba:b8:c6:95:4a:8a:41:ec
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125
\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\062
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125
\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\036\236\050\350\110\362\345\357\303\174\112\036\132\030
\147\266
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\331\060\202\003\301\240\003\002\001\002\002\020\036
\236\050\350\110\362\345\357\303\174\112\036\132\030\147\266\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\144
\061\013\060\011\006\003\125\004\006\023\002\143\150\061\021\060
\017\006\003\125\004\012\023\010\123\167\151\163\163\143\157\155
\061\045\060\043\006\003\125\004\013\023\034\104\151\147\151\164
\141\154\040\103\145\162\164\151\146\151\143\141\164\145\040\123
\145\162\166\151\143\145\163\061\033\060\031\006\003\125\004\003
\023\022\123\167\151\163\163\143\157\155\040\122\157\157\164\040
\103\101\040\062\060\036\027\015\061\061\060\066\062\064\060\070
\063\070\061\064\132\027\015\063\061\060\066\062\065\060\067\063
\070\061\064\132\060\144\061\013\060\011\006\003\125\004\006\023
\002\143\150\061\021\060\017\006\003\125\004\012\023\010\123\167
\151\163\163\143\157\155\061\045\060\043\006\003\125\004\013\023
\034\104\151\147\151\164\141\154\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163\061\033\060
\031\006\003\125\004\003\023\022\123\167\151\163\163\143\157\155
\040\122\157\157\164\040\103\101\040\062\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\225\102\116\204\235
\121\346\323\011\350\162\132\043\151\333\170\160\216\026\361\053
\217\015\003\316\223\314\056\000\010\173\253\063\214\364\351\100
\346\027\114\253\236\270\107\024\062\167\062\335\050\014\336\030
\113\137\166\237\370\071\073\374\116\211\330\174\305\147\357\253
\322\271\064\137\153\072\363\144\066\316\302\260\317\023\150\312
\310\313\353\265\342\075\056\041\337\352\054\324\340\371\160\226
\114\377\152\130\230\267\027\344\033\122\345\176\007\000\035\137
\332\346\076\225\004\267\151\210\071\241\101\140\045\141\113\225
\071\150\142\034\261\013\005\211\300\066\202\024\041\077\256\333
\241\375\274\157\034\140\206\266\123\224\111\271\053\106\305\117
\000\053\277\241\273\313\077\340\307\127\034\127\350\326\151\370
\301\044\122\235\210\125\335\302\207\056\164\043\320\024\375\052

\107\132\273\246\235\375\224\344\321\212\245\137\206\143\166\205
\313\257\377\111\050\374\200\355\114\171\322\273\344\300\357\001
\356\120\101\010\065\043\160\053\251\026\264\214\156\205\351\266
\021\317\061\335\123\046\033\337\055\132\112\002\100\374\304\300
\266\351\061\032\010\050\345\140\303\037\304\220\216\020\142\140
\104\015\354\012\276\125\030\161\054\245\364\262\274\025\142\377
\034\343\276\035\332\036\127\263\074\176\315\202\035\221\343\113
\353\054\122\064\260\212\375\022\116\226\260\353\160\177\236\071
\367\146\102\261\253\254\122\332\166\100\127\173\052\275\350\156
\003\262\013\200\205\210\235\014\307\302\167\260\232\232\127\364
\270\372\023\134\150\223\072\147\244\227\320\033\231\267\206\062
\113\140\330\316\357\320\014\177\225\237\157\207\117\207\212\216
\137\010\174\252\133\374\132\276\241\221\237\125\175\116\260\013
\151\314\260\224\250\247\207\362\323\112\120\334\137\162\260\026
\165\036\313\264\030\142\232\260\247\071\252\233\237\146\330\215
\246\154\226\025\343\346\362\370\361\203\142\154\273\125\351\141
\223\243\075\365\261\127\213\117\043\260\233\345\224\152\057\337
\214\337\225\121\051\140\241\013\051\344\134\125\130\267\250\374
\231\356\045\115\114\016\263\323\114\217\204\350\051\017\375\020
\124\002\205\310\371\345\303\213\317\347\017\002\003\001\000\001
\243\201\206\060\201\203\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\035\006\003\125\035\041\004\026\060
\024\060\022\006\007\140\205\164\001\123\002\001\006\007\140\205
\164\001\123\002\001\060\022\006\003\125\035\023\001\001\377\004
\010\060\006\001\001\377\002\001\007\060\035\006\003\125\035\016
\004\026\004\024\115\046\040\042\211\113\323\325\244\012\241\157
\336\342\022\201\305\361\074\056\060\037\006\003\125\035\043\004
\030\060\026\200\024\115\046\040\042\211\113\323\325\244\012\241
\157\336\342\022\201\305\361\074\056\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\062\012\262
\244\033\313\175\276\202\127\211\271\152\177\363\364\301\056\021
\175\270\031\076\171\267\250\250\162\067\146\233\032\355\254\023
\073\016\277\142\360\234\337\236\173\241\123\110\016\101\172\312
\040\247\027\033\266\170\354\100\221\363\102\255\020\303\134\357
\377\140\131\177\315\205\243\213\075\110\034\045\002\074\147\175
\365\062\351\057\060\345\175\245\172\070\320\363\146\052\146\036
\215\063\203\212\157\174\156\250\132\165\232\270\327\332\130\110
\104\107\250\114\372\114\111\012\112\302\022\067\250\100\014\303
\310\341\320\127\015\227\062\225\307\072\237\227\323\127\370\013
\336\345\162\363\243\333\377\265\330\131\262\163\335\115\052\161
\262\272\111\365\313\034\325\365\171\310\231\263\374\301\114\164
\343\264\275\051\067\025\004\050\036\336\105\106\160\354\257\272
\170\016\212\052\316\000\171\334\300\137\031\147\054\153\113\357
\150\150\013\103\343\254\301\142\011\357\246\335\145\141\240\257
\204\125\110\221\122\034\306\045\221\052\320\301\042\043\141\131
\257\105\021\205\035\001\044\064\217\317\263\377\027\162\040\023
\302\200\252\041\054\161\071\016\320\217\134\301\323\321\216\042
\162\106\114\035\226\256\117\161\261\341\005\051\226\131\364\273

\236\165\075\317\015\067\015\142\333\046\214\143\251\043\337\147
\006\074\174\072\332\064\102\341\146\264\106\004\336\306\226\230
\017\113\110\172\044\062\165\221\237\254\367\150\351\052\271\125
\145\316\135\141\323\047\160\330\067\376\237\271\257\240\056\126
\267\243\145\121\355\073\253\024\277\114\121\003\350\137\212\005
\233\356\212\156\234\357\277\150\372\310\332\013\343\102\311\320
\027\024\234\267\112\340\257\223\047\041\125\046\265\144\057\215
\361\377\246\100\005\205\005\134\312\007\031\134\013\023\050\114
\130\177\302\245\357\105\332\140\323\256\145\141\235\123\203\164
\302\256\362\134\302\026\355\222\076\204\076\163\140\210\274\166
\364\054\317\320\175\175\323\270\136\321\221\022\020\351\315\335
\312\045\343\325\355\231\057\276\165\201\113\044\371\105\106\224
\311\051\041\123\234\046\105\252\023\027\344\347\315\170\342\071
\301\053\022\236\246\236\033\305\346\016\331\061\331
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swisscom Root CA 2"
Issuer: CN=Swisscom Root CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:1e:9e:28:e8:48:f2:e5:ef:c3:7c:4a:1e:5a:18:67:b6
Subject: CN=Swisscom Root CA 2,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Fri Jun 24 08:38:14 2011
Not Valid After: Wed Jun 25 07:38:14 2031
Fingerprint (MD5): 5b:04:69:ec:a5:83:94:63:18:a7:86:d0:e4:f2:6e:19
#
Fingerprint (SHA1): 77:47:4f:c6:30:e4:0f:4c:47:64:3f:84:ba:b8:c6:95:4a:8a:41:ec
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\167\107\117\306\060\344\017\114\107\144\077\204\272\270\306\225
\112\212\101\354
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\004\151\354\245\203\224\143\030\247\206\320\344\362\156\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125

\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\036\236\050\350\110\362\345\357\303\174\112\036\132\030
\147\266
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "IGC/A AC racine Etat francais"
Issuer: CN=IGC/A AC racine Etat francais,OU=0002 130007669,O=ANSSI,C=FR
Serial Number:11:21:85:0c:b3:9c:6a:32:fa:be:67:1b:81:3f:a4:86:15:8f
Subject: CN=IGC/A AC racine Etat francais,OU=0002 130007669,O=ANSSI,C=FR
Not Valid Before: Fri Jul 08 09:00:00 2011
Not Valid After: Sat Apr 15 09:00:00 2028
Fingerprint (MD5): f4:f5:81:33:de:2e:15:b5:70:3a:57:3c:26:0a:72:8d
Fingerprint (SHA1): 1a:c9:2f:09:ea:89:e2:8b:12:6d:fa:c5:1e:3a:f7:ea:90:95:a3:ee
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IGC/A AC racine Etat francais"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\016\060\014\006\003\125\004\012\023\005\101\116\123\123\111\061
\027\060\025\006\003\125\004\013\023\016\060\060\060\062\040\061
\063\060\060\060\067\066\066\071\061\046\060\044\006\003\125\004
\003\023\035\111\107\103\057\101\040\101\103\040\162\141\143\151
\156\145\040\105\164\141\164\040\146\162\141\156\143\141\151\163
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\016\060\014\006\003\125\004\012\023\005\101\116\123\123\111\061
\027\060\025\006\003\125\004\013\023\016\060\060\060\062\040\061
\063\060\060\060\067\066\066\071\061\046\060\044\006\003\125\004
\003\023\035\111\107\103\057\101\040\101\103\040\162\141\143\151
\156\145\040\105\164\141\164\040\146\162\141\156\143\141\151\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\041\205\014\263\234\152\062\372\276\147\033\201\077

\244\206\025\217
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\303\060\202\003\253\240\003\002\001\002\002\022\021
\041\205\014\263\234\152\062\372\276\147\033\201\077\244\206\025
\217\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\136\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\016\060\014\006\003\125\004\012\023\005\101\116\123\123\111\061
\027\060\025\006\003\125\004\013\023\016\060\060\060\062\040\061
\063\060\060\060\067\066\066\071\061\046\060\044\006\003\125\004
\003\023\035\111\107\103\057\101\040\101\103\040\162\141\143\151
\156\145\040\105\164\141\164\040\146\162\141\156\143\141\151\163
\060\036\027\015\061\061\060\067\060\070\060\071\060\060\060\060
\132\027\015\062\070\060\064\061\065\060\071\060\060\060\060\132
\060\136\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\016\060\014\006\003\125\004\012\023\005\101\116\123\123\111\061
\027\060\025\006\003\125\004\013\023\016\060\060\060\062\040\061
\063\060\060\060\067\066\066\071\061\046\060\044\006\003\125\004
\003\023\035\111\107\103\057\101\040\101\103\040\162\141\143\151
\156\145\040\105\164\141\164\040\146\162\141\156\143\141\151\163
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\252\174\050\237\021\060\230\315\157\156\054\205\022\046\073
\010\006\312\101\375\122\117\103\275\300\046\047\161\166\032\131
\226\330\011\353\007\252\046\116\117\076\113\241\343\227\207\205
\146\201\161\311\271\025\166\157\167\120\030\223\020\055\067\210
\115\027\267\363\105\275\042\056\267\047\230\133\307\005\375\275
\063\355\242\365\123\035\050\043\145\277\100\065\156\316\152\013
\303\251\365\045\014\253\042\360\270\300\304\175\067\014\243\142
\174\356\264\333\075\041\071\247\234\211\343\233\242\020\370\212
\266\112\057\056\230\151\053\152\240\206\332\361\010\345\276\114
\147\026\055\045\141\363\325\015\013\027\104\107\011\324\106\005
\235\017\300\210\115\141\344\044\304\307\150\011\257\254\322\257
\271\225\046\157\200\004\374\166\254\252\307\043\266\344\006\221
\125\104\354\144\333\231\201\034\322\126\164\375\326\062\050\273
\313\311\067\015\373\151\154\157\272\243\153\006\214\152\100\056
\027\072\071\352\320\014\337\132\034\272\157\244\062\260\270\314
\076\167\033\323\213\037\206\372\377\076\076\157\134\210\106\347
\343\017\372\253\035\363\175\113\370\124\156\116\314\334\062\132
\143\170\242\062\257\063\170\352\103\341\114\172\115\327\224\006
\055\346\117\245\102\222\257\050\212\117\303\025\354\251\153\251
\337\340\335\023\002\274\314\175\377\055\346\007\251\276\165\226
\352\102\136\133\032\336\242\063\263\143\275\253\005\371\213\346
\275\115\321\155\126\232\353\211\074\237\300\170\344\276\045\160
\006\305\021\163\240\310\312\024\313\072\324\362\234\052\074\332
\137\027\063\331\166\024\067\252\111\207\145\331\364\331\056\031
\137\371\240\315\250\271\101\062\155\161\246\244\313\367\143\042

\320\051\344\272\201\032\152\051\035\232\245\244\134\106\124\044
\105\324\310\355\172\171\205\354\204\167\156\147\115\144\017\103
\336\172\203\244\247\330\333\265\123\114\376\142\310\023\303\142
\066\245\050\061\062\233\264\226\207\342\231\306\037\126\277\106
\243\251\144\061\345\325\261\113\250\146\314\133\241\377\026\374
\012\070\052\150\217\167\045\046\255\221\164\205\150\310\177\032
\345\132\024\270\175\016\267\043\061\300\144\267\005\057\101\130
\125\002\003\001\000\001\243\173\060\171\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\026\006\003\125
\035\040\004\017\060\015\060\013\006\011\052\201\172\001\201\137
\001\001\002\060\035\006\003\125\035\016\004\026\004\024\237\252
\323\051\226\337\000\345\103\340\361\143\254\336\022\216\302\047
\170\372\060\037\006\003\125\035\043\004\030\060\026\200\024\237
\252\323\051\226\337\000\345\103\340\361\143\254\336\022\216\302
\047\170\372\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\165\265\165\321\216\066\146\234\110
\367\205\015\116\005\273\115\232\234\264\016\050\242\004\274\120
\060\273\364\224\114\230\220\205\253\340\122\144\117\322\322\056
\142\223\220\260\205\015\210\124\373\306\124\154\236\353\225\171
\200\136\242\227\026\037\362\147\164\101\234\125\364\267\152\233
\112\026\206\275\005\037\146\200\160\176\311\321\365\055\041\161
\120\071\245\255\210\246\046\034\213\327\045\034\072\326\343\364
\302\014\237\127\301\144\310\127\121\043\026\043\215\017\043\152
\126\113\377\372\306\237\065\223\306\042\300\145\361\257\336\251
\154\030\276\127\145\131\315\364\043\125\144\041\330\355\225\141
\151\063\162\152\121\366\237\345\225\155\216\336\153\163\047\023
\224\136\176\227\110\300\062\026\276\075\067\355\326\334\216\274
\134\055\374\142\250\317\366\220\367\261\213\011\353\072\044\143
\015\310\226\105\324\057\167\110\102\365\055\142\347\047\013\340
\021\206\031\335\247\020\367\143\006\221\060\151\132\165\364\254
\371\241\215\227\306\240\357\072\037\223\045\110\126\072\032\210
\041\031\223\303\225\040\111\010\125\111\115\242\123\234\231\234
\163\151\056\247\365\312\267\016\045\357\067\043\137\220\330\103
\176\356\204\027\152\047\136\177\322\055\077\254\076\257\060\247
\215\221\304\364\217\011\035\363\367\221\016\343\030\272\334\104
\311\175\005\123\003\267\156\240\363\171\327\321\032\117\320\270
\154\210\166\301\200\230\125\205\123\141\317\104\127\114\336\116
\015\026\121\361\075\211\201\256\175\013\255\212\265\356\126\304
\306\314\021\013\030\324\374\375\171\373\376\004\021\234\043\357
\166\162\307\215\276\271\036\170\166\362\232\034\255\143\102\307
\330\355\155\141\220\302\041\052\017\010\024\055\040\103\045\174
\030\265\267\240\244\175\271\245\014\031\376\311\253\075\347\133
\336\257\372\127\031\047\205\347\043\016\364\315\015\031\060\076
\212\344\306\021\036\360\264\175\151\143\233\016\226\206\220\340
\373\003\157\133\131\076\035\041\365\127\147\126\046\362\207\031
\007\204\272\054\220\072\303\050\244\005\132\040\315\251\133\225
\165\071\177\042\120\012\116\177\027\367\263\254\323\007\246\276

\055\122\012\060\114\170\020
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "IGC/A AC racine Etat francais"
Issuer: CN=IGC/A AC racine Etat francais,OU=0002 130007669,O=ANSSI,C=FR
Serial Number:11:21:85:0c:b3:9c:6a:32:fa:be:67:1b:81:3f:a4:86:15:8f
Subject: CN=IGC/A AC racine Etat francais,OU=0002 130007669,O=ANSSI,C=FR
Not Valid Before: Fri Jul 08 09:00:00 2011
Not Valid After: Sat Apr 15 09:00:00 2028
Fingerprint (MD5): f4:f5:81:33:de:2e:15:b5:70:3a:57:3c:26:0a:72:8d
Fingerprint (SHA1): 1a:c9:2f:09:ea:89:e2:8b:12:6d:fa:c5:1e:3a:f7:ea:90:95:a3:ee
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IGC/A AC racine Etat francais"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\032\311\057\011\352\211\342\213\022\155\372\305\036\072\367\352
\220\225\243\356
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\364\365\201\063\336\056\025\265\160\072\127\074\046\012\162\215
END
CKA_ISSUER MULTILINE_OCTAL
\060\136\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\016\060\014\006\003\125\004\012\023\005\101\116\123\123\111\061
\027\060\025\006\003\125\004\013\023\016\060\060\060\062\040\061
\063\060\060\060\067\066\066\071\061\046\060\044\006\003\125\004
\003\023\035\111\107\103\057\101\040\101\103\040\162\141\143\151
\156\145\040\105\164\141\164\040\146\162\141\156\143\141\151\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\041\205\014\263\234\152\062\372\276\147\033\201\077
\244\206\025\217
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "PersonalID Trustworthy RootCA 2011"

```
#
 Issuer: CN=PersonalID Trustworthy RootCA 2011,OU=Certificate Services,O=PersonalID Ltd.,C=IL
# Serial Number:58:cb:f9:64:96:71:74:95:40:f4:ad:08:ac:64:e4:e3
# Subject: CN=PersonalID Trustworthy RootCA 2011,OU=Certificate Services,O=PersonalID Ltd.,C=IL
# Not Valid Before: Thu Sep 01 08:35:21 2011
# Not Valid After: Sun Sep 01 08:45:16 2041
# Fingerprint (MD5): 20:3c:23:dc:f6:7a:97:14:0e:5f:48:b4:7d:ad:ac:c8
# Fingerprint (SHA1): 43:94:ce:31:26:ff:1a:22:4c:dd:4d:ee:b4:f4:ec:1d:a3:68:ef:6a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "PersonalID Trustworthy RootCA 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\163\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\030\060\026\006\003\125\004\012\014\017\120\145\162\163\157\156
\141\154\111\104\040\114\164\144\056\061\035\060\033\006\003\125
\004\013\014\024\103\145\162\164\151\146\151\143\141\164\145\040
\123\145\162\166\151\143\145\163\061\053\060\051\006\003\125\004
\003\014\042\120\145\162\163\157\156\141\154\111\104\040\124\162
\165\163\164\167\157\162\164\150\171\040\122\157\157\164\103\101
\040\062\060\061\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\163\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\030\060\026\006\003\125\004\012\014\017\120\145\162\163\157\156
\141\154\111\104\040\114\164\144\056\061\035\060\033\006\003\125
\004\013\014\024\103\145\162\164\151\146\151\143\141\164\145\040
\123\145\162\166\151\143\145\163\061\053\060\051\006\003\125\004
\003\014\042\120\145\162\163\157\156\141\154\111\104\040\124\162
\165\163\164\167\157\162\164\150\171\040\122\157\157\164\103\101
\040\062\060\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\130\313\371\144\226\161\164\225\100\364\255\010\254\144
\344\343
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\062\060\202\004\032\240\003\002\001\002\002\020\130
\313\371\144\226\161\164\225\100\364\255\010\254\144\344\343\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\163
\061\013\060\011\006\003\125\004\006\023\002\111\114\061\030\060
\026\006\003\125\004\012\014\017\120\145\162\163\157\156\141\154
\111\104\040\114\164\144\056\061\035\060\033\006\003\125\004\013
\014\024\103\145\162\164\151\146\151\143\141\164\145\040\123\145
```

\162\166\151\143\145\163\061\053\060\051\006\003\125\004\003\014
\042\120\145\162\163\157\156\141\154\111\104\040\124\162\165\163
\164\167\157\162\164\150\171\040\122\157\157\164\103\101\040\062
\060\061\061\060\036\027\015\061\061\060\071\060\061\060\070\063
\065\062\061\132\027\015\064\061\060\071\060\061\060\070\064\065
\061\066\132\060\163\061\013\060\011\006\003\125\004\006\023\002
\111\114\061\030\060\026\006\003\125\004\012\014\017\120\145\162
\163\157\156\141\154\111\104\040\114\164\144\056\061\035\060\033
\006\003\125\004\013\014\024\103\145\162\164\151\146\151\143\141
\164\145\040\123\145\162\166\151\143\145\163\061\053\060\051\006
\003\125\004\003\014\042\120\145\162\163\157\156\141\154\111\104
\040\124\162\165\163\164\167\157\162\164\150\171\040\122\157\157
\164\103\101\040\062\060\061\061\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\260\225\214\140\376\005\016
\152\063\355\367\213\343\362\325\362\174\323\126\102\124\367\053
\362\210\245\365\347\267\154\207\001\053\151\276\005\111\104\330
\333\041\172\052\327\212\061\241\041\020\236\323\342\156\143\202
\205\124\204\115\050\046\033\342\023\367\121\373\057\353\022\325
\075\071\214\144\237\244\023\207\303\330\311\372\051\043\216\011
\217\111\106\304\324\311\127\130\151\237\027\317\163\164\245\356
\312\030\271\307\301\060\315\117\072\065\010\123\370\354\032\373
\157\060\355\366\237\011\360\360\320\304\216\073\171\116\056\205
\042\134\324\175\160\321\377\222\272\037\324\125\123\147\272\050
\130\055\367\023\214\374\245\013\234\070\246\106\034\016\350\252
\170\053\365\012\060\323\073\140\206\310\177\245\233\242\143\001
\057\320\323\022\045\205\176\226\315\061\261\344\233\216\352\054
\223\244\142\250\067\325\366\217\337\041\232\323\076\035\341\120
\021\160\124\233\004\027\235\115\253\141\316\217\052\054\357\171
\346\167\105\131\326\150\325\266\113\232\253\221\113\016\141\027
\271\130\302\236\146\241\217\211\301\103\040\102\260\177\200\234
\112\052\267\172\040\101\306\115\304\222\157\172\176\135\133\271
\243\311\116\312\345\120\145\274\000\000\171\107\360\105\004\260
\042\373\016\230\252\141\035\117\140\143\162\217\265\260\004\224
\177\020\254\031\077\047\142\151\326\034\127\335\071\117\070\352
\000\232\375\050\235\100\046\300\100\235\304\240\111\310\101\265
\147\075\240\113\224\051\022\251\130\047\131\004\177\217\321\214
\176\014\263\010\027\064\254\217\271\134\275\351\160\241\176\302
\245\145\141\351\266\020\120\217\334\344\164\141\361\137\162\173
\177\134\057\055\174\253\326\103\061\020\034\131\167\312\110\112
\030\242\144\013\000\131\147\307\324\312\303\233\032\010\122\025
\276\327\305\306\267\057\346\142\234\246\307\330\336\360\025\373
\256\071\125\055\157\120\165\056\375\240\007\264\137\172\176\004
\213\366\231\242\165\355\311\073\325\075\317\147\122\075\076\357
\037\160\232\030\074\247\040\006\111\014\261\145\254\063\273\324
\177\107\151\210\366\212\201\356\235\324\264\307\057\003\350\256
\032\311\126\005\147\151\250\310\201\002\003\001\000\001\243\201
\301\060\201\276\060\013\006\003\125\035\017\004\004\003\002\001

\206\060\022\006\003\125\035\023\001\001\377\004\010\060\006\001
\001\377\002\001\002\060\035\006\003\125\035\016\004\026\004\024
\307\177\013\310\057\127\216\051\362\366\001\213\353\047\245\126
\216\375\244\036\060\020\006\011\053\006\001\004\001\202\067\025
\001\004\003\002\001\000\060\152\006\003\125\035\040\004\143\060
\141\060\137\006\010\053\006\001\004\001\341\030\001\060\123\060
\121\006\010\053\006\001\005\005\007\002\001\026\105\150\164\164
\160\072\057\057\167\167\167\056\151\143\141\056\143\157\056\151
\154\057\162\145\160\157\163\151\164\157\162\171\057\143\160\163
\057\120\145\162\163\157\156\141\154\111\104\137\120\162\141\143
\164\151\143\145\137\123\164\141\164\145\155\145\156\164\056\160
\144\146\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\002\001\000\102\145\213\044\372\222\025\064\032\034
\372\310\316\115\172\057\173\337\320\003\101\034\324\244\341\373
\350\314\255\011\335\035\244\010\331\250\040\175\227\237\014\111
\361\245\302\346\325\167\106\227\176\244\220\242\171\351\275\032
\136\064\202\146\011\122\374\120\321\217\320\253\034\242\377\377
\075\356\376\043\370\277\043\263\315\276\341\367\317\344\330\022
\343\224\310\116\314\327\173\260\067\233\167\352\355\134\201\310
\314\217\316\071\343\344\145\135\336\202\330\217\043\151\341\121
\257\137\267\117\220\151\244\231\145\123\272\346\375\257\170\147
\224\112\310\303\177\214\002\117\112\346\207\230\366\070\267\110
\370\155\050\177\367\306\154\045\124\375\056\326\352\332\006\342
\261\375\007\150\360\257\200\214\264\302\351\164\025\244\032\277
\271\312\103\133\022\347\205\107\136\122\003\360\221\340\351\120
\161\324\041\002\054\173\206\221\160\066\306\234\266\164\371\052
\125\367\041\373\157\240\006\135\327\060\022\362\121\361\311\070
\066\217\310\146\141\101\331\307\113\202\150\122\243\365\211\014
\025\274\116\052\225\254\061\151\247\033\342\324\327\110\364\221
\365\003\174\171\026\076\054\015\151\341\212\067\036\237\174\030
\125\101\057\137\347\244\162\233\125\363\343\001\260\002\245\204
\022\152\100\246\253\344\241\254\353\003\331\274\137\044\126\047
\255\040\340\146\065\105\075\107\011\360\005\261\157\161\176\100
\260\320\025\136\053\254\122\201\250\373\203\365\054\127\104\206
\064\344\024\152\343\317\175\232\167\330\154\110\134\313\232\341
\246\373\277\021\242\006\345\037\161\275\064\265\317\275\304\102
\026\305\051\370\324\300\114\212\262\336\305\224\202\206\233\314
\340\251\006\104\061\044\044\115\372\355\341\102\045\146\242\301
\327\200\027\357\172\225\145\103\076\146\323\005\361\001\344\102
\126\104\000\170\153\235\066\040\373\145\377\100\134\350\150\065
\037\341\046\240\202\003\166\003\313\160\106\021\044\256\337\057
\140\375\361\047\000\003\275\113\047\333\274\234\227\067\121\053
\345\170\264\301\066\220\020\214\377\075\000\324\272\110\237\110
\312\207\061\232\355\304\232\123\322\335\163\024\077\011\202\241
\135\145\116\115\046\342
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "PersonalID Trustworthy RootCA 2011"
Issuer: CN=PersonalID Trustworthy RootCA 2011,OU=Certificate Services,O=PersonalID Ltd.,C=IL
Serial Number:58:cb:f9:64:96:71:74:95:40:f4:ad:08:ac:64:e4:e3
Subject: CN=PersonalID Trustworthy RootCA 2011,OU=Certificate Services,O=PersonalID Ltd.,C=IL
Not Valid Before: Thu Sep 01 08:35:21 2011
Not Valid After: Sun Sep 01 08:45:16 2041
Fingerprint (MD5): 20:3c:23:dc:f6:7a:97:14:0e:5f:48:b4:7d:ad:ac:c8
#
Fingerprint (SHA1): 43:94:ce:31:26:ff:1a:22:4c:dd:4d:ee:b4:f4:ec:1d:a3:68:ef:6a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "PersonalID Trustworthy RootCA 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\103\224\316\061\046\377\032\042\114\335\115\356\264\364\354\035
\243\150\357\152
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\040\074\043\334\366\172\227\024\016\137\110\264\175\255\254\310
END
CKA_ISSUER MULTILINE_OCTAL
\060\163\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\030\060\026\006\003\125\004\012\014\017\120\145\162\163\157\156
\141\154\111\104\040\114\164\144\056\061\035\060\033\006\003\125
\004\013\014\024\103\145\162\164\151\146\151\143\141\164\145\040
\123\145\162\166\151\143\145\163\061\053\060\051\006\003\125\004
\003\014\042\120\145\162\163\157\156\141\154\111\104\040\124\162
\165\163\164\167\157\162\164\150\171\040\122\157\157\164\103\101
\040\062\060\061\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\130\313\371\144\226\161\164\225\100\364\255\010\254\144
\344\343
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swiss Government Root CA II"

Issuer: CN=Swiss Government Root CA II,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Serial Number:0e:9f:17:99:a5:b1:3d:9c:cb:ec:06:eb:a3:f0:0e:69
Subject: CN=Swiss Government Root CA II,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Not Valid Before: Wed Feb 16 09:00:00 2011
Not Valid After: Fri Feb 16 08:59:59 2035
Fingerprint (MD5): 30:b0:e4:cf:bf:f5:89:dc:bf:52:2d:88:1c:cb:aa:b3
Fingerprint (SHA1): c7:f7:cb:e2:02:36:66:f9:86:02:5d:4a:3e:31:3f:29:eb:0c:5b:38
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA II"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\044\060\042\006\003\125\004\003\023\033\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111\111
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\044\060\042\006\003\125\004\003\023\033\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111\111
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\016\237\027\231\245\261\075\234\313\354\006\353\243\360
\016\151
END

CKA_VALUE MULTILINE_OCTAL
\060\202\010\070\060\202\006\040\240\003\002\001\002\002\020\016
\237\027\231\245\261\075\234\313\354\006\353\243\360\016\151\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\247\061\013\060\011\006\003\125\004\006\023\002\103\110\061\073
\060\071\006\003\125\004\012\023\062\124\150\145\040\106\145\144
\145\162\141\154\040\101\165\164\150\157\162\151\164\151\145\163
\040\157\146\040\164\150\145\040\123\167\151\163\163\040\103\157
\156\146\145\144\145\162\141\164\151\157\156\061\021\060\017\006
\003\125\004\013\023\010\123\145\162\166\151\143\145\163\061\042
\060\040\006\003\125\004\013\023\031\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\151
\145\163\061\044\060\042\006\003\125\004\003\023\033\123\167\151
\163\163\040\107\157\166\145\162\156\155\145\156\164\040\122\157
\157\164\040\103\101\040\111\111\060\036\027\015\061\061\060\062
\061\066\060\071\060\060\060\060\132\027\015\063\065\060\062\061
\066\060\070\065\071\065\071\132\060\201\247\061\013\060\011\006
\003\125\004\006\023\002\103\110\061\073\060\071\006\003\125\004
\012\023\062\124\150\145\040\106\145\144\145\162\141\154\040\101
\165\164\150\157\162\151\164\151\145\163\040\157\146\040\164\150
\145\040\123\167\151\163\163\040\103\157\156\146\145\144\145\162
\141\164\151\157\156\061\021\060\017\006\003\125\004\013\023\010
\123\145\162\166\151\143\145\163\061\042\060\040\006\003\125\004
\013\023\031\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\151\145\163\061\044\060\042
\006\003\125\004\003\023\033\123\167\151\163\163\040\107\157\166
\145\162\156\155\145\156\164\040\122\157\157\164\040\103\101\040
\111\111\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\251\054\022\355\277\300\042\351\206\350\034\067\202
\203\233\150\005\157\026\343\210\250\001\017\313\161\236\177\107
\220\113\314\045\167\310\360\327\151\056\221\150\127\041\262\262
\007\041\063\356\114\244\067\045\230\114\264\106\062\116\326\371
\153\213\121\212\357\054\067\362\230\325\365\324\264\267\347\000
\312\357\301\023\136\224\253\156\273\234\275\372\153\217\253\370
\036\066\126\151\070\146\072\320\364\063\015\000\071\002\250\305
\034\013\041\267\134\040\014\141\320\255\256\316\216\136\331\072
\351\336\377\107\174\170\127\016\034\161\364\140\034\335\333\232
\030\051\257\331\200\243\237\205\204\143\063\221\357\275\164\356
\335\003\172\310\372\340\204\346\331\275\116\176\372\156\117\166
\321\135\076\250\350\207\105\220\171\363\255\256\365\302\135\021
\115\051\367\210\023\311\325\223\163\001\253\335\355\375\257\167
\373\151\116\357\217\122\034\317\365\054\132\154\354\376\202\233
\333\174\071\253\165\043\176\070\220\117\224\216\055\142\130\236
\367\347\162\374\224\133\162\126\305\235\243\256\253\265\266\300
\327\166\120\000\074\077\107\210\222\132\140\324\277\062\033\246
\224\100\015\166\171\351\074\316\344\263\035\307\214\365\350\206
\061\271\330\053\120\112\200\022\211\327\054\120\200\346\147\057

\266\223\234\255\254\005\122\042\123\040\231\016\275\227\306\341
\332\163\251\035\211\362\304\131\346\207\346\126\053\016\225\002
\032\207\306\171\376\231\152\351\164\354\360\022\371\024\050\040
\225\226\072\057\135\127\265\157\377\223\274\266\050\152\054\244
\050\170\106\141\257\101\044\244\363\372\004\216\361\212\031\242
\221\163\342\167\217\264\247\371\234\377\156\121\354\275\037\226
\023\350\143\221\136\207\150\157\353\330\174\056\020\117\120\030
\220\307\267\164\357\063\300\201\337\063\343\032\223\053\125\004
\054\174\322\053\267\143\014\376\255\173\275\266\072\227\271\075
\003\043\164\163\003\246\054\131\000\154\325\325\350\354\257\102
\314\323\177\160\213\140\140\347\262\240\266\212\122\114\376\012
\226\313\317\072\260\130\010\356\034\102\311\206\167\102\156\077
\264\254\220\000\130\102\034\100\304\156\270\105\310\274\063\066
\337\275\047\002\003\001\000\001\243\202\002\134\060\202\002\130
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\201\235\006\003\125\035\040\004\201\225\060\201\222\060
\201\217\006\010\140\205\164\001\021\003\025\001\060\201\202\060
\104\006\010\053\006\001\005\005\007\002\001\026\070\150\164\164
\160\072\057\057\167\167\167\056\160\153\151\056\141\144\155\151
\156\056\143\150\057\143\160\163\057\103\120\123\137\062\137\061
\066\137\067\065\066\137\061\137\061\067\137\063\137\062\061\137
\061\056\160\144\146\060\072\006\010\053\006\001\005\005\007\002
\002\060\056\032\054\124\150\151\163\040\151\163\040\164\150\145
\040\123\167\151\163\163\040\107\157\166\145\162\156\155\145\156
\164\040\122\157\157\164\040\103\101\040\111\111\040\103\120\123
\056\060\201\217\006\003\125\035\037\004\201\207\060\201\204\060
\201\201\240\177\240\175\206\173\154\144\141\160\072\057\057\141
\144\155\151\156\144\151\162\056\141\144\155\151\156\056\143\150
\072\063\070\071\057\143\156\075\123\167\151\163\163\045\062\060
\107\157\166\145\162\156\155\145\156\164\045\062\060\122\157\157
\164\045\062\060\103\101\045\062\060\111\111\054\157\165\075\103
\145\162\164\151\146\151\143\141\164\151\157\156\045\062\060\101
\165\164\150\157\162\151\164\151\145\163\054\157\165\075\123\145
\162\166\151\143\145\163\054\157\075\101\144\155\151\156\054\143
\075\103\110\060\035\006\003\125\035\016\004\026\004\024\345\204
\157\211\151\075\166\000\027\177\301\253\275\256\137\301\175\272
\341\142\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\201\343\006\003\125\035\043\004\201\333\060\201\330
\200\024\345\204\157\211\151\075\166\000\027\177\301\253\275\256
\137\301\175\272\341\142\241\201\255\244\201\252\060\201\247\061
\013\060\011\006\003\125\004\006\023\002\103\110\061\073\060\071
\006\003\125\004\012\023\062\124\150\145\040\106\145\144\145\162
\141\154\040\101\165\164\150\157\162\151\164\151\145\163\040\157
\146\040\164\150\145\040\123\167\151\163\163\040\103\157\156\146
\145\144\145\162\141\164\151\157\156\061\021\060\017\006\003\125
\004\013\023\010\123\145\162\166\151\143\145\163\061\042\060\040
\006\003\125\004\013\023\031\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\151\145\163

\061\044\060\042\006\003\125\004\003\023\033\123\167\151\163\163
\040\107\157\166\145\162\156\155\145\156\164\040\122\157\157\164
\040\103\101\040\111\111\202\020\016\237\027\231\245\261\075\234
\313\354\006\353\243\360\016\151\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\203\067\127\165
\311\070\120\277\101\006\226\160\302\331\307\327\260\132\000\315
\243\100\117\323\322\371\212\207\221\262\211\313\135\244\274\157
\117\076\124\366\312\074\263\304\114\213\307\076\364\331\304\142
\335\307\125\236\321\371\322\104\347\036\117\317\350\356\053\034
\250\001\360\063\007\373\341\073\024\323\317\120\221\136\330\352
\102\306\171\130\205\252\373\334\333\160\312\225\371\364\016\142
\002\160\151\104\055\150\117\321\160\352\050\122\146\267\161\336
\045\350\241\247\157\260\241\046\307\327\312\040\144\334\300\163
\074\020\242\024\036\364\255\301\076\024\220\071\066\143\210\157
\050\340\140\245\221\367\142\344\232\317\322\265\161\236\135\073
\366\231\054\355\221\072\010\234\264\204\205\111\343\341\272\246
\266\150\263\266\266\117\113\134\123\012\127\154\241\007\222\366
\142\236\250\372\212\326\363\153\247\017\262\053\146\275\257\102
\107\010\117\350\327\174\237\206\017\372\132\203\276\055\157\000
\004\265\166\207\026\257\335\117\072\226\264\064\127\267\342\377
\101\377\336\102\034\146\305\205\353\302\162\037\270\034\116\356
\027\362\142\357\012\004\254\233\253\241\362\356\356\242\100\044
\034\107\336\102\213\030\264\251\127\263\117\074\142\062\034\255
\154\104\255\274\325\034\143\070\075\311\063\246\373\274\050\067
\104\106\343\172\142\372\200\110\065\342\236\033\210\031\114\263
\101\375\356\167\340\131\200\032\141\036\065\244\101\172\263\301
\215\104\351\305\041\131\351\254\323\104\312\166\205\066\024\106
\012\036\026\064\246\304\064\167\303\202\070\110\041\002\376\022
\154\332\327\352\260\354\366\315\054\314\363\233\012\143\200\323
\365\013\175\004\055\204\015\302\331\114\053\227\361\325\124\367
\217\263\012\342\275\130\074\231\362\257\071\033\220\371\073\347
\267\105\347\132\152\175\301\237\024\157\060\127\230\031\240\007
\103\353\356\321\010\206\327\111\234\022\012\000\073\017\247\101
\261\112\253\220\263\324\275\011\347\210\017\236\044\016\053\373
\141\075\125\231\323\130\344\270\307\175\364\025\115\145\016\030
\171\101\311\273\351\232\301\131\030\104\064\142\325\350\070\173
\312\205\030\230\206\171\315\175\272\107\333\225
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swiss Government Root CA II"
Issuer: CN=Swiss Government Root CA II,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Serial Number:0e:9f:17:99:a5:b1:3d:9c:cb:ec:06:eb:a3:f0:0e:69

Subject: CN=Swiss Government Root CA II,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Not Valid Before: Wed
Feb 16 09:00:00 2011
Not Valid After: Fri Feb 16 08:59:59 2035
Fingerprint (MD5): 30:b0:e4:cf:bf:f5:89:dc:bf:52:2d:88:1c:cb:aa:b3
Fingerprint (SHA1): c7:f7:cb:e2:02:36:66:f9:86:02:5d:4a:3e:31:3f:29:eb:0c:5b:38
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA II"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\307\367\313\342\002\066\146\371\206\002\135\112\076\061\077\051
\353\014\133\070
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\060\260\344\317\277\365\211\334\277\122\055\210\034\313\252\263
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\247\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\044\060\042\006\003\125\004\003\023\033\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111\111
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\016\237\027\231\245\261\075\234\313\354\006\353\243\360
\016\151
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swiss Government Root CA I"
Issuer: CN=Swiss Government Root CA I,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Serial Number:fd:75:04:8d:7a:60:86:93:69:4c:aa:00:3c:65:d3:3d
Subject: CN=Swiss Government Root CA

I,OU=Certification Authorities,OU=Services,O=The Federal Authorities of the Swiss Confederation,C=CH
Not Valid Before: Tue Feb 15 09:00:00 2011
Not Valid After: Thu Feb 15 08:59:59 2035
Fingerprint (MD5): c7:c9:da:9b:76:e1:ac:86:6b:34:bd:03:3f:e3:cf:d2
Fingerprint (SHA1): a1:58:51:87:15:65:86:ce:f9:c4:54:e2:2a:b1:5c:58:74:56:07:b4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA I"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\043\060\041\006\003\125\004\003\023\032\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\043\060\041\006\003\125\004\003\023\032\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\375\165\004\215\172\140\206\223\151\114\252\000\074
\145\323\075
END
CKA_VALUE MULTILINE_OCTAL
\060\202\010\064\060\202\006\034\240\003\002\001\002\002\021\000
\375\165\004\215\172\140\206\223\151\114\252\000\074\145\323\075
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060

\201\246\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106\145
\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151\145
\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040\103
\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060\017
\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163\061
\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\151\145\163\061\043\060\041\006\003\125\004\003\023\032\123\167
\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040\122
\157\157\164\040\103\101\040\111\060\036\027\015\061\061\060\062
\061\065\060\071\060\060\060\060\132\027\015\063\065\060\062\061
\065\060\070\065\071\065\071\132\060\201\246\061\013\060\011\006
\003\125\004\006\023\002\103\110\061\073\060\071\006\003\125\004
\012\023\062\124\150\145\040\106\145\144\145\162\141\154\040\101
\165\164\150\157\162\151\164\151\145\163\040\157\146\040\164\150
\145\040\123\167\151\163\163\040\103\157\156\146\145\144\145\162
\141\164\151\157\156\061\021\060\017\006\003\125\004\013\023\010
\123\145\162\166\151\143\145\163\061\042\060\040\006\003\125\004
\013\023\031\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\151\145\163\061\043\060\041
\006\003\125\004\003\023\032\123\167\151\163\163\040\107\157\166
\145\162\156\155\145\156\164\040\122\157\157\164\040\103\101\040
\111\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\310\016\162\364\001\057\206\173\013\302\143\260\215\150
\355\037\075\336\271\203\233\134\241\135\272\017\066\047\021\004
\255\006\124\040\267\036\240\346\316\276\360\231\151\162\031\065
\144\146\061\215\054\275\216\102\012\237\306\312\251\220\054\332
\274\205\060\003\331\062\226\226\360\276\240\042\015\044\154\324
\306\177\132\114\121\044\055\124\162\010\174\063\351\314\050\307
\146\145\043\151\153\225\264\353\276\343\207\347\143\327\344\373
\007\255\022\222\353\347\344\012\103\262\251\337\307\220\274\046
\133\221\371\243\267\207\234\224\271\020\215\210\305\130\134\062
\274\026\354\016\127\117\376\247\223\170\217\340\305\071\273\007
\210\140\301\124\145\353\207\276\237\061\227\161\074\372\213\310
\203\154\122\226\340\254\300\357\313\151\010\225\133\340\340\273
\257\047\244\302\027\361\121\237\204\166\141\330\044\342\376\141
\155\144\065\111\352\071\304\041\142\275\314\342\002\377\110\153
\070\257\151\307\271\222\055\202\021\215\275\013\211\205\052\352
\267\264\262\315\113\353\321\372\252\360\340\114\011\074\115\337
\366\061\035\206\060\250\101\210\127\160\054\047\121\336\317\213
\116\077\002\362\120\245\027\340\147\033\162\014\101\061\037\001
\242\226\076\074\333\002\266\235\224\346\002\116\363\360\031\202
\262\010\043\023\353\221\315\121\323\252\106\302\163\230\230\077
\272\303\356\232\374\372\315\257\162\012\067\023\217\371\240\120
\263\352\373\077\054\274\372\143\125\065\364\322\274\270\161\322
\221\353\351\312\312\134\354\121\146\250\236\131\005\042\057\243

\032\333\117\340\105\142\043\074\135\125\373\060\225\053\064\242
\317\247\264\113\300\063\311\064\121\235\323\263\053\337\305\352
\054\054\307\337\104\037\266\215\271\376\363\134\315\067\057\260
\154\234\112\010\275\350\365\326\372\160\345\151\062\067\134\137
\013\313\077\344\210\002\314\312\263\170\057\175\277\110\263\041
\260\037\210\171\233\132\212\161\330\041\204\051\017\112\004\061
\052\275\015\041\104\316\164\235\046\323\111\035\370\206\250\345
\022\167\305\300\163\014\120\203\152\220\153\241\312\370\320\225
\331\065\206\307\021\243\073\024\307\313\206\130\126\015\373\203
\367\001\002\003\001\000\001\243\202\002\131\060\202\002\125\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\201\233\006\003\125\035\040\004\201\223\060\201\220\060\201
\215\006\010\140\205\164\001\021\003\001\000\060\201\200\060\103
\006\010\053\006\001\005\005\007\002\001\026\067\150\164\164\160
\072\057\057\167\167\167\056\160\153\151\056\141\144\155\151\156
\056\143\150\057\143\160\163\057\103\120\123\137\062\137\061\066
\137\067\065\066\137\061\137\061\067\137\063\137\061\137\060\056
\160\144\146\060\071\006\010\053\006\001\005\005\007\002\002\060
\055\032\053\124\150\151\163\040\151\163\040\164\150\145\040\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111\040\103\120\123\056\060\201
\216\006\003\125\035\037\004\201\206\060\201\203\060\201\200\240
\176\240\174\206\172\154\144\141\160\072\057\057\141\144\155\151
\156\144\151\162\056\141\144\155\151\156\056\143\150\072\063\070
\071\057\143\156\075\123\167\151\163\163\045\062\060\107\157\166
\145\162\156\155\145\156\164\045\062\060\122\157\157\164\045\062
\060\103\101\045\062\060\111\054\157\165\075\103\145\162\164\151
\146\151\143\141\164\151\157\156\045\062\060\101\165\164\150\157
\162\151\164\151\145\163\054\157\165\075\123\145\162\166\151\143
\145\163\054\157\075\101\144\155\151\156\054\143\075\103\110\060
\035\006\003\125\035\016\004\026\004\024\265\033\203\273\073\117
\262\322\373\345\003\216\324\141\135\321\032\216\260\242\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\201
\343\006\003\125\035\043\004\201\333\060\201\330\200\024\265\033
\203\273\073\117\262\322\373\345\003\216\324\141\135\321\032\216
\260\242\241\201\254\244\201\251\060\201\246\061\013\060\011\006
\003\125\004\006\023\002\103\110\061\073\060\071\006\003\125\004
\012\023\062\124\150\145\040\106\145\144\145\162\141\154\040\101
\165\164\150\157\162\151\164\151\145\163\040\157\146\040\164\150
\145\040\123\167\151\163\163\040\103\157\156\146\145\144\145\162
\141\164\151\157\156\061\021\060\017\006\003\125\004\013\023\010
\123\145\162\166\151\143\145\163\061\042\060\040\006\003\125\004
\013\023\031\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\151\145\163\061\043\060\041
\006\003\125\004\003\023\032\123\167\151\163\163\040\107\157\166
\145\162\156\155\145\156\164\040\122\157\157\164\040\103\101\040
\111\202\021\000\375\165\004\215\172\140\206\223\151\114\252\000
\074\145\323\075\060\015\006\011\052\206\110\206\367\015\001\001

\013\005\000\003\202\002\001\000\045\332\337\170\260\046\334\237
\231\353\063\234\311\105\272\134\143\122\215\156\003\163\252\164
\110\305\015\013\322\027\014\054\013\322\306\045\203\324\124\315
\007\201\124\057\147\166\045\247\351\327\177\226\107\167\244\035
\233\105\377\361\330\366\236\107\016\164\214\023\304\362\276\326
\007\050\030\074\230\165\301\333\353\222\210\046\346\006\144\216
\371\322\375\342\231\065\201\321\330\165\027\265\163\352\335\350
\030\042\225\026\031\012\131\052\042\334\206\132\103\117\045\150
\066\251\330\223\000\217\136\305\303\141\206\360\322\024\011\225
\121\304\176\330\122\356\260\215\212\210\161\245\327\050\247\364
\334\006\130\045\136\304\125\030\010\225\164\174\270\001\347\116
\330\326\366\174\040\103\110\015\243\340\336\124\304\250\137\000
\111\103\323\105\073\202\145\156\356\213\243\001\042\126\232\361
\316\051\345\014\304\153\355\347\116\370\261\125\201\255\161\377
\204\373\010\127\346\107\312\255\207\370\106\370\372\360\065\204
\355\264\330\210\227\042\167\244\217\026\310\074\147\321\341\156
\004\254\173\217\066\315\336\245\010\254\052\215\365\247\035\237
\307\303\221\041\102\243\206\201\271\052\330\261\351\070\035\124
\010\230\071\012\021\312\062\016\063\315\364\114\352\250\112\006
\351\030\076\101\306\317\240\366\340\053\153\040\216\247\040\002
\353\060\101\201\260\350\344\256\244\030\211\053\337\024\360\022
\051\155\170\372\115\104\373\262\064\345\257\363\216\065\367\303
\316\054\013\030\264\320\171\217\023\277\003\213\146\270\265\141
\324\254\016\375\170\075\011\255\265\322\054\117\126\101\231\210
\104\014\176\147\343\144\237\372\132\052\130\167\121\151\261\315
\054\232\247\064\020\005\164\372\156\105\143\313\213\122\255\107
\221\242\022\310\242\046\004\305\320\042\036\003\263\262\222\067
\124\127\375\211\203\165\003\155\055\073\263\361\244\242\020\174
\234\223\215\243\120\204\071\213\225\131\101\366\002\166\006\212
\274\016\220\347\331\072\353\255\046\136\127\123\321\157\310\165
\340\253\221\173\153\241\177\371\033\120\250\334\376\115\006\341
\025\212\244\020\353\036\006\317\124\110\025\226\050\266\043\037
\032\343\174\245\217\372\067\127
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swiss Government Root CA I"
Issuer: CN=Swiss Government Root CA I,OU=Certification Authorities,OU=Services,O=The
Federal Authorities of the Swiss Confederation,C=CH
Serial Number:fd:75:04:8d:7a:60:86:93:69:4c:aa:00:3c:65:d3:3d
Subject: CN=Swiss Government Root CA I,OU=Certification Authorities,OU=Services,O=The Federal
Authorities of the Swiss Confederation,C=CH
Not Valid Before: Tue Feb 15 09:00:00 2011
Not Valid After: Thu Feb 15 08:59:59 2035

Fingerprint (MD5): c7:c9:da:9b:76:e1:ac:86:6b:34:bd:03:3f:e3:cf:d2
Fingerprint (SHA1): a1:58:51:87:15:65:86:ce:f9:c4:54:e2:2a:b1:5c:58:74:56:07:b4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA I"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\241\130\121\207\025\145\206\316\371\304\124\342\052\261\134\130
\164\126\007\264
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\307\311\332\233\166\341\254\206\153\064\275\003\077\343\317\322
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\246\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\073\060\071\006\003\125\004\012\023\062\124\150\145\040\106
\145\144\145\162\141\154\040\101\165\164\150\157\162\151\164\151
\145\163\040\157\146\040\164\150\145\040\123\167\151\163\163\040
\103\157\156\146\145\144\145\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\043\060\041\006\003\125\004\003\023\032\123
\167\151\163\163\040\107\157\166\145\162\156\155\145\156\164\040
\122\157\157\164\040\103\101\040\111
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\375\165\004\215\172\140\206\223\151\114\252\000\074
\145\323\075
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing
 Only Certificate
Certificate "Network Solutions Certificate Authority"
Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Serial Number:1c:a0:2d:c1:52:3b:6a:6d:8b:5c:1f:95:4a:ed:ac:30
Subject: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
Not Valid Before: Sat Jan 01 00:00:00 2011
Not Valid After: Tue Dec 31 23:59:59 2030
Fingerprint (MD5): bd:a4:1d:36:de:c2:7a:8a:04:37:cb:f2:00:a6:65:54
Fingerprint (SHA1): 71:89:9a:67:bf:33:af:31:be:fd:c0:71:f8:f7:33:b1:83:85:63:32
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\034\240\055\301\122\073\152\155\213\134\037\225\112\355
\254\060
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\220\060\202\002\170\240\003\002\001\002\002\020\034
\240\055\301\122\073\152\155\213\134\037\225\112\355\254\060\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\142
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\041\060
\037\006\003\125\004\012\023\030\116\145\164\167\157\162\153\040
\123\157\154\165\164\151\157\156\163\040\114\056\114\056\103\056
\061\060\060\056\006\003\125\004\003\023\047\116\145\164\167\157
\162\153\040\123\157\154\165\164\151\157\156\163\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\061\061\060\061\060\061\060\060\060\060
\060\060\132\027\015\063\060\061\062\063\061\062\063\065\071\065
\071\132\060\142\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\041\060\037\006\003\125\004\012\023\030\116\145\164\167
\157\162\153\040\123\157\154\165\164\151\157\156\163\040\114\056
\114\056\103\056\061\060\060\056\006\003\125\004\003\023\047\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206

\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\344\274\176\222\060\155\306\330\216
\053\013\274\106\316\340\047\226\336\336\371\372\022\323\074\063
\163\263\004\057\274\161\214\345\237\266\042\140\076\137\135\316
\011\377\202\014\033\232\121\120\032\046\211\335\325\141\135\031
\334\022\017\055\012\242\103\135\027\320\064\222\040\352\163\317
\070\054\006\046\011\172\162\367\372\120\062\370\302\223\323\151
\242\043\316\101\261\314\344\325\037\066\321\212\072\370\214\143
\342\024\131\151\355\015\323\177\153\350\270\003\345\117\152\345
\230\143\151\110\005\276\056\377\063\266\351\227\131\151\370\147
\031\256\223\141\226\104\025\323\162\260\077\274\152\175\354\110
\177\215\303\253\252\161\053\123\151\101\123\064\265\260\271\305
\006\012\304\260\105\365\101\135\156\211\105\173\075\073\046\214
\164\302\345\322\321\175\262\021\324\373\130\062\042\232\200\311
\334\375\014\351\177\136\003\227\316\073\000\024\207\047\160\070
\251\216\156\263\047\166\230\121\340\005\343\041\253\032\325\205
\042\074\051\265\232\026\305\200\250\364\273\153\060\217\057\106
\002\242\261\014\042\340\323\002\003\001\000\001\243\102\060\100
\060\035\006\003\125\035\016\004\026\004\024\041\060\311\373\000
\327\116\230\332\207\252\052\320\247\056\261\100\061\247\114\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\302\211\204\240\350\214\146\375\377\023\005\033
\303\072\216\230\111\212\370\252\000\134\046\375\162\152\243\176
\022\033\224\256\124\370\041\217\247\223\117\367\026\357\271\271
\263\062\300\045\041\061\146\067\054\011\260\376\062\260\067\354
\074\270\316\217\010\252\010\220\007\134\165\325\341\116\054\313
\002\044\351\242\136\351\365\170\065\042\006\034\362\037\210\261
\341\134\314\226\124\372\157\111\314\215\361\126\003\355\317\054
\237\047\336\345\312\203\104\276\106\100\371\127\056\322\177\061
\055\316\203\334\376\160\153\204\320\243\237\377\227\320\250\327
\002\354\261\054\360\357\163\070\075\231\254\304\117\001\277\325
\152\352\306\056\062\051\027\012\313\346\151\236\321\112\265\366
\337\216\031\370\225\351\105\251\016\315\155\101\131\040\236\163
\306\154\161\034\234\324\115\060\250\163\011\240\025\363\240\105
\046\303\133\375\273\271\330\055\327\037\365\005\060\031\366\256
\017\216\142\217\337\310\117\206\331\035\141\026\263\311\360\273
\373\307\365\257\001\042\107\354\330\332\317\034\363\123\146\272
\123\011\001\371
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Network Solutions Certificate Authority"

```
# Issuer: CN=Network Solutions Certificate Authority,O=Network Solutions L.L.C.,C=US
# Serial Number:1c:a0:2d:c1:52:3b:6a:6d:8b:5c:1f:95:4a:ed:ac:30
# Subject: CN=Network Solutions Certificate Authority,O=Network Solutions
 L.L.C.,C=US
# Not Valid Before: Sat Jan 01 00:00:00 2011
# Not Valid After: Tue Dec 31 23:59:59 2030
# Fingerprint (MD5): bd:a4:1d:36:de:c2:7a:8a:04:37:cb:f2:00:a6:65:54
# Fingerprint (SHA1): 71:89:9a:67:bf:33:af:31:be:fd:c0:71:f8:f7:33:b1:83:85:63:32
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\161\211\232\147\277\063\257\061\276\375\300\161\370\367\063\261
\203\205\143\062
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\275\244\035\066\336\302\172\212\004\067\313\362\000\246\145\124
END
CKA_ISSUER MULTILINE_OCTAL
\060\142\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\060\060\056\006\003\125\004\003\023\047\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\034\240\055\301\122\073\152\155\213\134\037\225\112\355
\254\060
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "LuxTrust Global Root"
# Issuer: CN=LuxTrust Global Root,O=LuxTrust s.a.,C=LU
# Serial Number: 3000 (0xbb8)
# Subject: CN=LuxTrust Global Root,O=LuxTrust s.a.,C=LU
# Not Valid Before: Thu Mar 17 09:51:37 2011
# Not Valid After: Wed Mar 17 09:51:37 2021
# Fingerprint (MD5): 42:a5:21:7a:4c:af:c7:bf:fd:a7:f5:b2:10:4c:3e:be
# Fingerprint (SHA1): c9:3c:34:ea:90:d9:13:0c:0f:03:00:4b:98:bd:8b:35:70:91:56:11
```

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LuxTrust Global Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\023\015\114\165\170\124\162\165
\163\164\040\163\056\141\056\061\035\060\033\006\003\125\004\003
\023\024\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\023\015\114\165\170\124\162\165
\163\164\040\163\056\141\056\061\035\060\033\006\003\125\004\003
\023\024\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\013\270
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\144\060\202\002\114\240\003\002\001\002\002\002\013
\270\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\104\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\023\015\114\165\170\124\162\165
\163\164\040\163\056\141\056\061\035\060\033\006\003\125\004\003
\023\024\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164\060\036\027\015\061\061\060\063\061\067
\060\071\065\061\063\067\132\027\015\062\061\060\063\061\067\060
\071\065\061\063\067\132\060\104\061\013\060\011\006\003\125\004
\006\023\002\114\125\061\026\060\024\006\003\125\004\012\023\015
\114\165\170\124\162\165\163\164\040\163\056\141\056\061\035\060
\033\006\003\125\004\003\023\024\114\165\170\124\162\165\163\164
\040\107\154\157\142\141\154\040\122\157\157\164\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\262\177\247
\100\360\042\312\014\366\353\261\361\313\016\225\127\100\165\257
\240\077\076\316\354\252\062\127\346\031\261\147\103\230\132\153
\174\263\270\372\170\234\252\246\204\262\140\033\200\101\316\143
\315\037\027\010\231\244\365\357\076\022\307\114\260\127\232\134
\170\100\170\374\105\215\332\221\147\334\072\121\271\155\163\346
\267\071\216\166\072\264\037\005\365\151\125\371\223\317\170\210
\112\276\252\233\327\173\107\133\106\004\114\202\026\246\065\366

\374\164\337\326\264\257\330\342\265\047\021\164\131\242\302\146
\054\150\012\341\230\210\210\074\212\005\165\024\343\270\256\363
\010\204\233\152\301\077\061\030\257\047\245\113\233\244\375\171
\061\336\230\075\016\141\312\207\230\301\370\212\060\234\372\076
\063\325\245\304\003\007\341\367\226\164\030\000\047\070\047\321
\053\252\252\341\101\105\213\157\361\045\302\334\242\227\225\307
\102\024\063\135\171\204\043\152\347\145\300\127\240\330\135\251
\143\001\347\260\344\213\350\370\305\143\270\345\154\164\220\075
\307\167\374\053\272\171\351\244\306\022\170\247\377\002\003\001
\000\001\243\140\060\136\060\014\006\003\125\035\023\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\037\006\003\125\035\043\004\030\060\026\200
\024\027\025\205\211\011\057\044\207\157\077\035\033\344\362\226
\171\203\110\023\316\060\035\006\003\125\035\016\004\026\004\024
\027\025\205\211\011\057\044\207\157\077\035\033\344\362\226\171
\203\110\023\316\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\001\001\000\132\360\034\320\324\120\317\101
\176\346\270\235\175\303\160\320\136\066\377\156\216\172\057\336
\110\021\325\064\056\074\267\105\302\124\045\247\341\301\036\067
\203\266\224\256\266\105\110\003\352\225\276\353\234\152\264\067
\134\037\056\323\153\202\201\103\133\012\077\021\125\143\254\372
\174\010\002\067\240\074\071\004\063\376\227\062\310\122\345\331
\045\115\260\306\356\150\037\160\252\163\316\127\003\334\175\012
\015\063\362\322\132\337\012\154\073\314\021\121\227\032\244\041
\242\205\065\002\327\200\042\322\204\262\370\300\252\150\277\325
\353\252\303\013\253\241\174\053\367\365\073\207\341\124\127\354
\005\044\357\171\102\116\363\213\150\237\344\156\313\202\231\311
\314\052\334\123\302\037\160\203\253\041\017\126\264\110\377\337
\007\042\263\214\371\035\246\004\337\055\003\066\271\335\157\376
\061\210\146\377\154\155\104\064\257\010\167\076\046\322\162\364
\273\107\126\223\074\230\143\341\063\273\231\043\222\265\203\171
\350\035\237\147\255\142\326\211\326\366\374\047\336\062\047\313
\204\332\167\205\041\241\022\041
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "LuxTrust Global Root"
Issuer: CN=LuxTrust Global Root,O=LuxTrust s.a.,C=LU
Serial Number: 3000 (0xbb8)
Subject: CN=LuxTrust Global Root,O=LuxTrust s.a.,C=LU
Not Valid Before: Thu Mar 17 09:51:37 2011
Not Valid After: Wed Mar 17 09:51:37 2021
Fingerprint (MD5): 42:a5:21:7a:4c:af:c7:bf:fd:a7:f5:b2:10:4c:3e:be
Fingerprint (SHA1): c9:3c:34:ea:90:d9:13:0c:0f:03:00:4b:98:bd:8b:35:70:91:56:11

CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LuxTrust Global Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\311\074\064\352\220\331\023\014\017\003\000\113\230\275\213\065
\160\221\126\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\245\041\172\114\257\307\277\375\247\365\262\020\114\076\276
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\023\015\114\165\170\124\162\165
\163\164\040\163\056\141\056\061\035\060\033\006\003\125\004\003
\023\024\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\013\270
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code
Signing Only Certificate
Certificate "AC1 RAIZ MTIN"
Issuer: C=ES,L=MADRID,O=MINISTERIO DE TRABAJO E INMIGRACION,OU=SUBDIRECCION
GENERAL DE PROCESO DE DATOS,OU=PRESTADOR DE SERVICIOS DE CERTIFICACION
MTIN,2.5.4.5=S2819001E,CN=AC1 RAIZ MTIN
Serial Number:05:0b:41:5e:82:7b
Subject: C=ES,L=MADRID,O=MINISTERIO DE TRABAJO E INMIGRACION,OU=SUBDIRECCION
GENERAL DE PROCESO DE DATOS,OU=PRESTADOR DE SERVICIOS DE CERTIFICACION
MTIN,2.5.4.5=S2819001E,CN=AC1 RAIZ MTIN
Not Valid Before: Thu Nov 05 16:17:45 2009
Not Valid After: Sun Nov 03 16:17:45 2019
Fingerprint (MD5): 27:13:d5:2c:70:06:3e:15:7b:d3:62:59:32:ea:01:05
Fingerprint (SHA1): 6a:d2:3b:9d:c4:8e:37:5f:85:9a:d9:ca:b5:85:32:5c:23:89:40:71
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC1 RAIZ MTIN"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\201\342\061\026\060\024\006\003\125\004\003\023\015\101\103
\061\040\122\101\111\132\040\115\124\111\116\061\022\060\020\006
\003\125\004\005\023\011\123\062\070\061\071\060\060\061\105\061
\065\060\063\006\003\125\004\013\023\054\120\122\105\123\124\101
\104\117\122\040\104\105\040\123\105\122\126\111\103\111\117\123
\040\104\105\040\103\105\122\124\111\106\111\103\101\103\111\117
\116\040\115\124\111\116\061\061\060\057\006\003\125\004\013\023
\050\123\125\102\104\111\122\105\103\103\111\117\116\040\107\105
\116\105\122\101\114\040\104\105\040\120\122\117\103\105\123\117
\040\104\105\040\104\101\124\117\123\061\054\060\052\006\003\125
\004\012\023\043\115\111\116\111\123\124\105\122\111\117\040\104
\105\040\124\122\101\102\101\112\117\040\105\040\111\116\115\111
\107\122\101\103\111\117\116\061\017\060\015\006\003\125\004\007
\023\006\115\101\104\122\111\104\061\013\060\011\006\003\125\004
\006\023\002\105\123
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\342\061\026\060\024\006\003\125\004\003\023\015\101\103
\061\040\122\101\111\132\040\115\124\111\116\061\022\060\020\006
\003\125\004\005\023\011\123\062\070\061\071\060\060\061\105\061
\065\060\063\006\003\125\004\013\023\054\120\122\105\123\124\101
\104\117\122\040\104\105\040\123\105\122\126\111\103\111\117\123
\040\104\105\040\103\105\122\124\111\106\111\103\101\103\111\117
\116\040\115\124\111\116\061\061\060\057\006\003\125\004\013\023
\050\123\125\102\104\111\122\105\103\103\111\117\116\040\107\105
\116\105\122\101\114\040\104\105\040\120\122\117\103\105\123\117
\040\104\105\040\104\101\124\117\123\061\054\060\052\006\003\125
\004\012\023\043\115\111\116\111\123\124\105\122\111\117\040\104
\105\040\124\122\101\102\101\112\117\040\105\040\111\116\115\111
\107\122\101\103\111\117\116\061\017\060\015\006\003\125\004\007
\023\006\115\101\104\122\111\104\061\013\060\011\006\003\125\004
\006\023\002\105\123
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\006\005\013\101\136\202\173
END
CKA_VALUE MULTILINE_OCTAL
\060\202\011\111\060\202\007\061\240\003\002\001\002\002\006\005
\013\101\136\202\173\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\060\201\342\061\026\060\024\006\003\125\004\003
\023\015\101\103\061\040\122\101\111\132\040\115\124\111\116\061
\022\060\020\006\003\125\004\005\023\011\123\062\070\061\071\060
\060\061\105\061\065\060\063\006\003\125\004\013\023\054\120\122
\105\123\124\101\104\117\122\040\104\105\040\123\105\122\126\111

\103\111\117\123\040\104\105\040\103\105\122\124\111\106\111\103
\101\103\111\117\116\040\115\124\111\116\061\061\060\057\006\003
\125\004\013\023\050\123\125\102\104\111\122\105\103\103\111\117
\116\040\107\105\116\105\122\101\114\040\104\105\040\120\122\117
\103\105\123\117\040\104\105\040\104\101\124\117\123\061\054\060
\052\006\003\125\004\012\023\043\115\111\116\111\123\124\105\122
\111\117\040\104\105\040\124\122\101\102\101\112\117\040\105\040
\111\116\115\111\107\122\101\103\111\117\116\061\017\060\015\006
\003\125\004\007\023\006\115\101\104\122\111\104\061\013\060\011
\006\003\125\004\006\023\002\105\123\060\036\027\015\060\071\061
\061\060\065\061\066\061\067\064\065\132\027\015\061\071\061\061
\060\063\061\066\061\067\064\065\132\060\201\342\061\026\060\024
\006\003\125\004\003\023\015\101\103\061\040\122\101\111\132\040
\115\124\111\116\061\022\060\020\006\003\125\004\005\023\011\123
\062\070\061\071\060\060\061\105\061\065\060\063\006\003\125\004
\013\023\054\120\122\105\123\124\101\104\117\122\040\104\105\040
\123\105\122\126\111\103\111\117\123\040\104\105\040\103\105\122
\124\111\106\111\103\101\103\111\117\116\040\115\124\111\116\061
\061\060\057\006\003\125\004\013\023\050\123\125\102\104\111\122
\105\103\103\111\117\116\040\107\105\116\105\122\101\114\040\104
\105\040\120\122\117\103\105\123\117\040\104\105\040\104\101\124
\117\123\061\054\060\052\006\003\125\004\012\023\043\115\111\116
\111\123\124\105\122\111\117\040\104\105\040\124\122\101\102\101
\112\117\040\105\040\111\116\115\111\107\122\101\103\111\117\116
\061\017\060\015\006\003\125\004\007\023\006\115\101\104\122\111
\104\061\013\060\011\006\003\125\004\006\023\002\105\123\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\334
\315\315\261\277\336\045\365\377\034\063\163\231\074\033\241\155
\365\240\304\175\233\070\146\215\011\337\003\154\127\065\264\023
\101\376\343\137\346\042\004\130\030\271\116\151\063\004\077\225
\307\331\116\377\063\064\247\062\100\062\223\127\376\201\257\045
\103\134\035\375\173\127\013\142\010\147\147\142\264\343\345\130
\045\200\346\252\206\142\100\347\117\020\141\051\111\046\253\115
\174\241\253\133\141\061\201\006\152\144\224\115\047\370\113\036
\321\325\103\342\327\261\155\366\366\377\264\160\125\366\010\231
\267\164\001\340\363\236\265\174\344\004\210\010\120\131\170\037
\032\224\333\357\310\311\211\323\067\270\363\075\206\321\031\313
\203\132\020\007\010\117\231\164\002\007\360\062\121\310\373\346
\320\074\046\166\175\162\176\254\166\067\301\212\165\040\134\100
\334\204\077\320\111\174\115\147\256\071\357\344\316\200\341\312
\235\346\055\253\056\346\022\225\332\371\373\337\343\342\214\075
\207\373\105\156\104\253\366\170\222\047\024\241\135\153\117\160
\173\127\163\357\371\135\250\017\165\237\357\021\140\031\204\260
\144\100\356\330\251\206\372\245\327\105\364\021\157\361\206\310
\064\133\210\110\316\272\335\315\233\335\210\343\001\066\350\254
\152\350\022\013\260\340\173\220\036\205\013\111\211\001\366\377
\202\337\130\145\042\203\110\326\007\320\034\146\374\146\050\072

\304\303\345\370\231\145\047\122\130\363\153\361\157\002\104\204
\165\320\244\343\150\123\141\162\357\366\057\251\263\254\365\364
\366\320\134\334\151\114\314\171\322\244\033\310\163\006\064\164
\264\361\152\312\051\050\307\064\204\133\043\330\272\000\214\314
\011\301\307\157\135\004\253\267\117\046\167\251\065\317\040\326
\263\377\061\151\320\064\373\045\354\150\226\012\242\335\203\037
\312\074\217\164\066\045\124\357\365\030\173\302\044\061\321\373
\202\004\256\004\202\326\365\002\051\161\341\222\161\164\216\333
\252\161\035\304\073\306\142\046\154\206\074\043\125\353\051\321
\037\253\312\036\143\347\263\163\264\247\270\052\072\366\037\373
\207\145\210\374\363\237\376\277\353\325\035\266\250\003\351\145
\203\031\214\340\030\355\027\330\034\015\075\234\212\130\177\002
\003\001\000\001\243\202\003\001\060\202\002\375\060\067\006\010
\053\006\001\005\005\007\001\001\004\053\060\051\060\047\006\010
\053\006\001\005\005\007\060\001\206\033\150\164\164\160\072\057
\057\143\141\056\155\164\151\156\056\145\163\057\155\164\151\156
\057\157\143\163\160\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\033\006\003\125\035\021\004\024\060\022
\201\020\141\144\155\151\156\137\143\141\100\155\164\151\156\056
\145\163\060\033\006\003\125\035\022\004\024\060\022\201\020\141
\144\155\151\156\137\143\141\100\155\164\151\156\056\145\163\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\162\006\003\125\035\037\004\153\060\151\060\062\240\060\240
\056\206\054\150\164\164\160\072\057\057\143\141\056\155\164\151
\156\056\145\163\057\155\164\151\156\057\143\162\154\057\115\124
\111\116\101\165\164\157\162\151\144\141\144\122\141\151\172\060
\063\240\061\240\057\206\055\150\164\164\160\072\057\057\143\141
\062\056\155\164\151\156\056\145\163\057\155\164\151\156\057\143
\162\154\057\115\124\111\116\101\165\164\157\162\151\144\141\144
\122\141\151\172\060\201\271\006\003\125\035\040\004\201\261\060
\201\256\060\201\253\006\013\053\006\001\004\001\201\331\005\002
\004\001\060\201\233\060\060\006\010\053\006\001\005\005\007\002
\001\026\044\150\164\164\160\072\057\057\143\141\056\155\164\151
\156\056\145\163\057\155\164\151\156\057\104\120\103\171\120\157
\154\151\164\151\143\141\163\060\147\006\010\053\006\001\005\005
\007\002\002\060\133\032\131\103\145\162\164\151\146\151\143\141
\144\157\040\162\141\355\172\056\040\103\157\156\163\165\154\164
\145\040\154\141\163\040\143\157\156\144\151\143\151\157\156\145
\163\040\144\145\040\165\163\157\040\145\156\040\150\164\164\160
\072\057\057\143\141\056\155\164\151\156\056\145\163\057\155\164
\151\156\057\104\120\103\171\120\157\154\151\164\151\143\141\163
\060\035\006\003\125\035\016\004\026\004\024\063\103\030\263\304
\113\035\313\037\371\360\116\374\337\112\344\025\140\310\203\060
\202\001\026\006\003\125\035\043\004\202\001\015\060\202\001\011
\200\024\063\103\030\263\304\113\035\313\037\371\360\116\374\337
\112\344\025\140\310\203\241\201\350\244\201\345\060\201\342\061
\026\060\024\006\003\125\004\003\023\015\101\103\061\040\122\101
\111\132\040\115\124\111\116\061\022\060\020\006\003\125\004\005

\023\011\123\062\070\061\071\060\060\061\105\061\065\060\063\006
\003\125\004\013\023\054\120\122\105\123\124\101\104\117\122\040
\104\105\040\123\105\122\126\111\103\111\117\123\040\104\105\040
\103\105\122\124\111\106\111\103\101\103\111\117\116\040\115\124
\111\116\061\061\060\057\006\003\125\004\013\023\050\123\125\102
\104\111\122\105\103\103\111\117\116\040\107\105\116\105\122\101
\114\040\104\105\040\120\122\117\103\105\123\117\040\104\105\040
\104\101\124\117\123\061\054\060\052\006\003\125\004\012\023\043
\115\111\116\111\123\124\105\122\111\117\040\104\105\040\124\122
\101\102\101\112\117\040\105\040\111\116\115\111\107\122\101\103
\111\117\116\061\017\060\015\006\003\125\004\007\023\006\115\101
\104\122\111\104\061\013\060\011\006\003\125\004\006\023\002\105
\123\202\006\005\013\101\136\202\173\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\231\343\252
\016\221\323\222\251\352\377\104\147\323\240\055\040\147\363\020
\017\032\067\167\135\122\106\346\152\270\367\210\363\202\303\052
\364\141\015\054\237\057\206\055\141\351\140\131\275\267\117\257
\223\011\034\371\063\167\100\234\241\174\145\334\136\220\225\251
\364\276\202\364\374\202\035\036\305\075\340\134\256\336\055\325
\143\166\253\361\354\044\247\040\370\036\350\317\161\202\003\335
\216\166\142\052\265\051\210\023\044\255\134\364\240\112\270\352
\023\212\126\215\152\057\150\071\162\206\130\304\244\253\165\174
\104\347\032\204\014\215\021\334\031\271\034\066\356\363\377\121
\233\263\103\310\045\176\347\016\110\243\344\117\006\055\025\036
\240\246\107\220\127\073\370\057\055\333\043\272\353\043\223\260
\270\122\033\140\034\324\031\260\155\170\217\113\235\247\013\050
\147\112\335\170\110\275\261\076\230\324\273\025\376\263\137\155
\035\165\310\036\317\017\256\112\032\135\207\054\006\164\154\012
\205\123\044\136\172\311\240\174\161\233\222\135\157\110\177\266
\130\161\262\114\246\032\011\043\064\120\161\025\153\107\333\373
\276\032\155\302\214\224\057\007\147\040\042\147\143\267\253\306
\031\234\226\015\142\352\010\244\032\160\357\251\271\357\116\305
\100\274\342\207\127\363\003\312\050\231\032\300\125\140\165\173
\143\276\144\077\226\116\113\217\375\055\246\164\300\337\111\072
\354\125\176\146\323\272\375\357\223\261\143\362\133\077\355\166
\241\331\323\014\376\056\157\012\246\123\113\357\321\363\107\255
\271\036\354\114\037\276\320\203\123\303\233\025\105\377\056\007
\321\332\152\222\105\346\154\127\133\044\056\121\151\311\060\317
\327\373\244\001\065\132\315\247\353\024\157\264\267\140\042\010
\305\161\310\223\342\276\045\137\365\014\372\130\121\075\173\310
\057\067\371\223\034\052\011\340\147\375\226\211\102\312\353\066
\260\326\033\246\120\017\132\235\166\377\244\117\306\354\015\304
\341\320\347\130\076\326\171\300\167\115\014\325\263\344\230\115
\335\106\056\122\260\342\017\015\102\066\245\020\044\122\050\276
\142\065\102\071\311\172\226\037\356\346\113\131\077\044\163\213
\277\042\113\146\362\333\017\065\361\067\235\240\044
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "AC1 RAIZ MTIN"
Issuer: C=ES,L=MADRID,O=MINISTERIO DE TRABAJO E INMIGRACION,OU=SUBDIRECCION GENERAL DE PROCESO DE DATOS,OU=PRESTADOR DE SERVICIOS DE CERTIFICACION MTIN,2.5.4.5=S2819001E,CN=AC1 RAIZ MTIN
Serial Number:05:0b:41:5e:82:7b
Subject: C=ES,L=MADRID,O=MINISTERIO DE TRABAJO E INMIGRACION,OU=SUBDIRECCION GENERAL DE PROCESO DE DATOS,OU=PRESTADOR DE SERVICIOS DE CERTIFICACION MTIN,2.5.4.5=S2819001E,CN=AC1 RAIZ MTIN
Not Valid Before: Thu Nov 05 16:17:45 2009
Not Valid After: Sun Nov 03 16:17:45 2019
Fingerprint (MD5): 27:13:d5:2c:70:06:3e:15:7b:d3:62:59:32:ea:01:05
Fingerprint (SHA1): 6a:d2:3b:9d:c4:8e:37:5f:85:9a:d9:ca:b5:85:32:5c:23:89:40:71
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC1 RAIZ MTIN"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\152\322\073\235\304\216\067\137\205\232\331\312\265\205\062\134
\043\211\100\161
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\047\023\325\054\160\006\076\025\173\323\142\131\062\352\001\005
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\342\061\026\060\024\006\003\125\004\003\023\015\101\103
\061\040\122\101\111\132\040\115\124\111\116\061\022\060\020\006
\003\125\004\005\023\011\123\062\070\061\071\060\060\061\105\061
\065\060\063\006\003\125\004\013\023\054\120\122\105\123\124\101
\104\117\122\040\104\105\040\123\105\122\126\111\103\111\117\123
\040\104\105\040\103\105\122\124\111\106\111\103\101\103\111\117
\116\040\115\124\111\116\061\061\060\057\006\003\125\004\013\023
\050\123\125\102\104\111\122\105\103\103\111\117\116\040\107\105
\116\105\122\101\114\040\104\105\040\120\122\117\103\105\123\117
\040\104\105\040\104\101\124\117\123\061\054\060\052\006\003\125
\004\012\023\043\115\111\116\111\123\124\105\122\111\117\040\104
\105\040\124\122\101\102\101\112\117\040\105\040\111\116\115\111
\107\122\101\103\111\117\116\061\017\060\015\006\003\125\004\007
\023\006\115\101\104\122\111\104\061\013\060\011\006\003\125\004
\006\023\002\105\123
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\006\005\013\101\136\202\173
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft Root Certificate Authority 2011"
Issuer: CN=Microsoft Root Certificate Authority 2011,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Serial Number:3f:8b:c8:b5:fc:9f:b2:96:43:b5:69:d6:6c:42:e1:44
Subject: CN=Microsoft Root Certificate Authority 2011,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Tue Mar 22 22:05:28 2011
Not Valid After: Sat Mar 22 22:13:04 2036
Fingerprint (MD5): ce:04:90:d5:e5:6c:34:a5:ae:0b:e9:8b:e5:81:18:5d
Fingerprint (SHA1): 8f:43:28:8a:d2:72:f3:10:3b:6f:b1:42:84:85:ea:30:14:c0:bc:fe
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT
MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\062\060\061\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164

\150\157\162\151\164\171\040\062\060\061\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\077\213\310\265\374\237\262\226\103\265\151\326\154\102
\341\104
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\355\060\202\003\325\240\003\002\001\002\002\020\077
\213\310\265\374\237\262\226\103\265\151\326\154\102\341\104\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\210\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023
\060\021\006\003\125\004\010\023\012\127\141\163\150\151\156\147
\164\157\156\061\020\060\016\006\003\125\004\007\023\007\122\145
\144\155\157\156\144\061\036\060\034\006\003\125\004\012\023\025
\115\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162
\141\164\151\157\156\061\062\060\060\006\003\125\004\003\023\051
\115\151\143\162\157\163\157\146\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\061\060\036\027\015\061\061\060
\063\062\062\062\062\060\065\062\070\132\027\015\063\066\060\063
\062\062\062\062\061\063\060\064\132\060\201\210\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125
\004\010\023\012\127\141\163\150\151\156\147\164\157\156\061\020
\060\016\006\003\125\004\007\023\007\122\145\144\155\157\156\144
\061\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157
\163\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156
\061\062\060\060\006\003\125\004\003\023\051\115\151\143\162\157
\163\157\146\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171\040
\062\060\061\061\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\262\200\101\252\065\070\115\023\162\062\150
\042\115\270\262\361\377\325\122\274\154\307\365\322\112\214\066
\356\321\302\134\176\214\212\256\257\023\050\157\300\163\343\072
\316\320\045\250\132\072\155\357\250\270\131\253\023\043\150\315
\014\051\207\321\157\200\134\217\104\177\135\220\001\122\130\254
\121\305\137\052\207\334\334\330\012\035\301\003\271\173\260\126
\350\243\336\144\141\302\236\370\363\174\271\354\015\265\124\376
\114\266\145\117\210\360\234\110\231\014\102\013\011\174\061\131
\027\171\006\170\050\215\211\072\114\003\045\276\161\152\134\013
\347\204\140\244\231\042\343\322\257\204\244\247\373\321\230\355
\014\251\336\224\211\341\016\240\334\300\316\231\075\352\010\122
\273\126\171\344\037\204\272\036\270\264\304\111\134\117\061\113
\207\335\335\005\147\046\231\200\340\161\021\243\270\245\101\342
\244\123\271\367\062\051\203\014\023\277\066\136\004\263\113\103
\107\057\153\342\221\036\323\230\117\335\102\007\310\350\035\022
\374\231\251\153\076\222\176\310\326\151\072\374\144\275\266\011

\235\312\375\014\013\242\233\167\140\113\003\224\244\060\151\022
\326\102\055\301\101\114\312\334\252\375\217\133\203\106\232\331
\374\261\321\343\263\311\177\110\172\315\044\360\101\217\134\164
\320\254\260\020\040\006\111\267\307\055\041\310\127\343\320\206
\363\003\150\373\320\316\161\301\211\231\112\144\001\154\375\354
\060\221\317\101\074\222\307\345\272\206\035\141\204\307\137\203
\071\142\256\264\222\057\107\363\013\370\125\353\240\037\131\320
\273\164\233\036\320\166\346\362\351\006\327\020\350\372\144\336
\151\306\065\226\210\002\360\106\270\077\047\231\157\313\161\211
\051\065\367\110\026\002\065\217\325\171\174\115\002\317\137\353
\212\203\117\105\161\210\371\251\015\116\162\351\302\234\007\317
\111\033\116\004\016\143\121\214\136\330\000\301\125\054\266\306
\340\302\145\116\311\064\071\365\234\263\304\176\350\141\156\023
\137\025\304\137\331\176\355\035\316\356\104\354\313\056\206\261
\354\070\366\160\355\253\134\023\301\331\017\015\307\200\262\125
\355\064\367\254\233\344\303\332\347\107\074\246\265\217\061\337
\305\113\257\353\361\002\003\001\000\001\243\121\060\117\060\013
\006\003\125\035\017\004\004\003\002\001\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\162\055\072\002\061\220\103\271\024
\005\116\341\352\247\307\061\321\043\211\064\060\020\006\011\053
\006\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\177\162\317\017\267\305\025\333\233\300\111\312\046\133\376
\236\023\346\323\360\322\333\227\137\362\113\077\115\263\256\031
\256\355\327\227\240\254\357\251\072\243\302\101\260\345\270\221
\236\023\201\044\003\346\011\375\077\127\100\071\041\044\126\321
\020\057\113\100\251\066\206\113\264\123\127\232\373\361\176\211
\217\021\376\030\154\121\252\350\355\011\225\265\345\161\311\241
\351\207\165\246\025\177\311\176\067\124\136\164\223\305\303\147
\314\015\117\153\250\027\014\155\010\222\176\213\335\201\252\055
\160\041\303\075\006\024\273\277\044\136\247\204\327\077\017\041
\042\275\113\000\006\333\227\034\330\136\324\305\013\134\207\156
\120\244\350\303\070\244\373\313\054\305\222\146\233\205\136\313
\172\154\223\174\200\051\130\133\127\265\100\151\272\010\171\246
\144\142\025\235\207\226\105\265\146\043\040\003\213\034\163\240
\323\242\171\063\340\120\131\206\333\057\345\002\045\352\163\052
\237\000\024\310\066\307\222\073\351\116\000\354\330\126\011\271
\063\111\022\322\124\013\001\253\254\107\266\221\051\175\114\264
\165\200\122\001\350\312\202\366\237\314\254\234\217\027\352\057
\046\260\253\162\254\013\376\236\121\036\307\103\125\147\117\121
\263\127\326\266\354\356\122\267\072\351\116\341\327\201\210\274
\117\216\165\273\113\250\360\065\252\046\324\147\147\111\262\160
\114\073\223\334\035\337\170\220\206\162\262\070\244\321\334\222
\115\311\130\353\053\022\134\324\073\256\214\153\260\203\345\001
\077\370\011\062\366\223\065\064\042\257\335\067\015\167\011\200
\053\315\110\000\361\214\231\031\107\005\001\351\321\277\321\116
\320\346\050\103\067\231\244\012\112\010\331\232\161\163\322\252

\315\061\023\143\166\241\067\157\222\070\036\175\022\074\146\062
\347\313\155\341\374\122\211\335\312\326\146\005\232\226\141\276
\242\050\307\034\243\247\066\120\074\072\244\337\112\156\346\207
\073\316\353\360\340\201\067\235\023\074\122\216\275\271\035\064
\306\035\325\012\152\075\230\051\160\214\211\052\321\253\202\020
\110\037\334\364\357\245\305\273\125\032\070\143\204\116\267\154
\255\225\124\354\145\042\020\111\027\270\300\036\307\017\254\124
\107
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft Root Certificate Authority 2011"
Issuer: CN=Microsoft Root Certificate Authority 2011,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Serial Number:3f:8b:c8:b5:fc:9f:b2:96:43:b5:69:d6:6c:42:e1:44
Subject: CN=Microsoft Root Certificate Authority 2011,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Tue Mar 22 22:05:28 2011
Not Valid After: Sat Mar 22 22:13:04 2036
Fingerprint (MD5): ce:04:90:d5:e5:6c:34:a5:ae:0b:e9:8b:e5:81:18:5d
Fingerprint (SHA1): 8f:43:28:8a:d2:72:f3:10:3b:6f:b1:42:84:85:ea:30:14:c0:bc:fe
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\217\103\050\212\322\162\363\020\073\157\261\102\204\205\352\060
\024\300\274\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\316\004\220\325\345\154\064\245\256\013\351\213\345\201\030\135
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\062\060\061\061
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\077\213\310\265\374\237\262\226\103\265\151\326\154\102
\341\104
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CCA India 2011"
Issuer: CN=CCA India 2011,O=India PKI,C=IN
Serial Number: 10126 (0x278e)
Subject: CN=CCA India 2011,O=India PKI,C=IN
Not Valid Before: Fri Mar 11 06:48:52 2011
Not Valid After: Fri Mar 11 06:48:52 2016
Fingerprint (MD5): 6e:3e:bc:f1:11:03:dc:4f:58:d5:2c:b0:74:f4:18:c8
Fingerprint
(SHA1): be:d5:25:d1:ac:63:a7:fc:6a:66:0b:a7:a8:95:81:8d:5e:8d:d5:64
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CCA India 2011"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\027\060\025\006\003\125\004\003\023\016\103\103
\101\040\111\156\144\151\141\040\062\060\061\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\027\060\025\006\003\125\004\003\023\016\103\103
\101\040\111\156\144\151\141\040\062\060\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\047\216
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\043\060\202\002\013\240\003\002\001\002\002\002\047
\216\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\072\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\027\060\025\006\003\125\004\003\023\016\103\103

\101\040\111\156\144\151\141\040\062\060\061\061\060\036\027\015
\061\061\060\063\061\061\060\066\064\070\065\062\132\027\015\061
\066\060\063\061\061\060\066\064\070\065\062\132\060\072\061\013
\060\011\006\003\125\004\006\023\002\111\116\061\022\060\020\006
\003\125\004\012\023\011\111\156\144\151\141\040\120\113\111\061
\027\060\025\006\003\125\004\003\023\016\103\103\101\040\111\156
\144\151\141\040\062\060\061\061\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\207\012\036\016\271\240\250
\040\230\032\270\172\025\366\107\361\277\322\306\047\344\022\152
\226\004\147\165\315\214\306\343\364\335\312\325\304\034\065\356
\115\351\344\042\324\227\070\327\254\143\151\110\300\174\171\142
\277\307\042\111\133\106\301\361\030\024\116\030\035\054\245\132
\222\270\205\025\257\027\126\023\216\237\026\016\042\226\201\204
\171\043\102\354\117\336\257\366\277\211\117\000\136\346\327\010
\322\225\224\232\023\054\004\021\203\357\221\217\010\125\254\172
\126\104\233\305\364\324\027\353\344\167\115\224\341\101\130\021
\351\242\252\011\206\055\046\041\040\365\300\314\303\025\314\114
\011\273\335\334\365\122\003\171\140\217\074\171\072\045\064\043
\207\110\165\362\101\160\115\032\060\010\206\165\316\130\031\250
\327\025\176\043\362\347\111\276\377\376\127\122\170\102\363\046
\167\335\172\367\142\345\313\135\226\063\224\223\273\304\032\026
\257\010\127\353\234\345\367\043\164\215\351\035\013\261\212\224
\163\231\021\221\305\150\240\361\212\015\201\255\264\121\150\156
\111\206\000\006\122\116\051\103\347\002\003\001\000\001\243\063
\060\061\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\021\006\003\125\035\016\004\012\004\010\115\007
\250\143\362\333\034\337\060\013\006\003\125\035\017\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\001\001\000\156\024\332\040\362\110\153\144\377
\052\164\315\126\265\305\071\017\176\141\037\065\131\033\035\050
\155\043\164\235\170\277\253\255\211\000\271\160\205\365\350\024
\076\344\354\237\226\144\134\322\261\042\040\243\010\234\350\014
\113\150\050\216\125\005\277\076\340\116\332\330\234\320\156\040
\354\376\172\073\302\066\107\227\330\053\010\263\256\302\321\346
\010\077\112\350\072\077\126\365\340\345\077\362\151\266\171\022
\340\360\071\267\030\354\322\351\204\016\030\070\026\212\111\073
\157\127\325\071\073\277\023\360\300\247\315\362\075\036\154\221
\247\167\143\274\253\331\126\070\017\112\271\031\300\053\214\373
\227\037\306\247\354\206\316\323\215\343\321\373\165\321\361\367
\246\143\304\317\350\261\244\222\105\150\362\350\214\261\255\176
\055\040\373\270\245\124\355\312\015\217\062\035\150\246\061\156
\260\310\236\325\372\277\006\233\157\051\175\172\003\111\277\053
\173\131\223\024\305\352\313\361\114\051\202\016\051\356\212\124
\174\074\315\125\202\045\162\016\161\116\045\170\115\323\116\131
\100\312\316\363\231\321\242
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CCA India 2011"
Issuer: CN=CCA India 2011,O=India PKI,C=IN
Serial Number: 10126 (0x278e)
Subject: CN=CCA India 2011,O=India PKI,C=IN
Not Valid Before: Fri Mar 11 06:48:52 2011
Not Valid After: Fri Mar 11 06:48:52 2016
Fingerprint (MD5): 6e:3e:bc:f1:11:03:dc:4f:58:d5:2c:b0:74:f4:18:c8
Fingerprint (SHA1): be:d5:25:d1:ac:63:a7:fc:6a:66:0b:a7:a8:95:81:8d:5e:8d:d5:64
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CCA India 2011"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\276\325\045\321\254\143\247\374\152\146\013\247\250\225\201\215
\136\215\325\144
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\156\076\274\361\021\003\334\117\130\325\054\260\164\364\030\310
END
CKA_ISSUER MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\022\060\020\006\003\125\004\012\023\011\111\156\144\151\141\040
\120\113\111\061\027\060\025\006\003\125\004\003\023\016\103\103
\101\040\111\156\144\151\141\040\062\060\061\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\002\047\216
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ANCERT Certificados Notariales V2"
Issuer: CN=ANCERT Certificados Notariales V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Serial Number:09:bd:56:05:2a:13:16:f4:68:4f:74:0e:a9:7d:1c:48
#
Subject: CN=ANCERT Certificados Notariales V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES

Not Valid Before: Tue May 25 16:56:14 2010
Not Valid After: Sat May 25 16:56:14 2030
Fingerprint (MD5): 75:70:cb:6e:6b:d6:9b:7d:90:bb:69:5e:59:f0:62:b4
Fingerprint (SHA1): 6f:62:de:b8:6c:85:58:5a:e4:2e:47:8d:b4:d7:6d:b3:67:58:5a:e6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados Notariales V2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\052\060\050\006\003\125\004\003\023\041\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\116\157\164\141\162\151\141\154\145\163\040\126\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\052\060\050\006\003\125\004\003\023\041\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\116\157\164\141\162\151\141\154\145\163\040\126\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\011\275\126\005\052\023\026\364\150\117\164\016\251\175
\034\110
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\022\060\202\004\372\240\003\002\001\002\002\020\011
\275\126\005\052\023\026\364\150\117\164\016\251\175\034\110\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\174
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\101\060
\077\006\003\125\004\012\023\070\101\147\145\156\143\151\141\040
\116\157\164\141\162\151\141\154\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\123\056\114\056\125\056
\040\055\040\103\111\106\040\102\070\063\063\071\065\071\070\070
\061\052\060\050\006\003\125\004\003\023\041\101\116\103\105\122
\124\040\103\145\162\164\151\146\151\143\141\144\157\163\040\116
\157\164\141\162\151\141\154\145\163\040\126\062\060\036\027\015

\061\060\060\065\062\065\061\066\065\066\061\064\132\027\015\063
\060\060\065\062\065\061\066\065\066\061\064\132\060\174\061\013
\060\011\006\003\125\004\006\023\002\105\123\061\101\060\077\006
\003\125\004\012\023\070\101\147\145\156\143\151\141\040\116\157
\164\141\162\151\141\154\040\144\145\040\103\145\162\164\151\146
\151\143\141\143\151\157\156\040\123\056\114\056\125\056\040\055
\040\103\111\106\040\102\070\063\063\071\065\071\070\070\061\052
\060\050\006\003\125\004\003\023\041\101\116\103\105\122\124\040
\103\145\162\164\151\146\151\143\141\144\157\163\040\116\157\164
\141\162\151\141\154\145\163\040\126\062\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\262\346\271\306\035
\152\052\055\111\305\374\374\324\144\100\320\340\024\056\367\240
\302\377\222\363\101\246\264\077\332\276\031\024\221\224\166\323
\025\314\136\177\170\120\172\333\332\305\105\252\313\034\043\171
\163\220\250\273\147\001\163\216\316\100\371\032\251\252\207\344
\223\222\017\134\150\134\136\360\006\140\053\130\334\074\155\074
\307\172\060\153\005\252\222\206\163\052\322\362\032\210\304\333
\345\132\146\216\165\311\102\077\233\210\050\100\036\365\251\134
\036\372\310\101\241\060\253\013\234\356\026\242\301\055\245\205
\372\355\240\014\350\177\226\112\173\275\217\232\242\030\166\322
\257\335\267\075\020\253\122\020\210\256\035\353\270\062\164\226
\364\267\252\047\367\245\007\015\343\224\127\152\124\040\167\315
\035\274\171\055\344\234\264\336\121\210\376\126\326\075\213\241
\317\372\122\036\214\005\163\167\326\005\317\143\000\121\207\141
\343\120\276\231\227\341\374\036\021\171\153\116\152\317\234\205
\012\034\226\052\300\040\066\024\305\011\027\142\073\364\255\352
\325\327\375\320\071\052\170\323\320\242\317\310\163\060\011\107
\305\116\031\375\270\060\324\017\200\230\210\206\301\114\101\172
\043\305\103\375\136\022\270\076\017\261\267\201\142\014\176\157
\343\173\232\302\302\107\021\041\037\317\236\321\060\316\203\301
\020\115\100\167\327\265\302\113\062\100\102\372\233\260\254\317
\353\041\330\031\353\144\305\153\335\125\055\200\207\104\174\114
\074\253\015\330\022\277\064\202\214\261\252\304\270\153\350\016
\106\167\322\213\006\035\102\373\254\275\311\347\063\263\042\157
\176\325\056\003\305\137\005\026\206\174\355\343\236\321\026\167
\032\106\330\311\320\214\344\134\134\041\005\221\361\144\344\254
\305\067\256\265\275\147\023\256\051\345\263\102\304\160\011\243
\135\114\353\067\040\343\360\365\163\063\073\302\374\216\121\205
\066\052\313\201\333\016\211\043\331\342\341\150\272\054\104\167
\076\034\100\272\360\147\216\030\207\360\075\327\351\077\107\133
\065\102\315\247\004\316\110\162\051\005\032\264\321\242\347\015
\171\212\226\155\147\122\055\073\043\346\371\202\234\326\263\171
\136\024\336\145\110\063\374\035\102\350\055\002\003\001\000\001
\243\202\001\216\060\202\001\212\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\202\001\045\006\003\125
\035\040\004\202\001\034\060\202\001\030\060\202\001\024\006\011
\053\006\001\004\001\201\223\150\001\060\202\001\005\060\045\006

\010\053\006\001\005\005\007\002\001\026\031\150\164\164\160\072
\057\057\167\167\167\056\141\156\143\145\162\164\056\143\157\155
\057\143\160\163\060\201\333\006\010\053\006\001\005\005\007\002
\002\060\201\316\060\015\026\006\101\116\103\105\122\124\060\003
\002\001\001\036\201\274\000\101\000\147\000\145\000\156\000\143
\000\151\000\141\000\040\000\116\000\157\000\164\000\141\000\162
\000\151\000\141\000\154\000\040\000\144\000\145\000\040\000\103
\000\145\000\162\000\164\000\151\000\146\000\151\000\143\000\141
\000\143\000\151\000\157\000\156\000\056\000\040\000\120\000\141
\000\163\000\145\000\157\000\040\000\144\000\145\000\154\000\240
\000\107\000\145\000\156\000\145\000\162\000\141\000\154\000\040
\000\115\000\141\000\162\000\164\000\151\000\156\000\145\000\172
\000\040\000\103\000\141\000\155\000\160\000\157\000\163\000\040
\000\064\000\066\000\040\000\066\000\141\000\040\000\160\000\154
\000\141\000\156\000\164\000\141\000\040\000\062\000\070\000\060
\000\061\000\060\000\040\000\115\000\141\000\144\000\162\000\151
\000\144\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\035\006\003\125\035\016\004\026\004\024\366\022\072
\253\173\130\301\215\103\157\166\201\322\362\270\323\357\027\352
\013\060\037\006\003\125\035\043\004\030\060\026\200\024\366\022
\072\253\173\130\301\215\103\157\166\201\322\362\270\323\357\027
\352\013\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\002\001\000\124\065\323\242\145\311\331\066\305\123
\321\264\215\162\064\211\272\247\010\237\351\065\020\271\270\014
\006\371\144\252\225\226\050\250\310\243\200\334\126\300\277\162
\115\126\277\177\135\004\325\255\050\133\115\275\363\303\017\025
\260\161\332\126\215\100\125\127\246\175\142\242\255\023\151\121
\252\224\120\272\275\000\060\120\365\335\244\116\011\172\224\061
\153\333\163\003\275\363\332\032\017\214\057\262\311\067\274\124
\325\013\043\067\365\344\133\067\146\211\117\264\307\005\244\145
\334\131\060\246\023\053\176\025\355\354\020\027\211\122\311\235
\337\242\114\355\366\017\036\246\111\260\015\121\263\061\261\121
\231\313\264\321\043\170\322\113\250\264\035\026\246\240\320\076
\007\176\145\077\045\316\144\116\033\056\113\115\202\205\032\145
\333\356\342\003\360\131\044\005\217\231\357\171\202\337\356\052
\067\150\303\152\120\001\131\137\237\150\334\054\121\140\053\135
\340\122\074\073\160\270\000\323\067\250\076\133\036\166\010\132
\324\273\166\060\256\371\310\362\216\244\217\012\165\175\032\230
\341\277\320\066\224\057\074\301\122\323\151\352\032\140\067\214
\200\333\115\155\306\232\135\215\240\141\121\273\075\015\346\022
\240\237\157\131\126\164\062\147\012\374\067\006\301\072\344\053
\216\204\037\332\041\014\111\210\103\323\245\365\202\015\166\206
\303\054\314\220\273\263\270\253\306\313\256\300\027\121\236\323
\200\367\044\332\034\354\316\022\203\316\116\066\060\071\165\370
\164\166\220\202\236\076\100\114\014\024\271\032\036\110\152\260
\061\352\210\177\200\101\100\123\173\070\113\207\220\140\172\113
\316\147\106\150\165\167\216\000\135\040\260\344\223\067\155\003
\337\130\071\350\232\305\244\353\354\141\063\010\205\044\153\117

\006\351\255\220\245\066\142\154\343\335\175\011\037\063\277\267
\273\367\311\165\005\367\133\253\372\207\131\257\032\147\020\176
\204\334\214\160\326\104\351\020\301\330\233\056\321\306\100\152
\352\346\132\017\020\175\154\373\125\207\272\115\265\161\003\236
\027\217\170\332\125\075\127\136\042\012\152\230\360\215\010\315
\335\226\102\132\033\315\272\157\047\270\164\047\250\077\345\240
\326\163\307\136\057\041
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANCERT Certificados Notariales V2"
Issuer: CN=ANCERT Certificados Notariales V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Serial Number:09:bd:56:05:2a:13:16:f4:68:4f:74:0e:a9:7d:1c:48
Subject: CN=ANCERT Certificados Notariales V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Not Valid Before: Tue May 25 16:56:14 2010
Not Valid After: Sat May 25 16:56:14 2030
Fingerprint (MD5): 75:70:cb:6e:6b:d6:9b:7d:90:bb:69:5e:59:f0:62:b4
Fingerprint (SHA1): 6f:62:de:b8:6c:85:58:5a:e4:2e:47:8d:b4:d7:6d:b3:67:58:5a:e6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados Notariales V2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\157\142\336\270\154\205\130\132\344\056\107\215\264\327\155\263
\147\130\132\346
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\165\160\313\156\153\326\233\175\220\273\151\136\131\360\142\264
END
CKA_ISSUER MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\052\060\050\006\003\125\004\003\023\041\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\116\157\164\141\162\151\141\154\145\163\040\126\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\011\275\126\005\052\023\026\364\150\117\164\016\251\175
\034\110
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ANCERT Certificados CGN V2"
Issuer: CN=ANCERT Certificados CGN V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Serial Number:0f:38:8c:70:fe:a6:95:5d:e9:5d:9c:87:af:79:04:99
Subject: CN=ANCERT Certificados CGN V2,O=Agencia Notarial de Certificacion S.L.U. - CIF
B83395988,C=ES
Not Valid Before: Tue May 25 16:31:22 2010
Not Valid After: Sat May 25 16:31:23 2030
Fingerprint (MD5): 92:45:af:c3:89:71:e6:87:1d:8e:5a:20:a6:33:0e:93
Fingerprint (SHA1): 7e:b1:a0:42:9b:e5:f4:28:ac:2b:93:97:1d:7c:84:48:a5:36:07:0c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados
 CGN V2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\043\060\041\006\003\125\004\003\023\032\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\103\107\116\040\126\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\043\060\041\006\003\125\004\003\023\032\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\103\107\116\040\126\062
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\020\017\070\214\160\376\246\225\135\351\135\234\207\257\171
\004\231
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\004\060\202\004\354\240\003\002\001\002\002\020\017
\070\214\160\376\246\225\135\351\135\234\207\257\171\004\231\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\165
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\101\060
\077\006\003\125\004\012\023\070\101\147\145\156\143\151\141\040
\116\157\164\141\162\151\141\154\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\123\056\114\056\125\056
\040\055\040\103\111\106\040\102\070\063\063\071\065\071\070\070
\061\043\060\041\006\003\125\004\003\023\032\101\116\103\105\122
\124\040\103\145\162\164\151\146\151\143\141\144\157\163\040\103
\107\116\040\126\062\060\036\027\015\061\060\060\065\062\065\061
\066\063\061\062\062\132\027\015\063\060\060\065\062\065\061\066
\063\061\062\063\132\060\165\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\101\060\077\006\003\125\004\012\023\070\101
\147\145\156\143\151\141\040\116\157\164\141\162\151\141\154\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\156
\040\123\056\114\056\125\056\040\055\040\103\111\106\040\102\070
\063\063\071\065\071\070\070\061\043\060\041\006\003\125\004\003
\023\032\101\116\103\105\122\124\040\103\145\162\164\151\146\151
\143\141\144\157\163\040\103\107\116\040\126\062\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\235\122\160
\351\047\030\203\312\352\304\231\330\246\341\056\024\257\156\036
\016\144\312\201\067\125\047\034\027\167\130\147\037\214\311\371
\302\212\142\145\050\164\233\342\321\276\125\007\166\166\356\174
\155\116\143\133\036\112\045\165\340\007\241\320\322\202\247\316
\017\063\353\272\024\300\145\262\112\056\345\145\274\042\322\257
\032\016\312\313\363\144\145\053\054\231\243\227\213\213\165\060
\376\146\372\301\117\113\067\120\214\077\363\336\231\172\116\207
\234\040\106\162\227\376\126\033\146\116\240\202\123\243\134\330
\050\106\014\005\027\157\070\326\134\237\016\045\042\301\206\343
\134\032\124\333\256\235\145\175\000\222\337\250\041\041\305\133
\020\046\164\341\261\163\127\144\174\175\027\003\014\352\367\024
\227\017\371\305\356\135\165\260\305\306\012\013\264\076\111\343
\031\306\233\104\223\374\132\025\144\012\262\203\377\200\136\210
\011\320\312\040\243\133\373\333\315\341\032\167\043\030\160\032
\213\355\104\077\326\032\250\066\070\341\235\057\247\167\304\172
\263\300\162\262\162\315\036\077\020\136\032\210\164\215\360\022
\305\367\257\111\334\225\257\053\115\264\220\312\371\356\357\014
\343\277\026\067\043\123\343\051\372\364\164\151\150\075\127\155
\024\140\212\144\151\050\144\115\372\066\107\375\270\022\316\303
\206\252\134\334\146\071\007\117\073\343\343\305\150\256\316\340
\071\134\040\203\077\022\012\070\263\000\301\134\023\227\042\136

\072\113\065\231\370\304\036\336\371\210\021\216\204\311\213\062
\362\322\327\277\042\007\077\140\170\056\165\034\242\272\043\022
\323\360\117\120\071\354\311\167\047\307\132\052\216\323\271\265
\164\004\231\025\057\056\206\137\217\006\301\312\352\342\250\037
\115\175\063\204\221\244\222\303\320\246\110\135\146\032\167\204
\040\120\234\352\004\013\014\043\226\317\261\234\374\271\272\037
\227\250\323\253\003\145\057\175\256\124\307\171\342\034\066\335
\155\322\006\230\001\375\316\374\077\113\303\322\256\377\211\330
\071\061\003\330\261\144\167\003\306\370\243\215\374\052\171\347
\020\275\271\155\221\034\076\235\313\274\125\177\042\376\141\204
\370\330\324\247\041\172\071\136\162\062\353\114\165\002\003\001
\000\001\243\202\001\216\060\202\001\212\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\202\001\045\006
\003\125\035\040\004\202\001\034\060\202\001\030\060\202\001\024
\006\011\053\006\001\004\001\201\223\150\004\060\202\001\005\060
\045\006\010\053\006\001\005\005\007\002\001\026\031\150\164\164
\160\072\057\057\167\167\167\056\141\156\143\145\162\164\056\143
\157\155\057\143\160\163\060\201\333\006\010\053\006\001\005\005
\007\002\002\060\201\316\060\015\026\006\101\116\103\105\122\124
\060\003\002\001\001\036\201\274\000\101\000\147\000\145\000\156
\000\143\000\151\000\141\000\040\000\116\000\157\000\164\000\141
\000\162\000\151\000\141\000\154\000\040\000\144\000\145\000\040
\000\103\000\145\000\162\000\164\000\151\000\146\000\151\000\143
\000\141\000\143\000\151\000\157\000\156\000\056\000\040\000\120
\000\141\000\163\000\145\000\157\000\040\000\144\000\145\000\154
\000\240\000\107\000\145\000\156\000\145\000\162\000\141\000\154
\000\040\000\115\000\141\000\162\000\164\000\151\000\156\000\145
\000\172\000\040\000\103\000\141\000\155\000\160\000\157\000\163
\000\040\000\064\000\066\000\040\000\066\000\141\000\040\000\160
\000\154\000\141\000\156\000\164\000\141\000\040\000\062\000\070
\000\060\000\061\000\060\000\040\000\115\000\141\000\144\000\162
\000\151\000\144\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\035\006\003\125\035\016\004\026\004\024\005
\156\341\241\232\356\007\257\316\365\264\323\145\075\004\120\342
\320\233\104\060\037\006\003\125\035\043\004\030\060\026\200\024
\005\156\341\241\232\356\007\257\316\365\264\323\145\075\004\120
\342\320\233\104\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\002\001\000\177\124\100\031\044\312\114\023
\366\023\371\134\142\225\060\325\270\340\223\200\154\324\025\106
\324\047\076\222\122\252\334\201\143\206\100\333\325\045\257\237
\223\154\012\365\115\241\376\124\226\135\207\257\021\223\017\213
\362\343\360\037\112\237\374\251\321\311\120\167\137\230\010\010
\055\172\213\201\020\314\073\002\124\130\345\306\247\364\367\312
\350\366\067\006\176\347\021\327\154\205\143\367\250\243\016\342
\045\142\004\244\362\142\123\234\107\264\247\144\273\201\345\326
\136\126\021\276\105\021\141\302\146\351\364\015\164\250\253\371
\133\277\202\262\221\246\120\373\207\176\157\273\310\353\005\242
\271\020\327\033\102\007\125\317\211\346\277\373\271\360\152\071

\127\123\160\214\275\113\243\151\277\037\213\246\134\115\145\212
\271\000\011\350\150\277\011\047\007\115\136\332\122\011\214\345
\161\223\212\314\205\216\322\067\136\123\334\202\155\013\126\112
\204\171\012\364\020\045\104\365\157\135\032\146\265\315\325\020
\113\207\132\116\324\177\344\161\254\356\150\237\274\372\056\130
\301\304\236\177\244\131\205\340\122\016\362\307\107\165\025\055
\054\166\214\017\105\005\065\140\370\173\073\167\062\177\050\200
\011\332\061\274\161\175\341\254\221\315\140\012\171\040\354\156
\073\267\204\340\162\363\251\112\320\057\344\133\343\322\032\324
\112\274\365\166\371\177\052\031\110\353\335\016\317\231\126\105
\270\175\326\011\216\016\316\263\204\150\111\204\124\065\113\344
\231\033\257\363\250\024\363\124\230\012\200\176\117\274\362\146
\055\046\377\060\215\247\366\275\333\232\217\345\341\337\273\267
\062\016\371\222\157\151\343\344\166\323\000\066\361\055\136\307
\023\137\325\331\152\055\350\321\033\153\166\313\030\156\016\005
\020\365\132\362\111\033\131\264\205\352\312\031\164\314\273\122
\342\067\214\302\152\002\045\302\322\161\244\222\333\216\311\326
\251\156\320\205\050\155\134\155\010\170\002\260\171\014\127\157
\013\132\001\343\204\204\002\366\317\362\253\143\353\002\152\271
\313\112\030\325\071\042\074\126\112\252\225\210\346\060\000\037
\215\041\041\311\127\356\271\267\104\051\210\117\266\053\247\024
\356\216\356\157\276\026\320\023
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANCERT Certificados CGN V2"
Issuer: CN=ANCERT Certificados CGN V2,O=Agencia Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Serial Number:0f:38:8c:70:fe:a6:95:5d:e9:5d:9c:87:af:79:04:99
Subject: CN=ANCERT Certificados CGN V2,O=Agencia
Notarial de Certificacion S.L.U. - CIF B83395988,C=ES
Not Valid Before: Tue May 25 16:31:22 2010
Not Valid After: Sat May 25 16:31:23 2030
Fingerprint (MD5): 92:45:af:c3:89:71:e6:87:1d:8e:5a:20:a6:33:0e:93
Fingerprint (SHA1): 7e:b1:a0:42:9b:e5:f4:28:ac:2b:93:97:1d:7c:84:48:a5:36:07:0c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados CGN V2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\176\261\240\102\233\345\364\050\254\053\223\227\035\174\204\110
\245\066\007\014
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\222\105\257\303\211\161\346\207\035\216\132\040\246\063\016\223
END
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\101\060\077\006\003\125\004\012\023\070\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\125\056\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\043\060\041\006\003\125\004\003\023\032\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\103\107\116\040\126\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\017\070\214\160\376\246\225\135\351\135\234\207\257\171
\004\231
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "EE Certification Centre Root CA"
Issuer: 1.2.840.113549.1.9.1=pki@sk.ee,CN=EE Certification Centre Root CA,O=AS
Sertifitseerimiskeskus,C=EE
Serial Number:54:80:f9:a0:73:ed:3f:00:4c:ca:89:d8:e3:71:e6:4a
Subject: 1.2.840.113549.1.9.1=pki@sk.ee,CN=EE Certification Centre Root CA,O=AS
Sertifitseerimiskeskus,C=EE
Not Valid Before: Sat Oct 30 10:10:30 2010
Not Valid After: Tue Dec 17
23:59:59 2030
Fingerprint (MD5): 43:5e:88:d4:7d:1a:4a:7e:fd:84:2e:52:eb:01:d4:6f
Fingerprint (SHA1): c9:a8:b9:e7:55:80:5e:58:e3:53:77:a7:25:eb:af:c3:7b:27:cc:d7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EE Certification Centre Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\105\061
\042\060\040\006\003\125\004\012\014\031\101\123\040\123\145\162
\164\151\146\151\164\163\145\145\162\151\155\151\163\153\145\163
\153\165\163\061\050\060\046\006\003\125\004\003\014\037\105\105
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\103
\145\156\164\162\145\040\122\157\157\164\040\103\101\061\030\060
\026\006\011\052\206\110\206\367\015\001\011\001\026\011\160\153

\151\100\163\153\056\145\145
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\105\061
\042\060\040\006\003\125\004\012\014\031\101\123\040\123\145\162
\164\151\146\151\164\163\145\145\162\151\155\151\163\153\145\163
\153\165\163\061\050\060\046\006\003\125\004\003\014\037\105\105
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\103
\145\156\164\162\145\040\122\157\157\164\040\103\101\061\030\060
\026\006\011\052\206\110\206\367\015\001\011\001\026\011\160\153
\151\100\163\153\056\145\145
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\124\200\371\240\163\355\077\000\114\312\211\330\343\161
\346\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\003\060\202\002\353\240\003\002\001\002\002\020\124
\200\371\240\163\355\077\000\114\312\211\330\343\161\346\112\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\165
\061\013\060\011\006\003\125\004\006\023\002\105\105\061\042\060
\040\006\003\125\004\012\014\031\101\123\040\123\145\162\164\151
\146\151\164\163\145\145\162\151\155\151\163\153\145\163\153\165
\163\061\050\060\046\006\003\125\004\003\014\037\105\105\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\103\145\156
\164\162\145\040\122\157\157\164\040\103\101\061\030\060\026\006
\011\052\206\110\206\367\015\001\011\001\026\011\160\153\151\100
\163\153\056\145\145\060\042\030\017\062\060\061\060\061\060\063
\060\061\060\061\060\063\060\132\030\017\062\060\063\060\061\062
\061\067\062\063\065\071\065\071\132\060\165\061\013\060\011\006
\003\125\004\006\023\002\105\105\061\042\060\040\006\003\125\004
\012\014\031\101\123\040\123\145\162\164\151\146\151\164\163\145
\145\162\151\155\151\163\153\145\163\153\165\163\061\050\060\046
\006\003\125\004\003\014\037\105\105\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\103\145\156\164\162\145\040\122
\157\157\164\040\103\101\061\030\060\026\006\011\052\206\110\206
\367\015\001\011\001\026\011\160\153\151\100\163\153\056\145\145
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\310\040\300\354\340\305\113\253\007\170\225\363\104\356\373
\013\014\377\164\216\141\273\261\142\352\043\330\253\241\145\062
\172\353\216\027\117\226\330\012\173\221\242\143\154\307\214\114
\056\171\277\251\005\374\151\134\225\215\142\371\271\160\355\303
\121\175\320\223\346\154\353\060\113\341\274\175\277\122\233\316
\156\173\145\362\070\261\300\242\062\357\142\262\150\340\141\123
\301\066\225\377\354\224\272\066\256\234\034\247\062\017\345\174

\264\306\157\164\375\173\030\350\254\127\355\006\040\113\062\060
\130\133\375\315\250\346\241\374\160\274\216\222\163\333\227\247
\174\041\256\075\301\365\110\207\154\047\275\237\045\164\201\125
\260\367\165\366\075\244\144\153\326\117\347\316\100\255\017\335
\062\323\274\212\022\123\230\311\211\373\020\035\115\176\315\176
\037\126\015\041\160\205\366\040\203\037\366\272\037\004\217\352
\167\210\065\304\377\352\116\241\213\115\077\143\033\104\303\104
\324\045\166\312\267\215\327\036\112\146\144\315\134\305\234\203
\341\302\010\210\232\354\116\243\361\076\034\054\331\154\035\241
\113\002\003\001\000\001\243\201\212\060\201\207\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\022\362\132\076\352\126\034\277
\315\006\254\361\361\045\311\251\113\324\024\231\060\105\006\003
\125\035\045\004\076\060\074\006\010\053\006\001\005\005\007\003
\002\006\010\053\006\001\005\005\007\003\001\006\010\053\006\001
\005\005\007\003\003\006\010\053\006\001\005\005\007\003\004\006
\010\053\006\001\005\005\007\003\010\006\010\053\006\001\005\005
\007\003\011\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\001\001\000\173\366\344\300\015\252\031\107\267
\115\127\243\376\255\273\261\152\325\017\236\333\344\143\305\216
\241\120\126\223\226\270\070\300\044\042\146\274\123\024\141\225
\277\320\307\052\226\071\077\175\050\263\020\100\041\152\304\257
\260\122\167\030\341\226\330\126\135\343\335\066\136\035\247\120
\124\240\305\052\344\252\214\224\212\117\235\065\377\166\244\006
\023\221\242\242\175\000\104\077\125\323\202\074\032\325\133\274
\126\114\042\056\106\103\212\044\100\055\363\022\270\073\160\032
\244\226\271\032\257\207\101\032\152\030\015\006\117\307\076\156
\271\051\115\015\111\211\021\207\062\133\346\113\004\310\344\134
\346\164\163\224\135\026\230\023\225\376\373\333\261\104\345\072
\160\254\067\153\346\263\063\162\050\311\263\127\240\366\002\026
\210\006\013\266\246\113\040\050\324\336\075\213\255\067\005\123
\164\376\156\314\274\103\027\161\136\371\305\314\032\251\141\356
\367\166\014\363\162\364\162\255\317\162\002\066\007\107\317\357
\031\120\211\140\314\351\044\225\017\302\313\035\362\157\166\220
\307\314\165\301\226\305\235
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "EE Certification Centre Root CA"
#
Issuer: 1.2.840.113549.1.9.1=pki@sk.ee,CN=EE Certification Centre Root CA,O=AS Sertifitseerimiskeskus,C=EE
Serial Number:54:80:f9:a0:73:ed:3f:00:4c:ca:89:d8:e3:71:e6:4a
Subject: 1.2.840.113549.1.9.1=pki@sk.ee,CN=EE Certification Centre Root CA,O=AS

Sertifitseerimiskeskus,C=EE
Not Valid Before: Sat Oct 30 10:10:30 2010
Not Valid After: Tue Dec 17 23:59:59 2030
Fingerprint (MD5): 43:5e:88:d4:7d:1a:4a:7e:fd:84:2e:52:eb:01:d4:6f
Fingerprint (SHA1): c9:a8:b9:e7:55:80:5e:58:e3:53:77:a7:25:eb:af:c3:7b:27:cc:d7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EE Certification Centre Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\311\250\271\347\125\200\136\130\343\123\167\247\045\353\257\303
\173\047\314\327
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\103\136\210\324\175\032\112\176\375\204\056\122\353\001\324\157
END
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\105\105\061
\042\060\040\006\003\125\004\012\014\031\101\123\040\123\145\162
\164\151\146\151\164\163\145\145\162\151\155\151\163\153\145\163
\153\165\163\061\050\060\046\006\003\125\004\003\014\037\105\105
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\103
\145\156\164\162\145\040\122\157\157\164\040\103\101\061\030\060
\026\006\011\052\206\110\206\367\015\001\011\001\026\011\160\153
\151\100\163\153\056\145\145
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\124\200\371\240\163\355\077\000\114\312\211\330\343\161
\346\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Autoridad de Certificacion Raiz del Estado Venezolano"
Issuer: 1.2.840.113549.1.9.1=acraiz@suscerte.gob.ve,OU=Superintendencia de Servicios de Certificacion Electronica,O=Sistema
Nacional de Certificacion Electronica,ST=Distrito Capital,L=Caracas,C=VE,CN=Autoridad de Certificacion Raiz del Estado Venezolano
Serial Number: 10 (0xa)
Subject: 1.2.840.113549.1.9.1=acraiz@suscerte.gob.ve,OU=Superintendencia de Servicios de Certificacion Electronica,O=Sistema Nacional de Certificacion Electronica,ST=Distrito Capital,L=Caracas,C=VE,CN=Autoridad de Certificacion Raiz del Estado Venezolano
Not Valid Before: Tue Dec 28 16:41:36 2010

Not Valid After: Mon Dec 23 23:59:59 2030
Fingerprint (MD5): 96:14:69:08:a8:36:59:d7:a0:35:14:89:58:50:5b:ab
Fingerprint (SHA1): 39:8e:be:9c:0f:46:c0:79:c3:c7:af:e0:7a:2f:dd:9f:ae:5f:8a:5c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Raiz del Estado Venezolano"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\202\001\036\061\076\060\074\006\003\125\004\003\023\065\101
\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\122\141\151\172\040\144
\145\154\040\105\163\164\141\144\157\040\126\145\156\145\172\157
\154\141\156\157\061\013\060\011\006\003\125\004\006\023\002\126
\105\061\020\060\016\006\003\125\004\007\023\007\103\141\162\141
\143\141\163\061\031\060\027\006\003\125\004\010\023\020\104\151
\163\164\162\151\164\157\040\103\141\160\151\164\141\154\061\066
\060\064\006\003\125\004\012\023\055\123\151\163\164\145\155\141
\040\116\141\143\151\157\156\141\154\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\105\154\145\143\164
\162\157\156\151\143\141\061\103\060\101\006\003\125\004\013\023
\072\123\165\160\145\162\151\156\164\145\156\144\145\156\143\151
\141\040\144\145\040\123\145\162\166\151\143\151\157\163\040\144
\145\040\103\145\162\164\151\146\151\143\141\143\151\157\156\040
\105\154\145\143\164\162\157\156\151\143\141\061\045\060\043\006
\011\052\206\110\206\367\015\001\011\001\026\026\141\143\162\141
\151\172\100\163\165\163\143\145\162\164\145\056\147\157\142\056
\166\145
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\036\061\076\060\074\006\003\125\004\003\023\065\101
\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\122\141\151\172\040\144
\145\154\040\105\163\164\141\144\157\040\126\145\156\145\172\157
\154\141\156\157\061\013\060\011\006\003\125\004\006\023\002\126
\105\061\020\060\016\006\003\125\004\007\023\007\103\141\162\141
\143\141\163\061\031\060\027\006\003\125\004\010\023\020\104\151
\163\164\162\151\164\157\040\103\141\160\151\164\141\154\061\066
\060\064\006\003\125\004\012\023\055\123\151\163\164\145\155\141
\040\116\141\143\151\157\156\141\154\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\105\154\145\143\164
\162\157\156\151\143\141\061\103\060\101\006\003\125\004\013\023
\072\123\165\160\145\162\151\156\164\145\156\144\145\156\143\151
\141\040\144\145\040\123\145\162\166\151\143\151\157\163\040\144
\145\040\103\145\162\164\151\146\151\143\141\143\151\157\156\040

\105\154\145\143\164\162\157\156\151\143\141\061\045\060\043\006
\011\052\206\110\206\367\015\001\011\001\026\026\141\143\162\141
\151\172\100\163\165\163\143\145\162\164\145\056\147\157\142\056
\166\145
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\012
END
CKA_VALUE MULTILINE_OCTAL
\060\202\011\230\060\202\007\200\240\003\002\001\002\002\001\012
\060\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060
\202\001\036\061\076\060\074\006\003\125\004\003\023\065\101\165
\164\157\162\151\144\141\144\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\156\040\122\141\151\172\040\144\145
\154\040\105\163\164\141\144\157\040\126\145\156\145\172\157\154
\141\156\157\061\013\060\011\006\003\125\004\006\023\002\126\105
\061\020\060\016\006\003\125\004\007\023\007\103\141\162\141\143
\141\163\061\031\060\027\006\003\125\004\010\023\020\104\151\163
\164\162\151\164\157\040\103\141\160\151\164\141\154\061\066\060
\064\006\003\125\004\012\023\055\123\151\163\164\145\155\141\040
\116\141\143\151\157\156\141\154\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\105\154\145\143\164\162
\157\156\151\143\141\061\103\060\101\006\003\125\004\013\023\072
\123\165\160\145\162\151\156\164\145\156\144\145\156\143\151\141
\040\144\145\040\123\145\162\166\151\143\151\157\163\040\144\145
\040\103\145\162\164\151\146\151\143\141\143\151\157\156\040\105
\154\145\143\164\162\157\156\151\143\141\061\045\060\043\006\011
\052\206\110\206\367\015\001\011\001\026\026\141\143\162\141\151
\172\100\163\165\163\143\145\162\164\145\056\147\157\142\056\166
\145\060\036\027\015\061\060\061\062\062\070\061\066\064\061\063
\066\132\027\015\063\060\061\062\062\063\062\063\065\071\065\071
\132\060\202\001\036\061\076\060\074\006\003\125\004\003\023\065
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\122\141\151\172\040
\144\145\154\040\105\163\164\141\144\157\040\126\145\156\145\172
\157\154\141\156\157\061\013\060\011\006\003\125\004\006\023\002
\126\105\061\020\060\016\006\003\125\004\007\023\007\103\141\162
\141\143\141\163\061\031\060\027\006\003\125\004\010\023\020\104
\151\163\164\162\151\164\157\040\103\141\160\151\164\141\154\061
\066\060\064\006\003\125\004\012\023\055\123\151\163\164\145\155
\141\040\116\141\143\151\157\156\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\105\154\145\143
\164\162\157\156\151\143\141\061\103\060\101\006\003\125\004\013
\023\072\123\165\160\145\162\151\156\164\145\156\144\145\156\143
\151\141\040\144\145\040\123\145\162\166\151\143\151\157\163\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\156
\040\105\154\145\143\164\162\157\156\151\143\141\061\045\060\043

\006\011\052\206\110\206\367\015\001\011\001\026\026\141\143\162
\141\151\172\100\163\165\163\143\145\162\164\145\056\147\157\142
\056\166\145\060\202\002\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002
\202\002\001\000\301\073\357\023\122\361\231\126\343\264\154\005
\341\032\151\026\141\046\206\170\257\016\374\345\100\005\012\343
\331\070\005\114\250\324\265\300\306\052\317\057\171\253\241\244
\120\357\065\021\037\356\202\044\027\374\243\034\253\376\007\006
\177\067\177\007\130\133\023\331\177\000\137\053\260\117\332\237
\311\260\130\063\141\341\117\320\025\316\056\153\350\044\214\345
\045\276\205\133\355\114\077\001\201\216\346\231\030\122\046\131
\233\022\230\145\034\225\276\165\231\026\014\144\104\341\367\362
\171\010\264\341\107\127\261\112\334\107\102\233\160\113\072\332
\314\321\151\221\006\077\316\150\373\371\206\115\003\334\203\242
\272\025\026\376\254\311\266\016\147\263\261\064\072\073\316\104
\213\243\216\110\356\003\060\267\032\226\147\305\144\045\231\002
\363\352\164\165\176\246\222\025\023\321\000\025\353\206\134\364
\173\031\210\177\350\056\021\044\136\070\153\201\235\274\160\136
\367\061\162\052\057\035\137\310\316\044\074\175\162\070\230\277
\107\275\247\063\002\373\017\344\235\352\146\140\043\115\371\117
\033\207\135\315\277\270\354\027\174\252\353\116\066\211\017\077
\011\247\240\335\172\313\016\223\022\040\220\245\321\214\377\205
\053\174\336\336\176\015\120\204\106\204\144\155\312\361\043\053
\336\177\332\015\066\267\243\336\142\046\025\032\352\372\256\344
\270\366\175\021\001\244\222\323\362\311\157\245\363\150\000\036
\322\151\216\331\353\347\022\254\110\053\014\266\231\224\115\075
\360\025\133\131\167\300\051\326\211\114\053\310\025\072\072\306
\305\160\121\153\102\157\264\323\003\242\161\173\316\114\160\114
\152\040\225\001\126\123\157\324\122\057\050\276\054\235\145\227
\062\131\073\172\152\334\204\142\210\030\367\360\332\050\243\355
\231\065\263\004\162\044\240\232\050\073\141\166\224\162\153\235
\111\124\057\055\042\376\143\017\222\251\254\062\173\074\031\270
\004\233\247\267\177\322\273\255\103\237\135\363\134\345\154\313
\167\047\274\201\347\256\353\117\142\052\043\047\120\362\240\126
\223\347\346\137\070\041\137\357\305\211\326\054\207\366\212\373
\066\173\133\056\274\220\241\356\314\114\065\126\251\032\267\220
\306\263\345\163\002\003\001\000\001\243\202\002\333\060\202\002
\327\060\022\006\003\125\035\023\001\001\377\004\010\060\006\001
\001\377\002\001\002\060\067\006\003\125\035\022\004\060\060\056
\202\017\163\165\163\143\145\162\164\145\056\147\157\142\056\166
\145\240\033\006\005\140\206\136\002\002\240\022\014\020\122\111
\106\055\107\055\062\060\060\060\064\060\063\066\055\060\060\035
\006\003\125\035\016\004\026\004\024\255\273\042\035\306\340\322
\001\250\375\166\120\122\223\355\230\301\115\256\323\060\202\001
\120\006\003\125\035\043\004\202\001\107\060\202\001\103\200\024
\255\273\042\035\306\340\322\001\250\375\166\120\122\223\355\230
\301\115\256\323\241\202\001\046\244\202\001\042\060\202\001\036
\061\076\060\074\006\003\125\004\003\023\065\101\165\164\157\162

\151\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143
\141\143\151\157\156\040\122\141\151\172\040\144\145\154\040\105
\163\164\141\144\157\040\126\145\156\145\172\157\154\141\156\157
\061\013\060\011\006\003\125\004\006\023\002\126\105\061\020\060
\016\006\003\125\004\007\023\007\103\141\162\141\143\141\163\061
\031\060\027\006\003\125\004\010\023\020\104\151\163\164\162\151
\164\157\040\103\141\160\151\164\141\154\061\066\060\064\006\003
\125\004\012\023\055\123\151\163\164\145\155\141\040\116\141\143
\151\157\156\141\154\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\157\156\040\105\154\145\143\164\162\157\156\151
\143\141\061\103\060\101\006\003\125\004\013\023\072\123\165\160
\145\162\151\156\164\145\156\144\145\156\143\151\141\040\144\145
\040\123\145\162\166\151\143\151\157\163\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\105\154\145\143
\164\162\157\156\151\143\141\061\045\060\043\006\011\052\206\110
\206\367\015\001\011\001\026\026\141\143\162\141\151\172\100\163
\165\163\143\145\162\164\145\056\147\157\142\056\166\145\202\001
\012\060\013\006\003\125\035\017\004\004\003\002\001\006\060\067
\006\003\125\035\021\004\060\060\056\202\017\163\165\163\143\145
\162\164\145\056\147\157\142\056\166\145\240\033\006\005\140\206
\136\002\002\240\022\014\020\122\111\106\055\107\055\062\060\060
\060\064\060\063\066\055\060\060\124\006\003\125\035\037\004\115
\060\113\060\044\240\042\240\040\206\036\150\164\164\160\072\057
\057\167\167\167\056\163\165\163\143\145\162\164\145\056\147\157
\142\056\166\145\057\154\143\162\060\043\240\041\240\037\206\035
\154\144\141\160\072\057\057\141\143\162\141\151\172\056\163\165
\163\143\145\162\164\145\056\147\157\142\056\166\145\060\067\006
\010\053\006\001\005\005\007\001\001\004\053\060\051\060\047\006
\010\053\006\001\005\005\007\060\001\206\033\150\164\164\160\072
\057\057\157\143\163\160\056\163\165\163\143\145\162\164\145\056
\147\157\142\056\166\145\060\100\006\003\125\035\040\004\071\060
\067\060\065\006\005\140\206\136\001\002\060\054\060\052\006\010
\053\006\001\005\005\007\002\001\026\036\150\164\164\160\072\057
\057\167\167\167\056\163\165\163\143\145\162\164\145\056\147\157
\142\056\166\145\057\144\160\143\060\015\006\011\052\206\110\206
\367\015\001\001\014\005\000\003\202\002\001\000\034\131\020\345
\136\244\121\301\107\273\145\262\013\125\342\057\251\243\047\274
\341\074\212\307\154\003\126\243\251\051\242\233\212\225\330\037
\367\266\022\140\026\276\172\364\375\003\201\117\375\201\201\252
\117\201\160\036\056\357\300\222\022\173\273\017\205\210\304\371
\035\101\265\272\044\052\303\050\046\023\312\371\000\373\327\303
\134\371\150\351\033\301\030\042\311\242\154\144\303\370\071\303
\116\041\335\326\302\336\345\266\054\311\134\070\360\336\136\152
\344\047\364\270\063\304\313\141\222\063\123\250\314\374\235\315
\123\373\050\013\357\355\177\260\217\164\042\266\065\127\200\250
\256\005\256\051\012\073\262\244\375\075\343\324\301\220\366\077
\316\274\344\104\376\321\301\176\050\057\375\000\044\062\040\210
\304\157\030\173\221\016\110\220\274\226\142\140\201\155\024\000

\032\121\272\265\135\151\215\141\107\034\054\254\116\105\040\251
\110\105\243\207\111\243\170\220\335\066\102\177\330\166\157\375
\155\203\001\306\371\177\230\040\177\226\056\042\140\253\242\047
\300\260\065\044\320\311\277\063\231\042\123\016\156\037\142\114
\046\374\044\063\312\301\003\314\251\027\141\143\063\044\314\150
\100\357\257\242\342\205\303\210\060\323\105\033\356\126\352\126
\012\017\012\107\233\060\131\330\111\321\060\220\014\047\052\046
\010\050\134\062\037\047\327\255\013\111\345\027\121\143\317\346
\015\073\140\121\032\275\103\011\120\346\221\265\143\346\144\227
\252\013\227\023\001\006\206\134\245\037\225\276\120\216\013\262
\322\144\177\333\253\114\346\103\306\344\205\215\152\376\215\376
\273\224\125\036\221\123\047\010\323\272\147\075\072\241\311\301
\305\024\272\371\103\134\305\216\041\214\202\242\375\052\062\045
\325\026\214\025\126\300\230\374\056\262\216\031\244\026\161\303
\113\335\161\376\161\354\042\035\360\301\214\230\201\207\264\277
\002\270\304\060\061\107\302\300\260\257\173\063\143\012\335\254
\105\233\301\314\200\207\364\331\230\136\234\206\376\232\004\377
\146\112\374\173\141\124\276\127\143\005\007\306\247\001\165\131
\344\156\071\073\000\364\252\235\363\237\210\277\317\321\045\053
\337\177\163\355\026\206\251\220\145\017\160\051
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Autoridad de Certificacion Raiz del Estado Venezolano"
Issuer: 1.2.840.113549.1.9.1=acraiz@suscerte.gob.ve,OU=Superintendencia de Servicios de Certificacion Electronica,O=Sistema Nacional de Certificacion Electronica,ST=Distrito Capital,L=Caracas,C=VE,CN=Autoridad de Certificacion Raiz del Estado Venezolano
Serial Number: 10 (0xa)
Subject: 1.2.840.113549.1.9.1=acraiz@suscerte.gob.ve,OU=Superintendencia
de Servicios de Certificacion Electronica,O=Sistema Nacional de Certificacion Electronica,ST=Distrito Capital,L=Caracas,C=VE,CN=Autoridad de Certificacion Raiz del Estado Venezolano
Not Valid Before: Tue Dec 28 16:41:36 2010
Not Valid After: Mon Dec 23 23:59:59 2030
Fingerprint (MD5): 96:14:69:08:a8:36:59:d7:a0:35:14:89:58:50:5b:ab
Fingerprint (SHA1): 39:8e:be:9c:0f:46:c0:79:c3:c7:af:e0:7a:2f:dd:9f:ae:5f:8a:5c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion Raiz del Estado Venezolano"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\216\276\234\017\106\300\171\303\307\257\340\172\057\335\237
\256\137\212\134
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\226\024\151\010\250\066\131\327\240\065\024\211\130\120\133\253
END
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\036\061\076\060\074\006\003\125\004\003\023\065\101
\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\122\141\151\172\040\144
\145\154\040\105\163\164\141\144\157\040\126\145\156\145\172\157
\154\141\156\157\061\013\060\011\006\003\125\004\006\023\002\126
\105\061\020\060\016\006\003\125\004\007\023\007\103\141\162\141
\143\141\163\061\031\060\027\006\003\125\004\010\023\020\104\151
\163\164\162\151\164\157\040\103\141\160\151\164\141\154\061\066
\060\064\006\003\125\004\012\023\055\123\151\163\164\145\155\141
\040\116\141\143\151\157\156\141\154\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\105\154\145\143\164
\162\157\156\151\143\141\061\103\060\101\006\003\125\004\013\023
\072\123\165\160\145\162\151\156\164\145\156\144\145\156\143\151
\141\040\144\145\040\123\145\162\166\151\143\151\157\163\040\144
\145\040\103\145\162\164\151\146\151\143\141\143\151\157\156\040
\105\154\145\143\164\162\157\156\151\143\141\061\045\060\043\006
\011\052\206\110\206\367\015\001\011\001\026\026\141\143\162\141
\151\172\100\163\165\163\143\145\162\164\145\056\147\157\142\056
\166\145
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\012
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "China Internet Network Information Center EV Certificates Root"
Issuer: CN=China Internet Network Information Center EV Certificates Root,O=China Internet Network Information Center,C=CN
Serial Number:48:9f:00:01
Subject: CN=China Internet Network Information Center EV Certificates Root,O=China Internet Network Information Center,C=CN
Not Valid Before: Tue Aug 31 07:11:25 2010
Not Valid After: Sat Aug 31 07:11:25 2030
Fingerprint (MD5): 55:5d:63:00:97:bd:6a:97:f5:67:ab:4b:fb:6e:63:15
Fingerprint (SHA1): 4f:99:aa:93:fb:2b:d1:37:26:a1:99:4a:ce:7f:f0:05:f2:93:5d:1e
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "China Internet Network Information Center EV Certificates Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\116
\061\062\060\060\006\003\125\004\012\014\051\103\150\151\156\141
\040\111\156\164\145\162\156\145\164\040\116\145\164\167\157\162
\153\040\111\156\146\157\162\155\141\164\151\157\156\040\103\145
\156\164\145\162\061\107\060\105\006\003\125\004\003\014\076\103
\150\151\156\141\040\111\156\164\145\162\156\145\164\040\116\145
\164\167\157\162\153\040\111\156\146\157\162\155\141\164\151\157
\156\040\103\145\156\164\145\162\040\105\126\040\103\145\162\164
\151\146\151\143\141\164\145\163\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\116
\061\062\060\060\006\003\125\004\012\014\051\103\150\151\156\141
\040\111\156\164\145\162\156\145\164\040\116\145\164\167\157\162
\153\040\111\156\146\157\162\155\141\164\151\157\156\040\103\145
\156\164\145\162\061\107\060\105\006\003\125\004\003\014\076\103
\150\151\156\141\040\111\156\164\145\162\156\145\164\040\116\145
\164\167\157\162\153\040\111\156\146\157\162\155\141\164\151\157
\156\040\103\145\156\164\145\162\040\105\126\040\103\145\162\164
\151\146\151\143\141\164\145\163\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\110\237\000\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\367\060\202\002\337\240\003\002\001\002\002\004\110
\237\000\001\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\212\061\013\060\011\006\003\125\004\006\023\002
\103\116\061\062\060\060\006\003\125\004\012\014\051\103\150\151
\156\141\040\111\156\164\145\162\156\145\164\040\116\145\164\167
\157\162\153\040\111\156\146\157\162\155\141\164\151\157\156\040
\103\145\156\164\145\162\061\107\060\105\006\003\125\004\003\014
\076\103\150\151\156\141\040\111\156\164\145\162\156\145\164\040
\116\145\164\167\157\162\153\040\111\156\146\157\162\155\141\164
\151\157\156\040\103\145\156\164\145\162\040\105\126\040\103\145
\162\164\151\146\151\143\141\164\145\163\040\122\157\157\164\060
\036\027\015\061\060\060\070\063\061\060\067\061\061\062\065\132
\027\015\063\060\060\070\063\061\060\067\061\061\062\065\132\060
\201\212\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\062\060\060\006\003\125\004\012\014\051\103\150\151\156\141\040
\111\156\164\145\162\156\145\164\040\116\145\164\167\157\162\153
\040\111\156\146\157\162\155\141\164\151\157\156\040\103\145\156

\164\145\162\061\107\060\105\006\003\125\004\003\014\076\103\150
\151\156\141\040\111\156\164\145\162\156\145\164\040\116\145\164
\167\157\162\153\040\111\156\146\157\162\155\141\164\151\157\156
\040\103\145\156\164\145\162\040\105\126\040\103\145\162\164\151
\146\151\143\141\164\145\163\040\122\157\157\164\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\233\176\163
\356\275\073\170\252\144\103\101\365\120\337\224\362\056\262\215
\112\216\106\124\322\041\022\310\071\062\102\006\351\203\325\237
\122\355\345\147\003\073\124\301\214\231\231\314\351\300\017\377
\015\331\204\021\262\270\321\313\133\334\036\371\150\061\144\341
\233\372\164\353\150\271\040\225\367\306\017\215\107\254\132\006
\335\141\253\342\354\330\237\027\055\234\312\074\065\227\125\161
\315\103\205\261\107\026\365\054\123\200\166\317\323\000\144\275
\100\231\335\314\330\333\304\237\326\023\137\101\203\213\371\015
\207\222\126\064\154\032\020\013\027\325\132\034\227\130\204\074
\204\032\056\134\221\064\156\031\137\177\027\151\305\145\357\153
\041\306\325\120\072\277\141\271\005\215\357\157\064\072\262\157
\024\143\277\026\073\233\251\052\375\267\053\070\146\006\305\054
\342\252\147\036\105\247\215\004\146\102\366\217\053\357\210\040
\151\217\062\214\024\163\332\053\206\221\143\042\232\362\247\333
\316\211\213\253\135\307\024\301\133\060\152\037\261\267\236\056
\201\001\002\355\317\226\136\143\333\250\346\070\267\002\003\001
\000\001\243\143\060\141\060\037\006\003\125\035\043\004\030\060
\026\200\024\174\162\113\071\307\300\333\142\245\117\233\252\030
\064\222\242\312\203\202\131\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\174\162\113\071\307\300\333\142\245\117\233\252\030
\064\222\242\312\203\202\131\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\052\303\307\103\067
\217\335\255\244\262\014\356\334\024\155\217\050\244\230\111\313
\014\200\352\363\355\043\146\165\175\305\323\041\147\171\321\163
\305\265\003\267\130\254\014\124\057\306\126\023\017\061\332\006
\347\145\073\035\157\066\333\310\035\371\375\200\006\312\243\075
\146\026\250\235\114\026\175\300\225\106\265\121\344\342\037\327
\352\006\115\143\215\226\214\357\347\063\127\102\072\353\214\301
\171\310\115\166\175\336\366\261\267\201\340\240\371\241\170\106
\027\032\126\230\360\116\075\253\034\355\354\071\334\007\110\367
\143\376\006\256\302\244\134\152\133\062\210\305\307\063\205\254
\146\102\107\302\130\044\231\341\345\076\345\165\054\216\103\326
\135\074\170\036\250\225\202\051\120\321\321\026\272\357\301\276
\172\331\264\330\314\036\114\106\341\167\261\061\253\275\052\310
\316\217\156\241\135\177\003\165\064\344\255\211\105\124\136\276
\256\050\245\273\077\170\171\353\163\263\012\015\375\276\311\367
\126\254\366\267\355\057\233\041\051\307\070\266\225\304\004\362
\303\055\375\024\052\220\231\271\007\314\237
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "China Internet Network Information Center EV Certificates Root"
Issuer:
CN=China Internet Network Information Center EV Certificates Root,O=China Internet Network Information Center,C=CN
Serial Number:48:9f:00:01
Subject: CN=China Internet Network Information Center EV Certificates Root,O=China Internet Network Information Center,C=CN
Not Valid Before: Tue Aug 31 07:11:25 2010
Not Valid After: Sat Aug 31 07:11:25 2030
Fingerprint (MD5): 55:5d:63:00:97:bd:6a:97:f5:67:ab:4b:fb:6e:63:15
Fingerprint (SHA1): 4f:99:aa:93:fb:2b:d1:37:26:a1:99:4a:ce:7f:f0:05:f2:93:5d:1e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "China Internet Network Information Center EV Certificates Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\117\231\252\223\373\053\321\067\046\241\231\112\316\177\360\005
\362\223\135\036
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\125\135\143\000\227\275\152\227\365\147\253\113\373\156\143\025
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\103\116
\061\062\060\060\006\003\125\004\012\014\051\103\150\151\156\141
\040\111\156\164\145\162\156\145\164\040\116\145\164\167\157\162
\153\040\111\156\146\157\162\155\141\164\151\157\156\040\103\145
\156\164\145\162\061\107\060\105\006\003\125\004\003\014\076\103
\150\151\156\141\040\111\156\164\145\162\156\145\164\040\116\145
\164\167\157\162\153\040\111\156\146\157\162\155\141\164\151\157
\156\040\103\145\156\164\145\162\040\105\126\040\103\145\162\164
\151\146\151\143\141\164\145\163\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\110\237\000\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Verizon Global Root CA"
Issuer: CN=Verizon Global Root CA,OU=OmniRoot,O=Verizon Business,C=US
Serial Number:
 1 (0x1)
Subject: CN=Verizon Global Root CA,OU=OmniRoot,O=Verizon Business,C=US
Not Valid Before: Thu Jul 30 14:27:04 2009
Not Valid After: Sun Jul 30 14:27:04 2034
Fingerprint (MD5): f4:c3:f3:e9:53:c2:94:65:27:3d:52:89:f1:8e:5b:1c
Fingerprint (SHA1): 91:21:98:ee:f2:3d:ca:c4:09:39:31:2f:ee:97:dd:56:0b:ae:49:b1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verizon Global Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\031\060\027\006\003\125\004\012\014\020\126\145\162\151\172\157
\156\040\102\165\163\151\156\145\163\163\061\021\060\017\006\003
\125\004\013\014\010\117\155\156\151\122\157\157\164\061\037\060
\035\006\003\125\004\003\014\026\126\145\162\151\172\157\156\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\031\060\027\006\003\125\004\012\014\020\126\145\162\151\172\157
\156\040\102\165\163\151\156\145\163\163\061\021\060\017\006\003
\125\004\013\014\010\117\155\156\151\122\157\157\164\061\037\060
\035\006\003\125\004\003\014\026\126\145\162\151\172\157\156\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\165\060\202\002\135\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\134\061\013\060\011\006\003\125\004\006\023\002\125\123\061\031
\060\027\006\003\125\004\012\014\020\126\145\162\151\172\157\156
\040\102\165\163\151\156\145\163\163\061\021\060\017\006\003\125
\004\013\014\010\117\155\156\151\122\157\157\164\061\037\060\035
\006\003\125\004\003\014\026\126\145\162\151\172\157\156\040\107
\154\157\142\141\154\040\122\157\157\164\040\103\101\060\036\027
\015\060\071\060\067\063\060\061\064\062\067\060\064\132\027\015

\063\064\060\067\063\060\061\064\062\067\060\064\132\060\134\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\031\060\027
\006\003\125\004\012\014\020\126\145\162\151\172\157\156\040\102
\165\163\151\156\145\163\163\061\021\060\017\006\003\125\004\013
\014\010\117\155\156\151\122\157\157\164\061\037\060\035\006\003
\125\004\003\014\026\126\145\162\151\172\157\156\040\107\154\157
\142\141\154\040\122\157\157\164\040\103\101\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\212\000\014\160
\035\277\353\064\206\303\231\105\065\036\177\103\367\253\157\044
\055\315\031\302\020\273\260\312\051\133\251\040\253\253\162\054
\304\342\002\071\155\202\270\305\021\352\370\373\263\236\142\370
\063\036\260\037\311\343\366\067\333\004\310\073\143\117\066\342
\205\244\045\035\307\151\037\004\275\150\105\023\226\007\037\224
\120\365\076\305\047\124\236\300\111\127\104\216\007\143\324\246
\256\355\042\231\314\115\226\151\004\023\156\166\211\237\164\026
\224\371\035\124\275\242\271\322\203\001\042\014\115\104\200\252
\376\065\211\047\045\247\206\211\306\325\032\222\343\217\305\225
\240\024\162\232\350\126\305\002\125\034\227\371\040\056\320\365
\074\023\031\132\366\341\371\013\003\202\151\247\214\267\326\157
\234\126\076\235\350\052\011\140\155\113\346\373\213\231\024\367
\064\117\145\131\200\215\271\127\310\242\065\041\330\210\161\126
\135\356\202\127\055\046\220\030\237\232\234\234\217\357\324\305
\143\247\124\175\107\221\207\175\032\022\250\033\030\157\251\157
\261\047\272\344\004\164\316\067\036\177\146\305\002\003\001\000
\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\114\070\021\270\230\000\133\132\053\160\076\252\170\344\325
\147\147\147\247\176\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\001\137\240\261\006\001\364
\171\327\145\030\140\076\317\171\240\272\302\043\117\043\337\207
\226\137\201\016\070\025\056\134\310\002\150\051\040\374\213\356
\245\212\030\201\144\134\230\065\176\071\060\202\244\202\212\120
\265\272\303\350\132\326\250\236\342\303\027\333\333\304\353\260
\012\040\015\351\236\343\377\140\124\107\361\073\235\324\050\074
\242\256\243\373\252\213\202\042\052\065\207\220\270\034\131\107
\220\325\235\056\372\111\343\145\250\066\353\307\344\034\150\334
\263\061\154\253\116\316\044\200\025\310\020\131\020\021\162\115
\172\234\230\234\304\374\141\340\263\262\235\116\240\306\302\131
\253\030\326\242\125\105\354\051\252\045\067\326\116\112\075\013
\100\301\344\223\344\374\315\221\013\370\346\253\314\263\166\304
\142\277\031\355\206\266\171\303\051\124\124\274\231\175\106\127
\317\246\317\364\124\052\232\003\145\107\001\241\102\052\313\045
\107\156\174\136\000\113\221\331\371\033\020\006\160\371\102\025
\246\137\252\327\100\036\375\311\110\235\227\201\352\134\150\302
\240\347\211\241\123\115\277\307\343
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Verizon Global Root CA"
Issuer: CN=Verizon Global Root CA,OU=OmniRoot,O=Verizon Business,C=US
Serial Number: 1 (0x1)
Subject: CN=Verizon Global Root CA,OU=OmniRoot,O=Verizon Business,C=US
Not Valid Before: Thu Jul 30 14:27:04 2009
Not Valid After: Sun Jul 30 14:27:04 2034
Fingerprint (MD5): f4:c3:f3:e9:53:c2:94:65:27:3d:52:89:f1:8e:5b:1c
Fingerprint (SHA1): 91:21:98:ee:f2:3d:ca:c4:09:39:31:2f:ee:97:dd:56:0b:ae:49:b1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Verizon Global Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\221\041\230\356\362\075\312\304\011\071\061\057\356\227\335\126
\013\256\111\261
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\364\303\363\351\123\302\224\145\047\075\122\211\361\216\133\034
END
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\031\060\027\006\003\125\004\012\014\020\126\145\162\151\172\157
\156\040\102\165\163\151\156\145\163\163\061\021\060\017\006\003
\125\004\013\014\010\117\155\156\151\122\157\157\164\061\037\060
\035\006\003\125\004\003\014\026\126\145\162\151\172\157\156\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SwissSign Silver Root CA - G3"
Issuer: CN=SwissSign Silver Root CA - G3,O=SwissSign AG,C=CH
Serial Number:aa:88:b0:5a:0b:b1:76:9b
Subject: CN=SwissSign

Silver Root CA - G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:19:14 2009
Not Valid After: Tue Aug 04 13:19:14 2037
Fingerprint (MD5): 40:e4:e0:25:6e:96:e0:01:a1:c8:4c:43:4c:f9:dc:33
Fingerprint (SHA1): 8d:08:fc:43:c0:77:0c:a8:4f:4d:cc:b2:d4:1a:5d:95:6d:78:6d:c4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\046\060\044\006\003\125\004\003\023
\035\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\046\060\044\006\003\125\004\003\023
\035\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\252\210\260\132\013\261\166\233
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\176\060\202\003\146\240\003\002\001\002\002\011\000
\252\210\260\132\013\261\166\233\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\114\061\013\060\011\006\003\125
\004\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023
\014\123\167\151\163\163\123\151\147\156\040\101\107\061\046\060
\044\006\003\125\004\003\023\035\123\167\151\163\163\123\151\147
\156\040\123\151\154\166\145\162\040\122\157\157\164\040\103\101
\040\055\040\107\063\060\036\027\015\060\071\060\070\060\064\061
\063\061\071\061\064\132\027\015\063\067\060\070\060\064\061\063
\061\071\061\064\132\060\114\061\013\060\011\006\003\125\004\006
\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014\123
\167\151\163\163\123\151\147\156\040\101\107\061\046\060\044\006
\003\125\004\003\023\035\123\167\151\163\163\123\151\147\156\040
\123\151\154\166\145\162\040\122\157\157\164\040\103\101\040\055
\040\107\063\060\202\002\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002
\202\002\001\000\276\207\233\005\346\161\174\122\157\155\354\067

\251\351\263\334\314\137\177\323\120\352\041\233\004\360\075\277
\276\216\311\245\024\026\062\020\317\231\374\354\160\255\110\066
\147\044\014\027\062\326\051\345\112\071\261\067\353\246\170\014
\154\157\031\312\116\367\121\332\032\350\372\041\070\154\225\234
\057\326\213\314\073\002\233\277\046\233\021\105\266\270\064\132
\035\246\124\110\122\310\235\170\161\316\110\112\314\247\170\203
\334\150\253\146\036\167\007\323\066\030\010\327\324\155\140\370
\360\171\323\063\066\011\222\143\267\004\232\365\247\226\332\105
\257\164\032\374\202\343\250\133\016\072\077\122\127\230\176\274
\234\214\301\300\262\132\337\304\176\376\014\246\124\166\203\176
\272\335\347\052\364\112\066\117\207\145\056\245\272\071\215\131
\141\051\363\323\216\044\160\214\123\233\021\245\107\007\262\165
\005\134\015\204\331\104\331\315\311\046\104\127\156\002\175\225
\001\324\253\044\206\356\075\160\373\127\372\260\051\024\320\235
\362\305\227\313\011\312\361\362\075\347\330\113\226\351\210\057
\236\107\121\212\124\145\230\110\322\022\344\124\167\014\007\346
\276\133\234\361\335\003\176\215\204\374\276\311\142\325\374\311
\072\350\211\265\137\302\005\122\141\360\234\076\354\056\115\214
\162\221\216\310\103\301\242\050\136\365\200\044\334\342\057\207
\073\123\000\345\313\360\262\174\215\171\031\240\210\315\170\370
\305\212\132\167\345\006\254\335\112\336\346\160\156\276\257\276
\365\261\253\016\010\260\333\240\077\224\305\276\022\271\274\173
\047\171\265\062\051\135\256\305\040\043\222\003\173\124\071\260
\211\042\124\155\022\343\303\170\352\072\100\375\244\223\254\351
\055\210\074\333\246\107\146\114\337\330\027\355\026\336\032\326
\327\101\146\277\035\200\361\244\340\144\021\051\136\014\047\005
\142\353\345\304\004\142\321\304\237\014\152\125\326\130\070\234
\146\017\235\373\253\124\200\231\234\354\111\326\202\237\332\105
\326\077\123\006\003\267\375\037\354\206\175\164\340\244\264\350
\062\266\252\007\043\370\357\044\101\236\143\060\170\364\124\335
\216\360\132\070\216\022\177\170\307\157\002\126\041\063\316\270
\270\255\151\125\002\003\001\000\001\243\143\060\141\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\241\214\105\223\012\022\143
\013\247\127\137\062\112\175\341\041\347\267\076\146\060\037\006
\003\125\035\043\004\030\060\026\200\024\241\214\105\223\012\022
\143\013\247\127\137\062\112\175\341\041\347\267\076\146\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002
\001\000\207\256\141\155\110\070\052\306\034\334\112\056\204\170
\111\300\043\052\105\270\065\115\321\005\372\271\005\063\304\144
\275\333\255\124\026\052\260\076\015\132\050\332\246\032\200\163
\014\304\101\157\257\270\064\266\167\324\133\216\035\013\213\106
\220\104\265\263\356\111\030\211\301\113\064\263\207\065\164\242
\236\105\147\355\105\161\146\266\271\241\045\163\327\302\254\210
\373\322\035\247\153\332\300\132\346\330\131\144\064\227\145\040
\061\063\003\117\316\255\011\236\256\351\302\076\030\165\264\063
\045\022\273\005\354\120\272\161\100\342\275\336\210\106\005\041

\204\213\243\053\036\353\060\060\211\277\021\365\134\104\370\221
\213\113\131\105\013\060\015\312\014\117\157\143\276\004\376\301
\355\340\207\376\310\315\126\277\345\334\216\172\324\326\051\116
\200\333\253\233\077\216\145\007\042\367\104\315\226\037\055\307
\365\011\266\230\160\377\070\334\120\025\021\204\073\177\251\360
\330\044\124\310\027\214\053\023\111\326\231\177\105\321\017\216
\277\151\162\067\123\007\364\346\256\375\133\076\171\271\006\315
\270\201\170\264\115\240\320\065\272\344\256\377\323\111\274\065
\355\143\306\263\374\343\253\141\132\005\266\013\344\377\251\052
\276\337\124\116\302\113\134\150\332\243\062\242\311\115\127\030
\123\064\131\074\146\231\327\074\002\170\247\114\161\320\277\333
\361\304\074\347\001\346\004\362\104\366\110\046\060\063\311\261
\001\031\353\002\361\314\041\372\072\002\060\027\235\310\137\200
\077\335\045\254\002\233\343\027\336\275\312\222\024\322\122\201
\123\346\352\374\060\147\062\251\142\366\223\027\025\007\061\136
\017\033\151\365\364\251\267\174\055\263\355\204\104\062\107\050
\007\073\206\151\105\251\307\066\226\220\162\164\330\022\246\163
\043\321\116\271\266\172\072\304\051\241\120\006\021\271\331\364
\046\156\142\010\022\040\026\360\001\127\027\324\005\066\147\227
\353\121\371\377\063\044\014\005\017\126\277\357\075\034\122\216
\212\336\151\017\132\037\360\325\003\061\104\263\222\306\352\165
\250\256\273\307\140\003\210\230\377\307\004\204\122\220\206\341
\264\223\251\120\057\350\353\322\066\254\060\140\247\320\003\023
\265\012
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SwissSign Silver Root CA - G3"
Issuer: CN=SwissSign Silver Root CA - G3,O=SwissSign AG,C=CH
Serial Number:aa:88:b0:5a:0b:b1:76:9b
Subject: CN=SwissSign Silver Root CA - G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:19:14 2009
Not Valid After: Tue Aug 04 13:19:14 2037
Fingerprint (MD5): 40:e4:e0:25:6e:96:e0:01:a1:c8:4c:43:4c:f9:dc:33
Fingerprint (SHA1): 8d:08:fc:43:c0:77:0c:a8:4f:4d:cc:b2:d4:1a:5d:95:6d:78:6d:c4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Silver Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\010\374\103\300\167\014\250\117\115\314\262\324\032\135\225
\155\170\155\304
END

CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\100\344\340\045\156\226\340\001\241\310\114\103\114\371\334\063
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\046\060\044\006\003\125\004\003\023
\035\123\167\151\163\163\123\151\147\156\040\123\151\154\166\145
\162\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\252\210\260\132\013\261\166\233
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SwissSign Platinum Root CA - G3"
Issuer: CN=SwissSign Platinum Root CA - G3,O=SwissSign AG,C=CH
Serial Number:22:3f:a9:17:20:de:81:94
Subject: CN=SwissSign Platinum Root CA
 - G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:34:04 2009
Not Valid After: Tue Aug 04 13:34:04 2037
Fingerprint (MD5): 20:de:12:0b:a8:6e:d9:34:a8:4e:b2:0d:1e:a6:43:39
Fingerprint (SHA1): a1:e7:c6:00:aa:41:70:e5:b7:4b:c9:4f:9b:97:03:ed:c2:61:b4:b9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\050\060\046\006\003\125\004\003\023
\037\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\050\060\046\006\003\125\004\003\023
\037\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151

\156\165\155\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\042\077\251\027\040\336\201\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\201\060\202\003\151\240\003\002\001\002\002\010\042
\077\251\027\040\336\201\224\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\116\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\050\060\046
\006\003\125\004\003\023\037\123\167\151\163\163\123\151\147\156
\040\120\154\141\164\151\156\165\155\040\122\157\157\164\040\103
\101\040\055\040\107\063\060\036\027\015\060\071\060\070\060\064
\061\063\063\064\060\064\132\027\015\063\067\060\070\060\064\061
\063\063\064\060\064\132\060\116\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\050\060\046
\006\003\125\004\003\023\037\123\167\151\163\163\123\151\147\156
\040\120\154\141\164\151\156\165\155\040\122\157\157\164\040\103
\101\040\055\040\107\063\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\224\240\357\023\033\237\104\040\033
\315\305\252\042\273\331\362\122\076\172\132\130\167\346\215\241
\053\311\334\244\363\344\263\023\224\000\142\233\034\362\103\120
\103\201\176\257\060\066\111\254\030\211\014\030\105\270\076\307
\124\155\343\330\232\131\153\212\032\045\251\266\265\015\267\175
\043\360\137\175\250\007\251\367\076\206\056\310\001\115\334\346
\066\355\035\345\067\007\151\022\113\343\203\321\004\034\044\360
\037\160\161\347\031\355\163\110\156\225\053\025\266\126\346\002
\337\126\351\233\372\352\246\356\340\302\303\272\340\314\306\310
\173\327\157\072\225\233\072\217\276\133\054\322\251\240\070\076
\326\210\341\261\142\023\216\334\253\060\147\315\250\152\246\143
\053\202\260\313\307\075\116\355\162\366\175\253\062\116\145\002
\353\017\231\164\370\034\032\050\214\016\105\000\223\054\024\237
\155\307\033\236\366\212\334\173\170\343\264\224\107\035\115\005
\155\204\172\220\124\262\236\213\165\302\200\337\207\071\077\237
\373\110\124\007\215\240\051\365\371\140\137\132\162\350\273\233
\240\102\340\010\000\064\243\025\074\023\343\326\032\153\002\262
\224\041\243\235\101\274\052\153\116\063\073\246\224\070\374\075
\307\053\063\263\056\053\006\164\254\233\020\157\305\116\105\367
\135\241\126\003\054\015\137\172\275\036\336\035\167\220\153\332
\245\055\212\114\351\337\101\364\347\113\354\175\225\102\237\114
\251\011\017\103\210\077\075\223\347\053\364\172\110\332\150\304
\335\022\200\061\032\135\044\124\046\246\044\041\263\114\255\332
\027\010\066\002\127\306\234\206\160\311\165\311\236\174\141\330
\170\346\271\350\024\151\371\034\020\050\022\135\113\165\120\272

\074\320\147\160\125\125\126\113\373\075\034\330\333\171\115\227
\337\270\236\333\027\054\325\065\007\270\120\251\367\216\367\126
\377\172\147\103\117\040\331\312\146\326\070\140\113\356\224\061
\326\015\242\110\233\377\064\151\224\306\065\365\226\210\357\252
\146\314\201\246\353\114\123\377\062\164\247\266\235\230\127\264
\272\046\251\361\063\063\142\176\072\260\003\021\127\377\334\157
\021\043\255\076\306\012\320\314\124\267\055\302\223\035\345\302
\246\214\307\330\357\123\367\002\003\001\000\001\243\143\060\141
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\126\052\077\220
\130\364\027\132\024\262\327\010\033\205\133\124\152\124\032\050
\060\037\006\003\125\035\043\004\030\060\026\200\024\126\052\077
\220\130\364\027\132\024\262\327\010\033\205\133\124\152\124\032
\050\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\154\355\212\347\103\250\171\047\233\270\317
\207\076\144\070\030\214\021\102\222\206\067\340\130\303\033\356
\004\056\367\204\354\203\020\150\014\177\170\055\234\302\227\216
\066\116\026\330\016\352\153\110\255\117\236\135\015\314\015\251
\076\030\205\176\314\150\231\071\065\326\330\237\206\301\062\373
\115\145\263\042\024\113\310\205\146\332\027\377\161\221\254\234
\126\127\336\161\054\126\102\277\370\315\016\360\242\323\377\322
\042\025\373\320\170\012\176\341\260\132\316\216\067\333\251\236
\347\225\317\143\362\054\015\322\372\157\363\310\325\373\000\267
\367\065\147\020\323\173\122\354\020\062\370\277\335\136\311\246
\202\244\361\260\277\035\056\335\045\344\275\115\360\065\251\221
\001\107\370\020\002\224\133\353\076\353\015\272\325\035\143\054
\245\056\253\347\343\036\243\356\113\252\137\261\146\001\264\202
\132\371\106\113\307\361\370\337\054\276\375\165\335\226\070\232
\067\072\156\245\346\062\025\156\263\220\300\071\212\164\245\225
\240\276\015\056\211\171\315\051\126\216\303\136\127\121\304\005
\157\004\125\217\201\351\114\275\131\106\313\052\274\115\311\035
\362\306\117\005\344\310\004\015\367\156\117\332\303\072\234\322
\302\365\351\306\044\172\024\076\034\102\060\250\002\105\061\251
\374\120\251\334\334\206\070\017\133\223\077\177\010\116\152\015
\047\072\020\171\126\303\025\270\076\006\206\366\331\160\147\257
\165\172\213\342\130\314\306\165\117\062\125\305\154\024\011\050
\073\362\225\344\152\336\054\050\007\255\240\175\007\050\335\324
\132\243\351\246\174\023\214\231\013\122\170\333\331\321\337\076
\132\103\166\177\106\140\123\302\315\347\166\107\174\125\315\264
\071\144\020\133\225\113\065\135\104\203\044\325\340\056\044\014
\301\200\156\151\000\200\006\167\012\146\202\020\014\121\157\067
\211\127\333\363\114\345\270\271\356\043\146\227\140\267\122\335
\331\226\373\272\212\073\240\115\316\136\360\104\114\220\314\041
\117\033\072\230\153\216\061\203\371\203\010\122\313\031\301\065
\153\356\241\025\133\210\077\155\254\362\064\222\123\246\060\052
\023\327\346\206\250\135\331\102\322\307\235\251\172\213\313\337
\356\242\061\302\345

END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SwissSign Platinum Root CA - G3"
Issuer: CN=SwissSign Platinum Root CA - G3,O=SwissSign AG,C=CH
Serial Number:22:3f:a9:17:20:de:81:94
Subject: CN=SwissSign Platinum Root CA - G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:34:04 2009
Not Valid After: Tue Aug 04 13:34:04 2037
Fingerprint (MD5): 20:de:12:0b:a8:6e:d9:34:a8:4e:b2:0d:1e:a6:43:39
Fingerprint (SHA1): a1:e7:c6:00:aa:41:70:e5:b7:4b:c9:4f:9b:97:03:ed:c2:61:b4:b9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\241\347\306\000\252\101\160\345\267\113\311\117\233\227\003\355
\302\141\264\271
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\040\336\022\013\250\156\331\064\250\116\262\015\036\246\103\071
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\050\060\046\006\003\125\004\003\023
\037\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\042\077\251\027\040\336\201\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SwissSign Gold Root CA - G3"
Issuer: CN=SwissSign Gold Root CA - G3,O=SwissSign AG,C=CH
Serial Number:de:c4:f2:44:f3:1d:a6:fc
Subject: CN=SwissSign Gold Root CA

- G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:31:47 2009
Not Valid After: Tue Aug 04 13:31:47 2037
Fingerprint (MD5): c2:64:4c:e2:7d:eb:6c:7b:ec:36:e0:39:df:68:9c:67
Fingerprint (SHA1): 0b:71:99:a1:c7:f3:ad:df:7b:a7:ea:b8:eb:57:4a:e8:0d:60:dd:de
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\044\060\042\006\003\125\004\003\023
\033\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\044\060\042\006\003\125\004\003\023
\033\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\336\304\362\104\363\035\246\374
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\172\060\202\003\142\240\003\002\001\002\002\011\000
\336\304\362\104\363\035\246\374\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\060\112\061\013\060\011\006\003\125
\004\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023
\014\123\167\151\163\163\123\151\147\156\040\101\107\061\044\060
\042\006\003\125\004\003\023\033\123\167\151\163\163\123\151\147
\156\040\107\157\154\144\040\122\157\157\164\040\103\101\040\055
\040\107\063\060\036\027\015\060\071\060\070\060\064\061\063\063
\061\064\067\132\027\015\063\067\060\070\060\064\061\063\063\061
\064\067\132\060\112\061\013\060\011\006\003\125\004\006\023\002
\103\110\061\025\060\023\006\003\125\004\012\023\014\123\167\151
\163\163\123\151\147\156\040\101\107\061\044\060\042\006\003\125
\004\003\023\033\123\167\151\163\163\123\151\147\156\040\107\157
\154\144\040\122\157\157\164\040\103\101\040\055\040\107\063\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\303\350\237\310\145\132\235\147\033\301\105\227\264\264\207\103

\133\141\140\200\236\362\177\136\371\147\104\335\104\372\253\265
\253\167\377\052\031\114\316\157\304\217\101\237\340\342\315\162
\340\321\324\122\141\101\011\012\277\012\160\373\340\203\151\141
\051\312\333\042\232\133\245\346\335\027\225\260\157\204\216\072
\076\144\132\101\373\033\130\374\375\053\076\262\244\346\254\311
\202\274\316\366\225\370\227\167\355\046\366\130\256\236\047\342
\017\203\354\305\066\130\310\173\317\325\207\241\251\207\032\023
\147\141\001\155\246\151\234\342\220\361\053\150\145\363\350\260
\174\374\202\075\336\255\330\012\000\011\104\171\023\234\360\376
\156\165\173\302\274\263\131\001\013\174\305\325\055\360\277\377
\155\127\322\111\201\353\264\263\120\254\133\371\013\025\025\214
\151\377\243\071\001\355\374\334\334\047\227\216\173\213\325\152
\246\326\340\035\137\315\001\221\346\365\042\230\272\056\011\030
\070\157\023\250\201\322\373\041\067\347\055\264\142\347\201\220
\260\306\171\131\267\147\165\376\276\217\073\372\066\354\257\255
\322\117\164\066\001\345\127\253\043\004\314\112\136\227\317\176
\306\357\214\314\225\043\151\215\313\070\307\031\366\326\212\000
\024\036\064\075\157\332\014\013\303\272\227\374\021\113\122\141
\076\277\063\147\123\020\277\170\033\011\302\107\272\036\257\130
\365\165\201\177\275\126\361\353\126\327\331\151\014\007\351\067
\061\260\022\034\062\357\126\331\276\172\053\174\275\323\075\274
\152\063\115\072\074\120\020\207\047\307\172\012\147\123\333\177
\200\233\350\236\043\372\371\010\072\213\241\216\064\132\110\063
\137\144\323\227\206\007\031\175\210\224\316\052\174\305\152\337
\257\274\251\237\315\072\246\272\273\124\371\177\217\337\317\016
\132\304\255\232\274\263\072\167\163\203\114\223\074\220\150\265
\174\120\225\021\310\202\136\224\161\320\101\030\373\311\306\145
\354\316\211\266\316\042\263\021\133\077\340\235\076\033\030\150
\015\252\003\241\147\131\277\153\235\274\370\362\145\057\232\101
\072\105\330\136\320\066\154\157\073\036\143\264\216\230\114\023
\333\041\016\237\173\355\352\240\252\161\303\353\243\240\322\045
\002\003\001\000\001\243\143\060\141\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\134\227\006\106\064\253\337\060\305\174\305
\015\125\161\146\060\265\140\217\236\060\037\006\003\125\035\043
\004\030\060\026\200\024\134\227\006\106\064\253\337\060\305\174
\305\015\125\161\146\060\265\140\217\236\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\167\113
\115\336\352\205\112\253\054\047\326\105\307\361\137\040\301\133
\140\355\007\313\242\063\334\066\317\307\224\361\006\307\325\332
\317\315\255\204\076\377\022\110\177\101\350\245\146\127\060\304
\035\344\247\032\057\055\102\301\357\106\163\262\325\365\132\375
\016\172\153\322\310\061\243\015\110\226\127\145\143\125\030\300
\374\344\212\314\230\206\133\253\014\212\047\067\372\043\150\131
\134\046\327\241\301\302\271\116\054\377\051\136\346\224\013\276
\315\162\117\225\350\217\366\367\270\076\136\316\317\236\021\311
\254\003\051\110\212\251\266\246\064\271\254\100\377\304\266\163

\067\261\307\177\251\121\333\113\052\107\137\100\044\007\210\006
\267\044\263\373\177\367\260\213\063\372\277\043\165\243\134\376
\252\145\032\302\276\361\175\201\167\003\201\261\215\327\225\015
\172\074\102\230\267\217\251\175\120\341\337\122\006\232\240\122
\124\170\203\007\141\122\011\067\136\212\234\247\306\121\321\134
\143\321\204\334\302\333\322\372\133\030\066\175\146\274\324\050
\227\057\165\226\034\204\007\254\213\216\123\021\276\044\041\252
\147\362\301\255\210\234\323\260\170\147\170\365\323\130\003\040
\012\135\040\361\265\347\145\314\016\040\343\325\337\346\057\031
\053\205\150\301\004\046\317\217\355\005\123\241\335\007\016\353
\101\046\307\264\251\054\133\343\151\075\146\300\142\033\300\252
\206\300\067\303\061\004\206\160\071\276\153\137\041\100\101\240
\177\345\331\017\070\113\160\137\111\370\205\270\053\056\252\037
\223\101\103\370\373\262\164\074\037\113\127\133\267\324\121\241
\222\112\316\276\020\242\356\330\024\042\173\271\101\275\215\351
\210\251\321\217\003\032\140\377\077\207\211\240\231\047\042\146
\260\076\150\236\162\210\121\070\235\023\076\105\155\005\345\106
\265\163\355\103\206\261\024\012\036\274\332\015\277\036\044\134
\146\217\016\276\241\375\306\353\151\274\103\171\327\003\166\371
\334\207\231\270\230\304\315\177\155\020\371\020\276\054\102\376
\234\051\115\203\153\012\275\265\216\304\110\212\375\041\007\246
\200\175\037\233\351\253\275\202\141\104\012\161\047\137\155\233
\220\236\256\377\066\044\263\150\003\326\225\214\153\163
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SwissSign Gold Root CA - G3"
Issuer: CN=SwissSign Gold Root CA - G3,O=SwissSign AG,C=CH
Serial Number:de:c4:f2:44:f3:1d:a6:fc
Subject: CN=SwissSign Gold Root CA - G3,O=SwissSign AG,C=CH
Not Valid Before: Tue Aug 04 13:31:47 2009
Not Valid After: Tue Aug 04 13:31:47 2037
Fingerprint (MD5): c2:64:4c:e2:7d:eb:6c:7b:ec:36:e0:39:df:68:9c:67
Fingerprint (SHA1): 0b:71:99:a1:c7:f3:ad:df:7b:a7:ea:b8:eb:57:4a:e8:0d:60:dd:de
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Gold Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\013\161\231\241\307\363\255\337\173\247\352\270\353\127\112\350
\015\140\335\336
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\302\144\114\342\175\353\154\173\354\066\340\071\337\150\234\147
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\044\060\042\006\003\125\004\003\023
\033\123\167\151\163\163\123\151\147\156\040\107\157\154\144\040
\122\157\157\164\040\103\101\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\011\000\336\304\362\104\363\035\246\374
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SITHS CA v3"
Issuer: CN=SITHS CA v3,O=Carelink,C=SE
Serial Number:1b:d4:0e:d4:34:d1:da:15:a6:00:30:15:02:4d:a4:6c
Subject: CN=SITHS CA v3,O=Carelink,C=SE
Not Valid Before: Mon Nov 28 10:27:50 2005
Not Valid After: Sat Nov 28 06:02:38 2015
Fingerprint
 (MD5): 51:c6:bb:37:df:2c:7b:55:0f:84:d4:f3:68:5a:be:eb
Fingerprint (SHA1): 16:d8:66:35:af:13:41:cd:34:79:94:45:eb:60:3e:27:37:02:96:5d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SITHS CA v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\066\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\103\141\162\145\154\151
\156\153\061\024\060\022\006\003\125\004\003\014\013\123\111\124
\110\123\040\103\101\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\066\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\103\141\162\145\154\151
\156\153\061\024\060\022\006\003\125\004\003\014\013\123\111\124
\110\123\040\103\101\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\033\324\016\324\064\321\332\025\246\000\060\025\002\115
\244\154
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\003\141\060\202\002\111\240\003\002\001\002\002\020\033
\324\016\324\064\321\332\025\246\000\060\025\002\115\244\154\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\066
\061\013\060\011\006\003\125\004\006\023\002\123\105\061\021\060
\017\006\003\125\004\012\014\010\103\141\162\145\154\151\156\153
\061\024\060\022\006\003\125\004\003\014\013\123\111\124\110\123
\040\103\101\040\166\063\060\036\027\015\060\065\061\061\062\070
\061\060\062\067\065\060\132\027\015\061\065\061\061\062\070\060
\066\060\062\063\070\132\060\066\061\013\060\011\006\003\125\004
\006\023\002\123\105\061\021\060\017\006\003\125\004\012\014\010
\103\141\162\145\154\151\156\153\061\024\060\022\006\003\125\004
\003\014\013\123\111\124\110\123\040\103\101\040\166\063\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\305
\331\133\321\324\053\177\100\147\356\241\133\135\321\332\152\271
\031\061\362\360\046\111\001\145\374\101\124\361\226\221\354\052
\356\004\104\044\036\100\234\347\027\120\077\352\034\174\356\270
\067\071\374\307\323\257\233\156\135\337\076\276\005\374\352\312
\331\371\105\126\341\225\234\261\320\132\217\376\310\052\246\327
\152\154\340\155\135\354\134\166\376\341\231\107\232\251\173\247
\352\346\157\124\002\047\115\121\116\050\075\254\006\072\201\202
\246\034\275\113\244\355\122\022\334\212\052\353\047\364\301\042
\112\020\204\132\165\265\200\042\126\145\353\314\200\362\245\341
\144\276\174\336\017\275\047\007\114\051\133\252\261\357\264\173
\377\207\064\350\243\223\102\313\075\140\273\167\323\302\057\136
\024\370\163\157\244\177\240\234\001\325\325\251\273\014\127\217
\314\300\073\221\170\236\222\071\171\062\114\104\177\307\013\175
\336\372\314\176\332\314\336\015\324\146\266\142\246\063\277\154
\371\325\335\107\122\160\224\313\145\340\105\267\015\327\257\225
\110\327\101\243\073\040\120\015\074\024\125\223\314\352\015\002
\003\001\000\001\243\153\060\151\060\022\006\003\125\035\023\001
\001\377\004\010\060\006\001\001\377\002\001\000\060\021\006\011
\140\206\110\001\206\370\102\001\001\004\004\003\002\002\004\060
\024\006\003\125\035\040\004\015\060\013\060\011\006\007\052\205
\160\112\001\001\003\060\013\006\003\125\035\017\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\174\056\071
\043\062\104\350\017\116\146\362\015\050\376\100\276\302\266\342
\240\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\010\123\132\210\051\015\365\124\330\253\261
\203\271\047\151\132\252\137\053\130\111\324\271\337\157\353\307
\006\353\375\207\232\277\312\022\337\172\236\001\042\045\143\122
\205\157\247\057\016\227\164\140\214\340\110\200\163\335\102\215
\041\355\017\162\177\164\006\156\120\126\073\055\207\354\201\130

\213\066\307\312\000\373\244\004\266\057\070\130\216\167\361\006
\304\055\054\047\055\030\202\013\212\137\042\224\024\025\143\070
\306\245\261\272\340\254\276\076\046\077\221\273\034\203\374\016
\312\311\067\276\067\327\360\173\363\214\330\274\220\013\364\000
\277\124\274\152\112\130\347\312\133\014\031\123\102\007\225\127
\065\270\117\226\123\232\250\230\335\116\175\125\264\234\343\272
\300\066\271\267\334\002\230\370\366\345\060\276\054\167\262\363
\311\342\002\243\346\367\104\174\326\152\177\320\170\276\071\163
\370\013\302\037\122\000\016\115\173\306\012\356\142\313\011\325
\017\012\060\207\202\223\274\312\021\244\037\011\372\372\067\120
\354\073\342\074\044\240\200\050\314\373\246\335\357\067\232\251
\061\335\337\352\121
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SITHS CA v3"
Issuer: CN=SITHS CA v3,O=Carelink,C=SE
Serial Number:1b:d4:0e:d4:34:d1:da:15:a6:00:30:15:02:4d:a4:6c
Subject: CN=SITHS CA v3,O=Carelink,C=SE
Not Valid Before: Mon Nov 28 10:27:50 2005
Not Valid After: Sat Nov 28 06:02:38
 2015
Fingerprint (MD5): 51:c6:bb:37:df:2c:7b:55:0f:84:d4:f3:68:5a:be:eb
Fingerprint (SHA1): 16:d8:66:35:af:13:41:cd:34:79:94:45:eb:60:3e:27:37:02:96:5d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SITHS CA v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\026\330\146\065\257\023\101\315\064\171\224\105\353\140\076\047
\067\002\226\135
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\121\306\273\067\337\054\173\125\017\204\324\363\150\132\276\353
END
CKA_ISSUER MULTILINE_OCTAL
\060\066\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\021\060\017\006\003\125\004\012\014\010\103\141\162\145\154\151
\156\153\061\024\060\022\006\003\125\004\003\014\013\123\111\124
\110\123\040\103\101\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\033\324\016\324\064\321\332\025\246\000\060\025\002\115

\244\154
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST
CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certinomis - Autorité Racine"
Issuer: CN=Certinomis - Autorité Racine,OU=0002 433998903,O=Certinomis,C=FR
Serial Number: 1 (0x1)
Subject: CN=Certinomis - Autorité Racine,OU=0002 433998903,O=Certinomis,C=FR
Not Valid Before: Wed Sep 17 08:28:59 2008
Not Valid After: Sun Sep 17 08:28:59 2028
Fingerprint (MD5): 7f:30:78:8c:03:e3:ca:c9:0a:e2:c9:ea:1e:aa:55:1a
Fingerprint (SHA1): 2e:14:da:ec:28:f0:fa:1e:8e:38:9a:4e:ab:eb:26:c0:0a:d3:83:c3
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certinomis - Autorité Racine"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\023\060\021\006\003\125\004\012\023\012\103\145\162\164\151\156
\157\155\151\163\061\027\060\025\006\003\125\004\013\023\016\060
\060\060\062\040\064\063\063\071\071\070\071\060\063\061\046\060
\044\006\003\125\004\003\014\035\103\145\162\164\151\156\157\155
\151\163\040\055\040\101\165\164\157\162\151\164\303\251\040\122
\141\143\151\156\145
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\023\060\021\006\003\125\004\012\023\012\103\145\162\164\151\156
\157\155\151\163\061\027\060\025\006\003\125\004\013\023\016\060
\060\060\062\040\064\063\063\071\071\070\071\060\063\061\046\060
\044\006\003\125\004\003\014\035\103\145\162\164\151\156\157\155
\151\163\040\055\040\101\165\164\157\162\151\164\303\251\040\122
\141\143\151\156\145
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\234\060\202\003\204\240\003\002\001\002\002\001\001

\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\106\122\061\023
\060\021\006\003\125\004\012\023\012\103\145\162\164\151\156\157
\155\151\163\061\027\060\025\006\003\125\004\013\023\016\060\060
\060\062\040\064\063\063\071\071\070\071\060\063\061\046\060\044
\006\003\125\004\003\014\035\103\145\162\164\151\156\157\155\151
\163\040\055\040\101\165\164\157\162\151\164\303\251\040\122\141
\143\151\156\145\060\036\027\015\060\070\060\071\061\067\060\070
\062\070\065\071\132\027\015\062\070\060\071\061\067\060\070\062
\070\065\071\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\106\122\061\023\060\021\006\003\125\004\012\023\012\103\145
\162\164\151\156\157\155\151\163\061\027\060\025\006\003\125\004
\013\023\016\060\060\060\062\040\064\063\063\071\071\070\071\060
\063\061\046\060\044\006\003\125\004\003\014\035\103\145\162\164
\151\156\157\155\151\163\040\055\040\101\165\164\157\162\151\164
\303\251\040\122\141\143\151\156\145\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\235\205\237\206\323\343
\257\307\262\153\156\063\340\236\267\102\064\125\235\371\201\276
\143\330\043\166\016\227\124\315\231\114\032\361\071\307\210\330
\027\120\014\236\141\332\300\116\125\336\347\132\270\172\116\167
\207\015\345\270\353\372\236\136\173\036\304\317\050\164\307\223
\365\024\306\042\050\004\371\221\303\253\047\163\152\016\056\115
\363\056\050\037\160\337\125\057\116\355\307\161\157\011\162\056
\355\325\062\227\320\361\130\167\321\140\274\116\136\333\232\204
\366\107\141\105\053\366\120\246\177\152\161\047\110\204\065\236
\254\376\151\251\236\172\136\065\045\372\264\247\111\065\167\226
\247\066\133\341\315\337\043\160\330\135\114\245\010\203\361\246
\044\070\023\250\354\057\250\241\147\307\246\055\206\107\356\212
\374\354\233\016\164\364\053\111\002\173\220\165\214\374\231\071
\001\071\326\112\211\345\236\166\253\076\226\050\070\046\213\335
\215\214\300\366\001\036\157\245\061\022\070\175\225\302\161\356
\355\164\256\344\066\242\103\165\325\361\000\233\342\344\327\314
\102\003\113\170\172\345\175\273\270\256\056\040\223\323\344\141
\337\161\341\166\147\227\077\266\337\152\163\132\144\042\345\102
\333\317\201\003\223\330\364\343\020\340\162\366\000\160\254\360
\301\172\017\005\177\317\064\151\105\265\223\344\031\333\122\026
\043\005\211\016\215\110\344\045\157\263\170\277\142\365\007\372
\225\044\302\226\262\350\243\043\302\135\003\374\303\323\345\174
\311\165\043\327\364\365\274\336\344\337\315\200\277\221\210\175
\247\023\264\071\272\054\272\275\321\153\314\363\245\050\355\104
\236\175\122\243\157\226\056\031\176\034\363\133\307\026\216\273
\140\175\167\146\107\124\202\000\021\140\154\062\301\250\070\033
\353\156\230\023\326\356\070\365\360\237\016\357\376\061\201\301
\322\044\225\057\123\172\151\242\360\017\206\105\216\130\202\053
\114\042\324\136\240\347\175\046\047\110\337\045\106\215\112\050
\174\206\236\371\233\032\131\271\145\277\005\335\266\102\135\075
\346\000\110\202\136\040\367\021\202\336\312\330\237\346\067\107

\046\036\353\170\367\141\303\101\144\130\002\101\371\332\340\321
\370\371\350\375\122\070\266\365\211\337\002\003\001\000\001\243
\133\060\131\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\015
\214\266\141\332\104\270\321\024\175\303\276\175\136\110\360\316
\312\152\260\060\027\006\003\125\035\040\004\020\060\016\060\014
\006\012\052\201\172\001\126\002\002\000\001\001\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001\000
\044\076\140\006\176\035\357\072\076\333\352\257\034\232\054\001
\013\364\305\265\331\111\061\364\135\101\215\211\014\116\377\154
\242\375\377\342\006\310\071\237\361\132\251\335\042\130\025\250
\212\323\261\346\062\011\202\003\154\327\077\010\307\370\271\272
\000\155\271\326\374\122\062\135\244\177\244\061\224\273\266\114
\070\177\050\060\065\377\237\043\123\267\266\356\024\160\000\100
\053\332\107\253\064\176\136\247\126\060\141\053\213\103\254\375
\266\210\050\365\153\266\076\140\112\272\102\220\064\147\215\352
\353\137\105\124\073\027\254\213\344\306\145\017\356\320\214\135
\146\071\316\062\247\330\020\227\300\176\064\234\237\224\363\366
\206\037\317\033\163\255\224\171\207\150\160\303\063\245\160\347
\330\325\070\224\157\143\171\353\277\012\016\010\347\305\057\017
\102\240\053\024\100\377\041\340\005\305\047\341\204\021\023\272
\326\206\035\101\013\023\043\211\323\311\013\350\212\272\172\243
\243\163\067\065\200\175\022\270\063\167\100\070\300\372\136\060
\322\362\266\243\261\326\242\225\227\201\233\122\355\151\114\377
\200\344\123\333\124\133\003\155\124\137\261\270\357\044\275\157
\237\021\303\307\144\302\017\050\142\205\146\136\032\173\262\267
\357\256\065\311\031\063\250\270\047\333\063\125\277\150\341\165
\110\104\126\373\315\323\110\273\107\211\072\254\151\365\200\306
\344\104\120\057\124\304\252\103\305\061\061\130\275\226\305\352
\165\154\232\165\261\115\370\367\227\377\226\026\362\227\115\350
\366\363\021\371\072\175\212\070\156\004\313\341\323\105\025\252
\245\321\035\235\135\143\350\044\346\066\024\342\207\255\033\131
\365\104\233\373\327\167\174\037\001\160\142\241\040\032\242\305
\032\050\364\041\003\356\056\331\301\200\352\271\331\202\326\133
\166\302\313\073\265\322\000\360\243\016\341\255\156\100\367\333
\240\264\320\106\256\025\327\104\302\115\065\371\322\013\362\027
\366\254\146\325\044\262\117\321\034\231\300\156\365\175\353\164
\004\270\371\115\167\011\327\264\317\007\060\011\361\270\000\126
\331\027\026\026\012\053\206\337\217\001\031\032\345\273\202\143
\377\276\013\166\026\136\067\067\346\330\164\227\242\231\105\171
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate

Trust for "Certinomis - Autorité Racine"
Issuer: CN=Certinomis - Autorité Racine,OU=0002 433998903,O=Certinomis,C=FR
#
Serial Number: 1 (0x1)
Subject: CN=Certinomis - Autorité Racine,OU=0002 433998903,O=Certinomis,C=FR
Not Valid Before: Wed Sep 17 08:28:59 2008
Not Valid After: Sun Sep 17 08:28:59 2028
Fingerprint (MD5): 7f:30:78:8c:03:e3:ca:c9:0a:e2:c9:ea:1e:aa:55:1a
Fingerprint (SHA1): 2e:14:da:ec:28:f0:fa:1e:8e:38:9a:4e:ab:eb:26:c0:0a:d3:83:c3
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certinomis - Autorité Racine"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\056\024\332\354\050\360\372\036\216\070\232\116\253\353\046\300
\012\323\203\303
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\177\060\170\214\003\343\312\311\012\342\311\352\036\252\125\032
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\023\060\021\006\003\125\004\012\023\012\103\145\162\164\151\156
\157\155\151\163\061\027\060\025\006\003\125\004\013\023\016\060
\060\060\062\040\064\063\063\071\071\070\071\060\063\061\046\060
\044\006\003\125\004\003\014\035\103\145\162\164\151\156\157\155
\151\163\040\055\040\101\165\164\157\162\151\164\303\251\040\122
\141\143\151\156\145
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ANF Server CA"
Issuer: CN=ANF Server CA,2.5.4.5=G63287510,OU=ANF Clase 1 CA,O=ANF Autoridad de Certificación,L=Barcelona (see current address at https://www.anf.es/address/),ST=Barcelona,C=ES
Serial Number: 78923 (0x1344b)
Subject: CN=ANF Server CA,2.5.4.5=G63287510,OU=ANF Clase 1 CA,O=ANF Autoridad de Certificación,L=Barcelona (see current address at https://www.anf.es/address/),ST=Barcelona,C=ES
Not Valid Before: Mon Nov 30 23:00:00 2009
Not Valid After: Tue

Nov 30 23:00:00 2021
Fingerprint (MD5): 8c:18:ed:28:bf:45:19:e6:49:98:e1:35:22:2f:54:c6
Fingerprint (SHA1): ce:a9:89:0d:85:d8:07:53:a6:26:28:6c:da:d7:8c:b5:66:d7:0c:f2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\331\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\022\060\020\006\003\125\004\010\014\011\102\141\162\143\145
\154\157\156\141\061\107\060\105\006\003\125\004\007\014\076\102
\141\162\143\145\154\157\156\141\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\150\164\164\160\163\072\057\057\167\167\167\056\141\156\146
\056\145\163\057\141\144\144\162\145\163\163\057\051\061\050\060
\046\006\003\125\004\012\014\037\101\116\106\040\101\165\164\157
\162\151\144\141\144\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\303\263\156\061\027\060\025\006\003\125\004\013
\014\016\101\116\106\040\103\154\141\163\145\040\061\040\103\101
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\026\060\024\006\003\125\004\003\014\015\101
\116\106\040\123\145\162\166\145\162\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\331\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\022\060\020\006\003\125\004\010\014\011\102\141\162\143\145
\154\157\156\141\061\107\060\105\006\003\125\004\007\014\076\102
\141\162\143\145\154\157\156\141\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\150\164\164\160\163\072\057\057\167\167\167\056\141\156\146
\056\145\163\057\141\144\144\162\145\163\163\057\051\061\050\060
\046\006\003\125\004\012\014\037\101\116\106\040\101\165\164\157
\162\151\144\141\144\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\303\263\156\061\027\060\025\006\003\125\004\013
\014\016\101\116\106\040\103\154\141\163\145\040\061\040\103\101
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\026\060\024\006\003\125\004\003\014\015\101
\116\106\040\123\145\162\166\145\162\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\001\064\113
END
CKA_VALUE MULTILINE_OCTAL

\060\202\006\235\060\202\005\205\240\003\002\001\002\002\003\001
\064\113\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\201\331\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\022\060\020\006\003\125\004\010\014\011\102\141\162\143
\145\154\157\156\141\061\107\060\105\006\003\125\004\007\014\076
\102\141\162\143\145\154\157\156\141\040\050\163\145\145\040\143
\165\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141
\164\040\150\164\164\160\163\072\057\057\167\167\167\056\141\156
\146\056\145\163\057\141\144\144\162\145\163\163\057\051\061\050
\060\046\006\003\125\004\012\014\037\101\116\106\040\101\165\164
\157\162\151\144\141\144\040\144\145\040\103\145\162\164\151\146
\151\143\141\143\151\303\263\156\061\027\060\025\006\003\125\004
\013\014\016\101\116\106\040\103\154\141\163\145\040\061\040\103
\101\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062
\070\067\065\061\060\061\026\060\024\006\003\125\004\003\014\015
\101\116\106\040\123\145\162\166\145\162\040\103\101\060\036\027
\015\060\071\061\061\063\060\062\063\060\060\060\060\132\027\015
\062\061\061\061\063\060\062\063\060\060\060\060\132\060\201\331
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\022\060
\020\006\003\125\004\010\014\011\102\141\162\143\145\154\157\156
\141\061\107\060\105\006\003\125\004\007\014\076\102\141\162\143
\145\154\157\156\141\040\050\163\145\145\040\143\165\162\162\145
\156\164\040\141\144\144\162\145\163\163\040\141\164\040\150\164
\164\160\163\072\057\057\167\167\167\056\141\156\146\056\145\163
\057\141\144\144\162\145\163\163\057\051\061\050\060\046\006\003
\125\004\012\014\037\101\116\106\040\101\165\164\157\162\151\144
\141\144\040\144\145\040\103\145\162\164\151\146\151\143\141\143
\151\303\263\156\061\027\060\025\006\003\125\004\013\014\016\101
\116\106\040\103\154\141\163\145\040\061\040\103\101\061\022\060
\020\006\003\125\004\005\023\011\107\066\063\062\070\067\065\061
\060\061\026\060\024\006\003\125\004\003\014\015\101\116\106\040
\123\145\162\166\145\162\040\103\101\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\277\352\110\247\232\210
\071\153\054\110\100\007\004\223\174\367\270\055\176\245\067\342
\141\326\041\374\220\067\313\151\076\136\213\067\337\133\157\073
\330\266\303\210\100\220\364\235\014\134\020\122\261\263\345\137
\221\020\346\375\250\200\024\137\323\213\275\134\275\017\043\222
\011\067\343\162\322\146\224\013\134\164\224\057\136\362\116\330
\003\306\263\316\126\245\034\331\173\375\117\007\114\324\267\332
\137\051\115\165\362\037\125\317\062\043\034\106\011\047\035\105
\354\361\214\064\211\336\173\026\247\103\136\212\053\351\224\103
\036\327\076\223\155\157\211\075\274\356\261\310\267\377\311\175
\343\137\015\157\167\170\365\052\056\215\304\213\230\227\060\261
\106\132\013\143\160\324\170\307\206\263\177\377\047\102\252\237
\212\156\155\241\224\312\354\207\002\034\326\124\113\375\274\211
\233\246\143\070\146\214\026\211\211\227\303\120\350\366\102\001
\247\167\175\020\031\222\003\350\135\105\310\025\305\207\033\015

\221\362\306\071\234\173\363\300\012\231\370\356\203\157\176\102
\167\021\216\303\037\034\162\057\075\033\002\003\001\000\001\243
\202\002\152\060\202\002\146\060\035\006\003\125\035\016\004\026
\004\024\276\073\366\264\061\267\163\044\110\071\305\127\023\224
\165\252\237\201\077\054\060\202\001\011\006\003\125\035\043\004
\202\001\000\060\201\375\200\024\276\073\366\264\061\267\163\044
\110\071\305\127\023\224\165\252\237\201\077\054\241\201\337\244
\201\334\060\201\331\061\013\060\011\006\003\125\004\006\023\002
\105\123\061\022\060\020\006\003\125\004\010\014\011\102\141\162
\143\145\154\157\156\141\061\107\060\105\006\003\125\004\007\014
\076\102\141\162\143\145\154\157\156\141\040\050\163\145\145\040
\143\165\162\162\145\156\164\040\141\144\144\162\145\163\163\040
\141\164\040\150\164\164\160\163\072\057\057\167\167\167\056\141
\156\146\056\145\163\057\141\144\144\162\145\163\163\057\051\061
\050\060\046\006\003\125\004\012\014\037\101\116\106\040\101\165
\164\157\162\151\144\141\144\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\303\263\156\061\027\060\025\006\003\125
\004\013\014\016\101\116\106\040\103\154\141\163\145\040\061\040
\103\101\061\022\060\020\006\003\125\004\005\023\011\107\066\063
\062\070\067\065\061\060\061\026\060\024\006\003\125\004\003\014
\015\101\116\106\040\123\145\162\166\145\162\040\103\101\202\003
\001\064\113\060\014\006\003\125\035\023\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\061\006\012\053\006\001\004\001\201\217\034\052\006\004
\043\033\041\150\164\164\160\163\072\057\057\167\167\167\056\141
\156\146\056\145\163\057\101\103\057\101\103\124\101\123\057\067
\070\071\062\063\060\030\006\012\053\006\001\004\001\201\217\034
\023\001\004\012\033\010\070\060\061\055\063\064\060\060\060\070
\006\010\053\006\001\005\005\007\001\001\004\054\060\052\060\050
\006\010\053\006\001\005\005\007\060\001\206\034\150\164\164\160
\072\057\057\167\167\167\056\141\156\146\056\145\163\057\101\103
\057\122\103\057\157\143\163\160\060\143\006\003\125\035\037\004
\134\060\132\060\053\240\051\240\047\206\045\150\164\164\160\163
\072\057\057\167\167\167\056\141\156\146\056\145\163\057\101\103
\057\101\116\106\123\145\162\166\145\162\103\101\056\143\162\154
\060\053\240\051\240\047\206\045\150\164\164\160\163\072\057\057
\143\162\154\056\141\156\146\056\145\163\057\101\103\057\101\116
\106\123\145\162\166\145\162\103\101\056\143\162\154\060\026\006
\003\125\035\022\004\017\060\015\201\013\151\156\146\157\100\141
\156\146\056\145\163\060\026\006\003\125\035\021\004\017\060\015
\201\013\151\156\146\157\100\141\156\146\056\145\163\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\265\306\307\274\106\372\102\134\023\301\224\165\063\126\277
\057\247\007\163\354\067\343\103\164\352\371\146\117\136\215\177
\360\346\171\303\115\365\331\070\245\314\312\103\364\123\200\206
\277\274\320\021\135\220\304\302\100\107\353\305\207\223\301\266
\170\136\232\256\207\365\142\020\131\114\114\155\006\276\231\023
\025\263\263\372\034\162\176\340\042\041\001\130\065\070\150\242

\344\370\341\360\360\066\120\221\340\264\167\334\143\204\063\222
\140\270\313\026\362\322\143\073\114\134\065\072\347\254\002\123
\305\034\201\001\167\307\034\021\037\124\060\357\124\217\045\372
\211\047\224\064\243\017\024\117\157\351\163\331\030\142\347\356
\010\350\311\203\173\310\063\233\174\104\232\174\032\220\265\322
\161\211\337\075\364\034\117\116\121\340\311\153\266\252\013\036
\331\060\017\323\143\325\355\160\364\301\203\355\006\105\232\250
\352\264\211\067\375\132\067\107\357\221\171\247\065\377\360\334
\060\355\015\024\147\333\174\132\340\217\155\063\376\074\236\025
\063\303\303\055\016\135\252\174\015\216\061\226\115\213\377\005
\325
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANF Server CA"
Issuer: CN=ANF Server CA,2.5.4.5=G63287510,OU=ANF Clase 1 CA,O=ANF Autoridad de Certificación,L=Barcelona (see current address at https://www.anf.es/address/),ST=Barcelona,C=ES
Serial Number: 78923 (0x1344b)
Subject: CN=ANF Server CA,2.5.4.5=G63287510,OU=ANF Clase 1 CA,O=ANF Autoridad de Certificación,L=Barcelona (see current address at https://www.anf.es/address/),ST=Barcelona,C=ES
Not Valid Before: Mon Nov 30 23:00:00 2009
Not Valid After: Tue Nov 30 23:00:00 2021
Fingerprint (MD5): 8c:18:ed:28:bf:45:19:e6:49:98:e1:35:22:2f:54:c6
#
 Fingerprint (SHA1): ce:a9:89:0d:85:d8:07:53:a6:26:28:6c:da:d7:8c:b5:66:d7:0c:f2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANF Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\316\251\211\015\205\330\007\123\246\046\050\154\332\327\214\265
\146\327\014\362
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\030\355\050\277\105\031\346\111\230\341\065\042\057\124\306
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\331\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\022\060\020\006\003\125\004\010\014\011\102\141\162\143\145
\154\157\156\141\061\107\060\105\006\003\125\004\007\014\076\102
\141\162\143\145\154\157\156\141\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\150\164\164\160\163\072\057\057\167\167\167\056\141\156\146

\056\145\163\057\141\144\144\162\145\163\163\057\051\061\050\060
\046\006\003\125\004\012\014\037\101\116\106\040\101\165\164\157
\162\151\144\141\144\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\303\263\156\061\027\060\025\006\003\125\004\013
\014\016\101\116\106\040\103\154\141\163\145\040\061\040\103\101
\061\022\060\020\006\003\125\004\005\023\011\107\066\063\062\070
\067\065\061\060\061\026\060\024\006\003\125\004\003\014\015\101
\116\106\040\123\145\162\166\145\162\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\001\064\113
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "KEYNECTIS ROOT CA"
Issuer: CN=KEYNECTIS ROOT CA,OU=ROOT,O=KEYNECTIS,C=FR
Serial Number:11:21:bc:27:6c:55:47:af:58:4e:ef:d4:ce:d6:29:b2:a2:85
Subject: CN=KEYNECTIS ROOT CA,OU=ROOT,O=KEYNECTIS,C=FR
Not Valid Before: Tue May 26 00:00:00 2009
Not Valid After: Tue
 May 26 00:00:00 2020
Fingerprint (MD5): cc:4d:ae:fb:30:6b:d8:38:fe:50:eb:86:61:4b:d2:26
Fingerprint (SHA1): 9c:61:5c:4d:4d:85:10:3a:53:26:c2:4d:ba:ea:e4:a2:d2:d5:cc:97
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "KEYNECTIS ROOT CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\023\011\113\105\131\116\105\103
\124\111\123\061\015\060\013\006\003\125\004\013\023\004\122\117
\117\124\061\032\060\030\006\003\125\004\003\023\021\113\105\131
\116\105\103\124\111\123\040\122\117\117\124\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\023\011\113\105\131\116\105\103
\124\111\123\061\015\060\013\006\003\125\004\013\023\004\122\117
\117\124\061\032\060\030\006\003\125\004\003\023\021\113\105\131
\116\105\103\124\111\123\040\122\117\117\124\040\103\101

END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\022\021\041\274\047\154\125\107\257\130\116\357\324\316\326
\051\262\242\205
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\345\060\202\002\315\240\003\002\001\002\002\022\021
\041\274\047\154\125\107\257\130\116\357\324\316\326\051\262\242
\205\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\060\114\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\023\011\113\105\131\116\105\103
\124\111\123\061\015\060\013\006\003\125\004\013\023\004\122\117
\117\124\061\032\060\030\006\003\125\004\003\023\021\113\105\131
\116\105\103\124\111\123\040\122\117\117\124\040\103\101\060\036
\027\015\060\071\060\065\062\066\060\060\060\060\060\060\132\027
\015\062\060\060\065\062\066\060\060\060\060\060\060\132\060\114
\061\013\060\011\006\003\125\004\006\023\002\106\122\061\022\060
\020\006\003\125\004\012\023\011\113\105\131\116\105\103\124\111
\123\061\015\060\013\006\003\125\004\013\023\004\122\117\117\124
\061\032\060\030\006\003\125\004\003\023\021\113\105\131\116\105
\103\124\111\123\040\122\117\117\124\040\103\101\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\306\375\263
\027\205\241\255\046\033\225\151\065\041\075\244\210\372\336\333
\140\066\100\027\151\302\024\143\373\270\331\302\164\025\067\056
\234\320\040\315\151\215\204\062\242\205\114\024\264\233\362\045
\263\124\052\203\077\055\276\017\363\073\144\321\377\240\120\357
\167\117\073\116\341\077\013\144\205\232\272\130\176\322\303\142
\323\144\045\242\324\262\227\074\167\135\143\052\063\222\374\315
\202\015\233\124\225\207\365\265\353\214\315\133\321\312\060\057
\311\210\106\265\315\015\021\264\030\217\356\321\241\076\135\025
\350\050\317\337\303\220\233\154\314\321\014\105\167\263\072\353
\212\220\035\351\257\144\152\211\173\251\075\103\164\372\344\147
\042\241\373\334\115\304\365\142\311\312\045\264\311\200\140\063
\251\335\173\240\002\277\226\045\012\136\311\137\051\173\264\027
\201\213\155\201\031\320\331\203\134\005\217\101\151\032\151\103
\200\237\250\257\340\351\214\221\213\047\053\242\046\140\315\017
\362\244\243\002\203\216\030\201\302\027\212\103\025\371\155\363
\035\020\244\132\234\104\141\043\041\172\330\373\321\002\003\001
\000\001\243\201\300\060\201\275\060\022\006\003\125\035\023\001
\001\377\004\010\060\006\001\001\377\002\001\004\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\127\006\003
\125\035\037\004\120\060\116\060\114\240\112\240\110\206\106\150
\164\164\160\072\057\057\164\162\165\163\164\143\145\156\164\145
\162\055\143\162\154\056\143\145\162\164\151\146\151\143\141\164
\062\056\143\157\155\057\113\145\171\156\145\143\164\151\163\057
\113\105\131\116\105\103\124\111\123\137\122\117\117\124\137\103

\101\056\143\162\154\060\035\006\003\125\035\016\004\026\004\024
\357\267\043\227\320\250\221\177\246\317\246\041\300\064\237\314
\167\101\341\320\060\037\006\003\125\035\043\004\030\060\026\200
\024\357\267\043\227\320\250\221\177\246\317\246\041\300\064\237
\314\167\101\341\320\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\003\202\001\001\000\032\061\151\231\102\302\345
\100\205\242\237\222\303\143\324\217\041\071\250\031\041\376\172
\374\303\115\100\363\053\350\113\254\133\114\131\223\306\334\176
\013\257\174\137\225\205\153\275\307\157\272\301\276\370\306\072
\147\113\223\306\005\151\076\044\055\360\033\221\306\076\077\354
\102\030\223\154\003\044\212\156\371\040\147\053\174\155\253\064
\311\052\042\063\015\327\175\217\356\322\066\144\102\310\065\232
\156\031\141\313\215\147\360\150\247\320\044\005\346\303\027\272
\105\256\174\103\265\200\170\003\115\040\163\005\374\103\020\235
\065\151\102\165\224\045\202\053\246\073\220\030\336\301\251\257
\363\055\225\277\225\247\317\030\227\341\131\342\242\257\032\026
\141\015\367\023\161\123\223\067\375\074\257\000\035\154\213\024
\257\106\226\214\266\122\174\314\055\116\315\341\351\113\012\356
\232\376\172\230\347\051\272\033\332\034\272\334\153\315\004\016
\046\100\251\353\163\074\376\120\250\021\047\125\275\333\216\113
\357\117\030\355\025\377\275\206\230\146\356\232\045\161\064\154
\120\361\262\121\313\146\235\115\051
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "KEYNECTIS ROOT CA"
Issuer: CN=KEYNECTIS ROOT CA,OU=ROOT,O=KEYNECTIS,C=FR
Serial Number:11:21:bc:27:6c:55:47:af:58:4e:ef:d4:ce:d6:29:b2:a2:85
Subject: CN=KEYNECTIS ROOT CA,OU=ROOT,O=KEYNECTIS,C=FR
Not Valid Before: Tue May 26 00:00:00 2009
Not Valid After: Tue May 26 00:00:00 2020
Fingerprint (MD5): cc:4d:ae:fb:30:6b:d8:38:fe:50:eb:86:61:4b:d2:26
Fingerprint (SHA1): 9c:61:5c:4d:4d:85:10:3a:53:26:c2:4d:ba:ea:e4:a2:d2:d5:cc:97
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "KEYNECTIS ROOT CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\234\141\134\115\115\205\020\072\123\046\302\115\272\352\344\242
\322\325\314\227
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL

\314\115\256\373\060\153\330\070\376\120\353\206\141\113\322\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\022\060\020\006\003\125\004\012\023\011\113\105\131\116\105\103
\124\111\123\061\015\060\013\006\003\125\004\013\023\004\122\117
\117\124\061\032\060\030\006\003\125\004\003\023\021\113\105\131
\116\105\103\124\111\123\040\122\117\117\124\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\022\021\041\274\047\154\125\107\257\130\116\357\324\316\326
\051\262\242\205
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "I.CA - Standard Certification Authority, 09/2009"
Issuer: OU=I.CA - Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Standard Certification Authority\, 09/2009,C=CZ
Serial Number:16:e3:60
Subject: OU=I.CA - Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Standard Certification Authority\, 09/2009,C=CZ
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After: Sun Sep 01 00:00:00 2019
Fingerprint (MD5): 86:ef:8e:31:9d:9f:85:69:a2:a4:1a:12:71:68:ba:1b
Fingerprint (SHA1): 90:de:ce:77:f8:c8:25:34:0e:62:eb:d6:35:e1:be:20:cf:73:27:dd
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Standard Certification Authority, 09/2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\253\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\071\060\067\006\003\125\004\003\014\060\111\056\103\101\040
\055\040\123\164\141\156\144\141\162\144\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056\061\062\060\060\006\003
\125\004\013\014\051\111\056\103\101\040\055\040\120\162\157\166
\151\144\145\162\040\157\146\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\123\145\162\166\151\143\145\163

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\253\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\071\060\067\006\003\125\004\003\014\060\111\056\103\101\040
\055\040\123\164\141\156\144\141\162\144\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056\061\062\060\060\006\003
\125\004\013\014\051\111\056\103\101\040\055\040\120\162\157\166
\151\144\145\162\040\157\146\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\026\343\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\052\060\202\003\022\240\003\002\001\002\002\003\026
\343\140\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\201\253\061\013\060\011\006\003\125\004\006\023\002\103
\132\061\071\060\067\006\003\125\004\003\014\060\111\056\103\101
\040\055\040\123\164\141\156\144\141\162\144\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053
\006\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145
\162\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164
\157\162\151\164\141\054\040\141\056\163\056\061\062\060\060\006
\003\125\004\013\014\051\111\056\103\101\040\055\040\120\162\157
\166\151\144\145\162\040\157\146\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\123\145\162\166\151\143\145\163\060
\036\027\015\060\071\060\071\060\061\060\060\060\060\060\060\132
\027\015\061\071\060\071\060\061\060\060\060\060\060\060\132\060
\201\253\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\071\060\067\006\003\125\004\003\014\060\111\056\103\101\040\055
\040\123\164\141\156\144\141\162\144\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\054\040\060\071\057\062\060\060\071\061\055\060\053\006\003
\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162\164
\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157\162
\151\164\141\054\040\141\056\163\056\061\062\060\060\006\003\125
\004\013\014\051\111\056\103\101\040\055\040\120\162\157\166\151
\144\145\162\040\157\146\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\123\145\162\166\151\143\145\163\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000

\003\202\001\017\000\060\202\001\012\002\202\001\001\000\250\010
\126\022\077\373\224\203\251\140\166\275\105\203\176\226\064\074
\317\111\116\326\317\374\040\341\341\261\002\024\155\255\312\176
\120\162\051\251\375\234\167\046\070\144\367\103\101\077\024\202
\004\242\101\220\002\347\231\367\203\142\170\104\205\350\235\005
\160\324\376\170\241\164\064\307\254\073\205\002\335\356\121\133
\106\073\123\063\326\147\354\354\024\056\343\304\345\263\164\203
\000\314\306\226\346\034\203\332\334\030\120\151\372\335\103\321
\216\100\375\026\244\267\214\145\207\340\276\254\227\037\260\161
\353\000\145\127\026\316\154\207\257\227\210\360\135\367\207\115
\072\021\012\242\302\104\024\300\026\362\117\365\333\225\102\257
\051\263\051\240\203\121\156\376\074\121\127\223\060\045\046\272
\073\152\206\310\366\013\321\161\077\234\267\072\310\316\147\011
\214\372\100\033\172\154\336\310\034\240\306\134\273\141\030\210
\077\056\131\035\126\374\172\105\234\246\331\070\331\305\140\314
\271\101\125\267\312\274\115\356\264\247\304\366\240\016\274\211
\305\001\225\261\134\337\117\360\314\302\315\102\273\137\002\003
\001\000\001\243\125\060\123\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\021\006\003\125\035\040\004
\012\060\010\060\006\006\004\125\035\040\000\060\035\006\003\125
\035\016\004\026\004\024\301\114\070\224\325\200\206\110\331\042
\220\054\323\356\031\020\333\147\107\207\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\001\001\000\243\313
\321\175\164\373\065\170\007\222\350\356\150\351\344\122\136\360
\330\143\221\224\237\150\373\276\133\272\251\341\143\167\253\120
\166\306\351\126\107\124\120\231\264\045\213\350\301\031\162\066
\132\011\276\347\326\372\302\266\062\075\107\303\120\116\231\156
\223\066\305\212\121\167\143\340\111\063\253\074\037\212\351\073
\331\206\265\050\307\302\165\161\133\146\152\215\130\016\363\165
\220\265\255\054\201\030\315\234\330\303\315\117\361\373\151\040
\227\300\110\317\023\105\022\265\034\366\076\203\342\116\136\335
\131\306\153\112\340\110\316\331\052\235\145\072\275\057\360\360
\114\274\011\172\313\067\000\244\077\073\014\043\335\343\373\306
\102\242\264\266\346\322\162\205\114\337\263\336\026\247\176\035
\347\324\317\255\253\263\120\344\160\214\337\260\160\220\311\206
\236\356\174\204\213\144\034\153\341\150\025\176\311\245\164\340
\116\367\132\352\335\022\061\253\221\100\205\161\013\316\051\050
\371\156\070\024\134\035\376\354\021\277\115\103\176\236\137\070
\277\327\352\236\223\057\320\035\164\265\005\011\323\042
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate

Trust for "I.CA - Standard Certification Authority, 09/2009"
Issuer: OU=I.CA - Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Standard Certification Authority\, 09/2009,C=CZ
Serial Number:16:e3:60
Subject: OU=I.CA - Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Standard Certification Authority\, 09/2009,C=CZ
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After: Sun Sep 01 00:00:00 2019
Fingerprint (MD5): 86:ef:8e:31:9d:9f:85:69:a2:a4:1a:12:71:68:ba:1b
Fingerprint (SHA1): 90:de:ce:77:f8:c8:25:34:0e:62:eb:d6:35:e1:be:20:cf:73:27:dd
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Standard Certification Authority, 09/2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\220\336\316\167\370\310\045\064\016\142\353\326\065\341\276\040
\317\163\047\335
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\206\357\216\061\235\237\205\151\242\244\032\022\161\150\272\033
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\253\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\071\060\067\006\003\125\004\003\014\060\111\056\103\101\040
\055\040\123\164\141\156\144\141\162\144\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056\061\062\060\060\006\003
\125\004\013\014\051\111\056\103\101\040\055\040\120\162\157\166
\151\144\145\162\040\157\146\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\026\343\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "I.CA - Qualified Certification Authority, 09/2009"
Issuer: OU=I.CA - Accredited Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA -

Qualified Certification Authority\, 09/2009,C=CZ
Serial Number:a0:37:a0
Subject: OU=I.CA - Accredited Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified Certification Authority\, 09/2009,C=CZ
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After: Sun Sep 01 00:00:00 2019
Fingerprint (MD5): 8d:63:9b:56:c1:14:e4:ee:9a:12:85:86:11:90:82:a3
Fingerprint (SHA1): d2:44:1a:a8:c2:03:ae:ca:a9:6e:50:1f:12:4d:52:b6:8f:e4:c3:75
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Qualified
Certification Authority, 09/2009"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\267\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\072\060\070\006\003\125\004\003\014\061\111\056\103\101\040
\055\040\121\165\141\154\151\146\151\145\144\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053
\006\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145
\162\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164
\157\162\151\164\141\054\040\141\056\163\056\061\075\060\073\006
\003\125\004\013\014\064\111\056\103\101\040\055\040\101\143\143
\162\145\144\151\164\145\144\040\120\162\157\166\151\144\145\162
\040\157\146\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\123\145\162\166\151\143\145\163
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\267\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\072\060\070\006\003\125\004\003\014\061\111\056\103\101\040
\055\040\121\165\141\154\151\146\151\145\144\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053
\006\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145
\162\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164
\157\162\151\164\141\054\040\141\056\163\056\061\075\060\073\006
\003\125\004\013\014\064\111\056\103\101\040\055\040\101\143\143
\162\145\144\151\164\145\144\040\120\162\157\166\151\144\145\162
\040\157\146\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\000\240\067\240
END

CKA_VALUE MULTILINE_OCTAL
\060\202\005\036\060\202\004\006\240\003\002\001\002\002\004\000
\240\067\240\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\267\061\013\060\011\006\003\125\004\006\023\002
\103\132\061\072\060\070\006\003\125\004\003\014\061\111\056\103
\101\040\055\040\121\165\141\154\151\146\151\145\144\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\054\040\060\071\057\062\060\060\071\061\055
\060\053\006\003\125\004\012\014\044\120\162\166\156\303\255\040
\143\145\162\164\151\146\151\153\141\304\215\156\303\255\040\141
\165\164\157\162\151\164\141\054\040\141\056\163\056\061\075\060
\073\006\003\125\004\013\014\064\111\056\103\101\040\055\040\101
\143\143\162\145\144\151\164\145\144\040\120\162\157\166\151\144
\145\162\040\157\146\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\123\145\162\166\151\143\145\163\060\036\027\015
\060\071\060\071\060\061\060\060\060\060\060\060\132\027\015\061
\071\060\071\060\061\060\060\060\060\060\060\060\132\060\201\267\061
\013\060\011\006\003\125\004\006\023\002\103\132\061\072\060\070
\006\003\125\004\003\014\061\111\056\103\101\040\055\040\121\165
\141\154\151\146\151\145\144\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\054
\040\060\071\057\062\060\060\071\061\055\060\053\006\003\125\004
\012\014\044\120\162\166\156\303\255\040\143\145\162\164\151\146
\151\153\141\304\215\156\303\255\040\141\165\164\157\162\151\164
\141\054\040\141\056\163\056\061\075\060\073\006\003\125\004\013
\014\064\111\056\103\101\040\055\040\101\143\143\162\145\144\151
\164\145\144\040\120\162\157\166\151\144\145\162\040\157\146\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\265\066\204\313\102\202\360\317\145
\342\124\232\130\163\054\343\353\025\127\122\360\317\042\130\210
\204\015\170\052\357\324\161\346\375\212\106\041\326\077\147\256
\064\161\346\247\222\064\057\041\176\346\333\160\112\340\344\202
\350\243\274\221\226\000\337\072\051\073\076\206\024\043\212\127
\143\357\056\351\033\163\347\066\212\141\172\220\261\304\277\252
\215\003\305\261\204\366\321\337\022\260\224\160\360\007\154\241
\133\072\073\127\164\025\200\064\106\363\173\056\202\244\047\264
\246\002\334\271\345\114\146\311\244\323\376\003\076\366\202\223
\275\000\165\047\374\200\141\026\116\044\261\317\045\141\055\213
\364\140\262\364\053\046\164\244\201\077\277\051\367\017\013\307
\273\303\056\251\003\202\335\177\314\032\334\121\151\222\111\276
\300\023\360\117\021\343\053\311\005\165\041\322\072\236\121\247
\006\025\244\134\346\037\350\144\235\153\042\160\363\246\355\273
\020\273\276\040\312\066\266\351\343\201\343\101\026\222\306\172
\172\073\167\255\243\134\170\015\370\230\167\017\330\154\221\136
\354\110\344\305\044\001\313\002\003\001\000\001\243\202\001\056
\060\202\001\052\060\017\006\003\125\035\023\001\001\377\004\005

\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\201\347\006\003\125\035\040\004\201\337
\060\201\334\060\201\331\006\004\125\035\040\000\060\201\320\060
\201\315\006\010\053\006\001\005\005\007\002\002\060\201\300\032
\201\275\124\145\156\164\157\040\143\145\162\164\151\146\151\153
\141\164\040\152\145\040\166\171\144\141\156\040\152\141\153\157
\040\153\166\141\154\151\146\151\153\157\166\141\156\171\040\163
\171\163\164\145\155\157\166\171\040\143\145\162\164\151\146\151
\153\141\164\040\160\157\144\154\145\040\172\141\153\157\156\141
\040\143\056\040\062\062\067\057\062\060\060\060\040\123\142\056
\040\166\040\160\154\141\164\156\145\155\040\172\156\145\156\151
\057\124\150\151\163\040\151\163\040\161\165\141\154\151\146\151
\145\144\040\163\171\163\164\145\155\040\143\145\162\164\151\146
\151\143\141\164\145\040\141\143\143\157\162\144\151\156\147\040
\164\157\040\103\172\145\143\150\040\101\143\164\040\116\157\056
\040\062\062\067\057\062\060\060\060\040\103\157\154\154\056\060
\035\006\003\125\035\016\004\026\004\024\171\313\320\043\351\072
\147\160\221\164\117\323\121\342\340\040\375\341\050\373\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\175\225\245\066\327\210\130\150\021\317\145\373\133\015
\057\366\164\201\213\131\331\235\111\270\365\071\226\311\360\262
\017\004\314\130\214\372\004\062\254\300\107\276\055\303\336\223
\213\246\226\105\256\126\164\345\232\113\242\077\252\046\304\050
\126\141\044\005\127\137\231\244\307\147\260\030\122\311\373\101
\250\371\344\361\236\062\316\236\025\105\331\135\254\373\236\333
\233\307\074\217\257\333\113\242\043\350\073\051\160\161\030\245
\370\343\207\256\041\023\152\364\151\052\131\016\061\263\050\123
\072\142\232\254\010\223\174\251\207\266\137\132\246\030\302\320
\302\363\135\214\157\247\077\060\211\070\353\224\023\052\110\132
\336\171\345\220\313\136\244\271\027\266\143\006\071\137\310\066
\143\021\364\266\022\317\110\166\211\074\152\127\371\353\163\042
\367\372\076\005\256\072\300\306\016\222\115\317\324\211\124\321
\032\202\152\067\133\226\050\250\000\042\203\316\320\052\271\263
\215\123\130\056\145\134\325\362\333\214\001\045\163\154\227\213
\374\140\001\354\100\223\301\355\121\270\252\313\142\330\045\060
\242\075
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "I.CA - Qualified Certification Authority, 09/2009"
Issuer: OU=I.CA - Accredited Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified Certification Authority\, 09/2009,C=CZ
Serial Number:a0:37:a0
Subject: OU=I.CA - Accredited Provider of Certification Services,O=První certifikaní autorita\, a.s.,CN=I.CA -

Qualified Certification Authority\, 09/2009,C=CZ
Not Valid Before: Tue Sep 01 00:00:00 2009
Not Valid After: Sun Sep 01 00:00:00 2019
Fingerprint (MD5): 8d:63:9b:56:c1:14:e4:ee:9a:12:85:86:11:90:82:a3
Fingerprint (SHA1): d2:44:1a:a8:c2:03:ae:ca:a9:6e:50:1f:12:4d:52:b6:8f:e4:c3:75
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL
CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Qualified Certification Authority, 09/2009"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\322\104\032\250\302\003\256\312\251\156\120\037\022\115\122\266
\217\344\303\165
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\215\143\233\126\301\024\344\356\232\022\205\206\021\220\202\243
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\267\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\072\060\070\006\003\125\004\003\014\061\111\056\103\101\040
\055\040\121\165\141\154\151\146\151\145\144\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\054\040\060\071\057\062\060\060\071\061\055\060\053
\006\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145
\162\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164
\157\162\151\164\141\054\040\141\056\163\056\061\075\060\073\006
\003\125\004\013\014\064\111\056\103\101\040\055\040\101\143\143
\162\145\144\151\164\145\144\040\120\162\157\166\151\144\145\162
\040\157\146\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\123\145\162\166\151\143\145\163
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\000\240\067\240
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VI Registru Centras RCSC (RootCA)"
Issuer: CN=VI Registru Centras RCSC (RootCA),OU=Registru Centro Sertifikavimo Centras,O=VI Registru Centras - I.k. 124110246,C=LT
Serial Number:03:a3:a4:57:b5:f0:f3:86:4a:11:63:e8:98:ff:16:9c
Subject: CN=VI Registru Centras RCSC (RootCA),OU=Registru Centro Sertifikavimo Centras,O=VI Registru Centras - I.k. 124110246,C=LT

Not Valid Before: Mon Jul 21 11:47:46 2008
Not Valid After: Sun Jul 21 11:47:46 2024
Fingerprint (MD5): 41:5b:95:78:0d:d1:c3:a7:dc:d9:ba:fe:e7:27:b6:14
#
 Fingerprint (SHA1): 97:1d:34:86:fc:1e:8e:63:15:f7:c6:f2:e1:29:67:c7:24:34:22:14
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VI Registru Centras RCSC (RootCA)"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\114\124
\061\055\060\053\006\003\125\004\012\023\044\126\111\040\122\145
\147\151\163\164\162\165\040\103\145\156\164\162\141\163\040\055
\040\111\056\153\056\040\061\062\064\061\061\060\062\064\066\061
\056\060\054\006\003\125\004\013\023\045\122\145\147\151\163\164
\162\165\040\103\145\156\164\162\157\040\123\145\162\164\151\146
\151\153\141\166\151\155\157\040\103\145\156\164\162\141\163\061
\052\060\050\006\003\125\004\003\023\041\126\111\040\122\145\147
\151\163\164\162\165\040\103\145\156\164\162\141\163\040\122\103
\123\103\040\050\122\157\157\164\103\101\051
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\114\124
\061\055\060\053\006\003\125\004\012\023\044\126\111\040\122\145
\147\151\163\164\162\165\040\103\145\156\164\162\141\163\040\055
\040\111\056\153\056\040\061\062\064\061\061\060\062\064\066\061
\056\060\054\006\003\125\004\013\023\045\122\145\147\151\163\164
\162\165\040\103\145\156\164\162\157\040\123\145\162\164\151\146
\151\153\141\166\151\155\157\040\103\145\156\164\162\141\163\061
\052\060\050\006\003\125\004\003\023\041\126\111\040\122\145\147
\151\163\164\162\165\040\103\145\156\164\162\141\163\040\122\103
\123\103\040\050\122\157\157\164\103\101\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\243\244\127\265\360\363\206\112\021\143\350\230\377
\026\234
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\212\060\202\004\162\240\003\002\001\002\002\020\003
\243\244\127\265\360\363\206\112\021\143\350\230\377\026\234\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\230\061\013\060\011\006\003\125\004\006\023\002\114\124\061\055
\060\053\006\003\125\004\012\023\044\126\111\040\122\145\147\151
\163\164\162\165\040\103\145\156\164\162\141\163\040\055\040\111

\056\153\056\040\061\062\064\061\061\060\062\064\066\061\056\060
\054\006\003\125\004\013\023\045\122\145\147\151\163\164\162\165
\040\103\145\156\164\162\157\040\123\145\162\164\151\146\151\153
\141\166\151\155\157\040\103\145\156\164\162\141\163\061\052\060
\050\006\003\125\004\003\023\041\126\111\040\122\145\147\151\163
\164\162\165\040\103\145\156\164\162\141\163\040\122\103\123\103
\040\050\122\157\157\164\103\101\051\060\036\027\015\060\070\060
\067\062\061\061\061\064\067\064\066\132\027\015\062\064\060\067
\062\061\061\061\064\067\064\066\132\060\201\230\061\013\060\011
\006\003\125\004\006\023\002\114\124\061\055\060\053\006\003\125
\004\012\023\044\126\111\040\122\145\147\151\163\164\162\165\040
\103\145\156\164\162\141\163\040\055\040\111\056\153\056\040\061
\062\064\061\061\060\062\064\066\061\056\060\054\006\003\125\004
\013\023\045\122\145\147\151\163\164\162\165\040\103\145\156\164
\162\157\040\123\145\162\164\151\146\151\153\141\166\151\155\157
\040\103\145\156\164\162\141\163\061\052\060\050\006\003\125\004
\003\023\041\126\111\040\122\145\147\151\163\164\162\165\040\103
\145\156\164\162\141\163\040\122\103\123\103\040\050\122\157\157
\164\103\101\051\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\310\231\362\042\307\263\207\025\056\247\313
\115\106\253\147\227\317\017\163\167\003\367\144\174\166\110\062
\040\364\243\330\131\235\024\251\037\240\036\221\016\015\255\365
\376\147\222\221\023\040\041\115\012\125\156\161\372\254\027\313
\000\375\016\120\002\063\333\251\330\275\141\032\375\340\020\127
\261\125\171\140\031\264\124\171\236\373\200\060\342\310\102\311
\122\002\010\330\254\057\303\161\101\124\002\365\201\212\022\343
\151\002\245\207\241\160\175\005\276\245\142\277\005\260\010\226
\107\157\177\223\212\255\340\254\323\102\336\275\346\217\024\345
\163\050\240\003\233\101\372\345\076\367\071\164\056\144\364\237
\113\300\365\170\231\124\153\345\025\040\374\351\062\162\100\253
\145\165\274\074\106\064\322\370\020\141\307\014\170\307\174\300
\021\121\321\005\066\373\370\234\377\055\270\345\161\055\111\360
\127\110\263\223\216\234\373\072\311\113\155\061\327\122\325\126
\351\204\056\221\324\002\035\262\200\005\201\305\200\312\051\301
\064\147\271\257\004\060\103\366\257\102\107\336\374\001\056\350
\102\234\276\262\013\024\344\064\334\335\255\123\204\172\330\003
\126\321\302\014\324\227\051\370\114\362\265\034\337\235\203\256
\137\132\045\113\242\260\050\345\277\132\013\320\234\250\234\160
\052\155\016\056\341\047\277\255\013\157\021\323\370\106\055\364
\227\104\113\312\260\310\346\066\157\042\272\216\344\122\225\026
\354\104\152\324\120\036\230\050\371\150\244\272\336\236\060\355
\242\311\122\241\311\065\212\100\341\215\233\233\375\361\106\213
\244\307\117\160\140\121\215\362\222\251\316\272\214\057\111\122
\022\147\320\365\253\004\045\100\164\003\342\330\255\241\164\130
\141\267\265\016\363\177\045\054\021\143\257\361\022\303\364\244
\163\232\144\254\356\246\006\217\362\274\234\254\050\251\134\025
\323\063\255\320\066\310\041\160\153\274\052\037\325\253\270\001

\130\166\374\073\021\115\373\362\034\110\044\021\375\115\217\031
\051\256\153\350\155\136\262\241\015\170\316\322\143\203\164\264
\315\051\114\277\233\160\210\117\022\015\105\347\276\017\145\304
\326\070\044\344\112\025\213\321\152\352\273\066\241\241\220\245
\123\310\245\326\145\002\003\001\000\001\243\201\315\060\201\312
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\057\006\010\053\006\001\005\005\007\001\003\004\043\060\041
\060\010\006\006\004\000\216\106\001\001\060\013\006\006\004\000
\216\106\001\003\002\001\012\060\010\006\006\004\000\216\106\001
\004\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\274\163\076
\057\234\221\014\273\217\315\167\231\076\314\205\344\314\130\150
\021\060\020\006\011\053\006\001\004\001\202\067\025\001\004\003
\002\001\000\060\105\006\003\125\035\040\004\076\060\074\060\072
\006\013\053\006\001\004\001\201\361\067\001\001\001\060\053\060
\051\006\010\053\006\001\005\005\007\002\001\026\035\150\164\164
\160\072\057\057\167\167\167\056\162\143\163\143\056\154\164\057
\162\145\160\157\163\151\164\157\162\171\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\031\170
\054\121\023\137\274\231\116\134\247\001\374\336\266\376\251\035
\206\061\021\173\172\231\212\263\210\222\245\140\322\004\143\071
\274\257\216\330\361\053\105\162\062\051\074\055\342\331\330\075
\164\372\107\065\207\334\020\000\066\101\075\355\252\176\262\314
\304\032\351\061\264\365\221\321\204\112\347\365\334\317\106\147
\002\231\257\270\167\372\176\355\041\157\226\043\024\161\077\320
\130\276\252\333\103\054\067\240\035\006\151\064\360\117\217\165
\356\263\322\001\273\354\034\351\217\251\211\357\370\324\033\101
\002\231\276\360\137\272\216\054\302\041\160\336\121\201\330\367
\274\270\303\063\203\303\227\312\011\163\304\351\167\310\162\364
\134\255\017\015\212\352\355\322\012\001\316\353\127\235\025\360
\051\025\357\131\234\257\254\222\202\160\014\230\330\042\235\057
\230\065\251\321\212\211\274\325\235\125\302\056\236\007\045\106
\366\222\115\120\372\075\211\362\337\223\277\223\224\320\331\257
\127\243\363\146\346\216\361\350\240\033\030\006\223\132\054\211
\015\066\304\372\040\263\334\050\365\152\356\217\061\233\131\070
\330\116\152\240\043\041\344\206\253\345\373\140\243\321\315\132
\054\102\111\246\016\125\044\045\065\375\322\072\257\153\130\246
\221\106\137\151\313\275\176\046\233\336\010\275\036\354\236\246
\370\234\165\244\100\066\225\113\042\117\306\266\175\162\121\274
\343\302\150\315\315\345\213\276\300\302\117\233\156\145\316\026
\267\010\210\307\207\336\377\062\214\313\353\102\101\254\373\327
\317\001\103\370\157\300\326\013\360\367\222\351\313\105\135\144
\261\367\312\074\273\211\010\226\311\332\016\341\161\052\017\354
\244\102\055\343\152\017\107\107\260\123\246\326\205\120\227\060
\327\214\056\137\106\042\320\254\316\074\136\234\036\162\203\375
\014\247\370\027\062\273\141\336\343\117\057\030\216\202\265\207
\033\164\005\060\112\277\152\036\110\074\124\050\261\135\235\222
\137\233\020\343\056\042\212\257\335\066\144\177\023\166\107\203

\065\225\032\224\217\365\304\123\155\071\275\325\213\365\312\317
\030\103\005\001\223\244\066\336\060\322\024\363\260\144\265\312
\316\225\367\272\164\354\212\163\076\122\323\136\123\000
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VI Registru Centras RCSC (RootCA)"
Issuer: CN=VI Registru Centras RCSC (RootCA),OU=Registru Centro Sertifikavimo Centras,O=VI Registru Centras - I.k. 124110246,C=LT
Serial Number:03:a3:a4:57:b5:f0:f3:86:4a:11:63:e8:98:ff:16:9c
Subject: CN=VI Registru Centras RCSC (RootCA),OU=Registru Centro Sertifikavimo Centras,O=VI Registru Centras - I.k. 124110246,C=LT
Not Valid Before: Mon Jul 21 11:47:46 2008
Not Valid After: Sun Jul 21 11:47:46 2024
Fingerprint (MD5): 41:5b:95:78:0d:d1:c3:a7:dc:d9:ba:fe:e7:27:b6:14
Fingerprint (SHA1): 97:1d:34:86:fc:1e:8e:63:15:f7:c6:f2:e1:29:67:c7:24:34:22:14
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VI Registru Centras RCSC (RootCA)"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\227\035\064\206\374\036\216\143\025\367\306\362\341\051\147\307
\044\064\042\024
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\101\133\225\170\015\321\303\247\334\331\272\376\347\047\266\024
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\114\124
\061\055\060\053\006\003\125\004\012\023\044\126\111\040\122\145
\147\151\163\164\162\165\040\103\145\156\164\162\141\163\040\055
\040\111\056\153\056\040\061\062\064\061\061\060\062\064\066\061
\056\060\054\006\003\125\004\013\023\045\122\145\147\151\163\164
\162\165\040\103\145\156\164\162\157\040\123\145\162\164\151\146
\151\153\141\166\151\155\157\040\103\145\156\164\162\141\163\061
\052\060\050\006\003\125\004\003\023\041\126\111\040\122\145\147
\151\163\164\162\165\040\103\145\156\164\162\141\163\040\122\103
\123\103\040\050\122\157\157\164\103\101\051
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\003\243\244\127\265\360\363\206\112\021\143\350\230\377

\026\234
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Autoridade Certificadora Raiz Brasileira v1"
Issuer: CN=Autoridade Certificadora Raiz Brasileira v1,OU=Instituto
Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Serial Number: 1 (0x1)
Subject: CN=Autoridade Certificadora Raiz Brasileira v1,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Not Valid Before: Tue Jul 29 19:17:10 2008
Not Valid After: Thu Jul 29 19:17:10 2021
Fingerprint (MD5): 93:f1:ad:34:0b:2b:e7:a8:54:60:e2:73:8c:a4:94:31
Fingerprint (SHA1): 70:5d:2b:45:65:c7:04:7a:54:06:94:a7:9a:f7:ab:b8:42:bd:c1:61
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridade Certificadora Raiz Brasileira v1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101
\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141
\163\151\154\145\151\162\141\040\166\061
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101
\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141

\163\151\154\145\151\162\141\040\166\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\200\060\202\003\150\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122\061
\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102\162
\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064\111
\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156\141
\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141\040
\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055\040
\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101\165
\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146\151
\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141\163
\151\154\145\151\162\141\040\166\061\060\036\027\015\060\070\060
\067\062\071\061\071\061\067\061\060\132\027\015\062\061\060\067
\062\071\061\071\061\067\061\060\132\060\201\227\061\013\060\011
\006\003\125\004\006\023\002\102\122\061\023\060\021\006\003\125
\004\012\023\012\111\103\120\055\102\162\141\163\151\154\061\075
\060\073\006\003\125\004\013\023\064\111\156\163\164\151\164\165
\164\157\040\116\141\143\151\157\156\141\154\040\144\145\040\124
\145\143\156\157\154\157\147\151\141\040\144\141\040\111\156\146
\157\162\155\141\143\141\157\040\055\040\111\124\111\061\064\060
\062\006\003\125\004\003\023\053\101\165\164\157\162\151\144\141
\144\145\040\103\145\162\164\151\146\151\143\141\144\157\162\141
\040\122\141\151\172\040\102\162\141\163\151\154\145\151\162\141
\040\166\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\316\034\350\276\223\064\316\311\261\344\124\356
\011\366\354\244\010\205\240\077\306\212\306\160\060\247\200\214
\355\076\001\124\007\214\031\043\073\237\273\307\264\213\040\261
\342\367\101\026\055\136\207\146\272\260\007\335\157\321\077\074
\332\310\131\063\235\025\260\237\222\310\126\124\130\212\072\047
\242\064\036\233\170\265\267\315\345\233\351\300\056\022\236\160
\170\007\372\216\362\114\300\370\345\162\174\036\251\251\140\003
\127\046\107\333\203\166\303\316\310\022\273\321\377\357\256\263
\142\175\232\240\344\274\156\175\001\056\064\140\334\207\340\137
\177\005\160\134\060\025\054\302\165\243\077\120\003\146\043\146
\054\347\164\167\170\333\146\027\337\371\037\015\202\150\217\165
\207\367\351\061\172\123\117\317\130\142\273\100\242\064\317\300
\160\204\120\227\025\332\040\113\351\373\114\102\255\053\150\216
\243\331\255\005\142\376\010\164\304\350\301\314\205\023\316\255
\050\060\120\335\336\300\201\301\111\260\136\056\046\070\351\143
\004\063\167\265\200\166\315\052\177\362\074\254\135\223\102\071

\364\242\163\105\002\003\001\000\001\243\201\324\060\201\321\060
\116\006\003\125\035\040\004\107\060\105\060\103\006\005\140\114
\001\001\000\060\072\060\070\006\010\053\006\001\005\005\007\002
\001\026\054\150\164\164\160\072\057\057\141\143\162\141\151\172
\056\151\143\160\142\162\141\163\151\154\056\147\157\166\056\142
\162\057\104\120\103\141\143\162\141\151\172\056\160\144\146\060
\077\006\003\125\035\037\004\070\060\066\060\064\240\062\240\060
\206\056\150\164\164\160\072\057\057\141\143\162\141\151\172\056
\151\143\160\142\162\141\163\151\154\056\147\157\166\056\142\162
\057\114\103\122\141\143\162\141\151\172\166\061\056\143\162\154
\060\035\006\003\125\035\016\004\026\004\024\102\262\054\134\164
\001\007\276\233\377\125\063\073\356\051\273\135\221\277\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\131\154\212\166\351\031\161\127\203\376\247\364
\172\017\236\201\320\317\007\034\014\043\351\044\015\121\313\063
\350\052\011\303\172\377\016\243\200\206\140\301\160\227\340\300
\012\125\335\244\145\114\217\247\107\260\127\267\363\253\304\303
\031\343\230\354\015\260\033\121\221\311\331\011\326\351\152\263
\347\014\260\262\222\207\373\216\115\025\354\022\024\031\170\014
\142\352\024\071\030\012\305\125\333\123\205\334\173\050\372\025
\161\243\312\164\045\202\017\147\047\064\327\256\122\023\002\373
\305\357\232\200\045\245\122\236\071\016\355\072\364\170\007\137
\325\050\172\012\112\365\320\303\147\367\214\130\027\157\012\000
\243\046\020\264\140\042\072\112\110\245\332\340\251\204\336\103
\333\237\103\247\077\050\004\107\222\057\367\347\144\165\041\322
\117\201\316\252\076\144\016\343\016\255\125\232\176\224\233\064
\301\320\256\151\116\036\243\331\263\207\127\332\160\302\132\175
\207\315\371\277\067\336\355\126\065\367\267\042\016\117\222\270
\077\010\337\234\236\230\136\362\157\271\372\233\054\370\315\105
\330\162\262\040
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Trust for "Autoridade Certificadora Raiz Brasileira v1"
Issuer: CN=Autoridade Certificadora Raiz Brasileira v1,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Serial Number: 1 (0x1)
Subject: CN=Autoridade Certificadora Raiz Brasileira v1,OU=Instituto Nacional de Tecnologia da Informacao - ITI,O=ICP-Brasil,C=BR
Not Valid Before: Tue Jul 29 19:17:10 2008
Not Valid After: Thu Jul 29 19:17:10 2021

Fingerprint (MD5): 93:f1:ad:34:0b:2b:e7:a8:54:60:e2:73:8c:a4:94:31
Fingerprint (SHA1): 70:5d:2b:45:65:c7:04:7a:54:06:94:a7:9a:f7:ab:b8:42:bd:c1:61
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridade Certificadora Raiz Brasileira v1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\160\135\053\105\145\307\004\172\124\006\224\247\232\367\253\270
\102\275\301\141
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\223\361\255\064\013\053\347\250\124\140\342\163\214\244\224\061
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\102\122
\061\023\060\021\006\003\125\004\012\023\012\111\103\120\055\102
\162\141\163\151\154\061\075\060\073\006\003\125\004\013\023\064
\111\156\163\164\151\164\165\164\157\040\116\141\143\151\157\156
\141\154\040\144\145\040\124\145\143\156\157\154\157\147\151\141
\040\144\141\040\111\156\146\157\162\155\141\143\141\157\040\055
\040\111\124\111\061\064\060\062\006\003\125\004\003\023\053\101
\165\164\157\162\151\144\141\144\145\040\103\145\162\164\151\146
\151\143\141\144\157\162\141\040\122\141\151\172\040\102\162\141
\163\151\154\145\151\162\141\040\166\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Actalis Authentication
 CA G1"
Issuer: CN=Actalis Authentication CA G1,O=Actalis S.p.A./03358520967,L=Milano,C=IT
Serial Number: 1 (0x1)
Subject: CN=Actalis Authentication CA G1,O=Actalis S.p.A./03358520967,L=Milano,C=IT
Not Valid Before: Tue Jun 23 14:06:00 2009
Not Valid After: Sat Jun 25 14:06:00 2022
Fingerprint (MD5): c2:2a:59:ab:cf:15:2f:4c:f7:e6:31:a3:16:ae:84:0c
Fingerprint (SHA1): 91:58:c5:ef:98:73:01:a8:90:3c:fd:ab:03:d7:2d:a1:d8:89:09:c9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication CA G1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\152\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\017\060\015\006\003\125\004\007\014\006\115\151\154\141\156\157
\061\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154
\151\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065
\062\060\071\066\067\061\045\060\043\006\003\125\004\003\014\034
\101\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151
\143\141\164\151\157\156\040\103\101\040\107\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\152\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\017\060\015\006\003\125\004\007\014\006\115\151\154\141\156\157
\061\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154
\151\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065
\062\060\071\066\067\061\045\060\043\006\003\125\004\003\014\034
\101\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151
\143\141\164\151\157\156\040\103\101\040\107\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\224\060\202\002\174\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\152\061\013\060\011\006\003\125\004\006\023\002\111\124\061\017
\060\015\006\003\125\004\007\014\006\115\151\154\141\156\157\061
\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154\151
\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065\062
\060\071\066\067\061\045\060\043\006\003\125\004\003\014\034\101
\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151\143
\141\164\151\157\156\040\103\101\040\107\061\060\036\027\015\060
\071\060\066\062\063\061\064\060\066\060\060\132\027\015\062\062
\060\066\062\065\061\064\060\066\060\060\132\060\152\061\013\060
\011\006\003\125\004\006\023\002\111\124\061\017\060\015\006\003
\125\004\007\014\006\115\151\154\141\156\157\061\043\060\041\006
\003\125\004\012\014\032\101\143\164\141\154\151\163\040\123\056
\160\056\101\056\057\060\063\063\065\070\065\062\060\071\066\067
\061\045\060\043\006\003\125\004\003\014\034\101\143\164\141\154
\151\163\040\101\165\164\150\145\156\164\151\143\141\164\151\157
\156\040\103\101\040\107\061\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\303\034\206\064\077\047\122\102
\140\272\053\140\320\041\053\311\327\351\100\165\072\154\130\017

\043\073\317\206\076\324\144\253\156\332\352\310\052\330\225\105
\337\311\034\322\045\222\236\020\230\132\213\161\151\300\225\351
\366\153\150\334\367\266\304\015\376\156\365\160\073\301\244\250
\117\040\242\047\013\237\361\022\165\174\317\256\177\136\313\170
\002\130\050\327\057\252\333\240\256\164\075\176\253\366\351\162
\241\052\317\326\220\140\337\340\240\065\312\300\333\004\304\007
\126\374\146\165\214\216\172\023\241\074\006\153\032\346\177\071
\234\210\344\204\157\242\342\177\153\237\354\001\252\322\304\313
\262\354\232\075\270\027\030\254\037\140\231\063\346\353\005\335
\314\362\151\147\260\016\276\050\044\103\313\055\271\107\204\031
\371\352\344\361\365\150\364\237\307\173\120\121\257\242\374\157
\167\210\061\277\222\333\177\234\305\265\254\241\010\230\347\152
\063\376\321\273\000\341\267\005\010\257\363\246\126\210\066\075
\343\212\112\342\015\235\200\206\146\237\324\302\243\120\272\034
\022\327\207\212\061\112\270\025\002\003\001\000\001\243\105\060
\103\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\022\006\003\125\035\023\001\001\377\004\010\060\006\001
\001\377\002\001\000\060\035\006\003\125\035\016\004\026\004\024
\001\273\326\233\126\264\176\346\305\130\335\054\230\364\312\162
\366\137\063\206\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\001\001\000\241\040\326\313\242\064\155\074
\156\341\125\322\112\320\331\272\262\067\121\210\167\047\356\002
\110\223\105\101\342\165\121\362\031\224\011\240\363\270\175\272
\003\200\043\240\045\357\001\031\265\331\032\172\055\343\102\212
\261\206\061\017\226\354\146\204\362\316\043\022\106\226\153\061
\136\006\272\257\243\122\252\102\040\250\321\256\252\233\337\304
\027\236\123\160\001\264\251\032\332\150\310\143\017\266\132\163
\123\321\151\021\006\023\122\347\153\250\005\061\267\260\374\207
\106\305\165\210\201\361\137\170\002\347\237\255\234\273\124\355
\137\231\152\067\325\353\125\263\052\300\103\140\121\334\264\161
\222\046\243\017\314\172\075\334\300\102\211\027\051\010\147\124
\144\305\371\250\104\274\204\161\130\226\075\147\127\177\273\254
\220\263\161\042\277\076\272\254\146\046\105\020\263\360\037\072
\072\150\245\120\065\312\264\027\221\006\001\054\367\015\260\160
\262\133\126\165\271\167\231\300\331\225\205\002\055\163\146\007
\311\117\231\021\356\133\053\250\343\150\043\005\250\363\004\017
\006\273\037\011\216\306\133\035
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Actalis Authentication CA G1"
Issuer: CN=Actalis Authentication CA G1,O=Actalis S.p.A./03358520967,L=Milano,C=IT
Serial Number: 1 (0x1)
Subject: CN=Actalis Authentication CA G1,O=Actalis S.p.A./03358520967,L=Milano,C=IT

Not Valid Before: Tue Jun 23 14:06:00 2009
Not Valid After: Sat Jun 25 14:06:00 2022
Fingerprint (MD5): c2:2a:59:ab:cf:15:2f:4c:f7:e6:31:a3:16:ae:84:0c
#
Fingerprint (SHA1): 91:58:c5:ef:98:73:01:a8:90:3c:fd:ab:03:d7:2d:a1:d8:89:09:c9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Actalis Authentication CA G1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\221\130\305\357\230\163\001\250\220\074\375\253\003\327\055\241
\330\211\011\311
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\302\052\131\253\317\025\057\114\367\346\061\243\026\256\204\014
END
CKA_ISSUER MULTILINE_OCTAL
\060\152\061\013\060\011\006\003\125\004\006\023\002\111\124\061
\017\060\015\006\003\125\004\007\014\006\115\151\154\141\156\157
\061\043\060\041\006\003\125\004\012\014\032\101\143\164\141\154
\151\163\040\123\056\160\056\101\056\057\060\063\063\065\070\065
\062\060\071\066\067\061\045\060\043\006\003\125\004\003\014\034
\101\143\164\141\154\151\163\040\101\165\164\150\145\156\164\151
\143\141\164\151\157\156\040\103\101\040\107\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "A-Trust-Qual-03"
Issuer: CN=A-Trust-Qual-03,OU=A-Trust-Qual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number: 255636 (0x3e694)
Subject: CN=A-Trust-Qual-03,OU=A-Trust-Qual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Thu Apr 24 22:00:00 2008
Not Valid After: Tue Apr 24 22:00:00 2018
Fingerprint (MD5): d8:7e:32:ef:69:f8:bf:72:03:1d:40:82:e8:a7:75:af
Fingerprint (SHA1): 42:ef:dd:e6:bf:f3:5e:d0:ba:e6:ac:dd:20:4c:50:ae:86:c4:f4:fa
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Qual-03"
CKA_CERTIFICATE_TYPE
CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\063\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\063\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\003\346\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\313\060\202\002\263\240\003\002\001\002\002\003\003
\346\224\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101
\124\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162
\165\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150
\145\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151
\155\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166
\145\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006
\003\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165
\141\154\055\060\063\061\030\060\026\006\003\125\004\003\014\017
\101\055\124\162\165\163\164\055\121\165\141\154\055\060\063\060
\036\027\015\060\070\060\064\062\064\062\062\060\060\060\060\132
\027\015\061\070\060\064\062\064\062\062\060\060\060\060\132\060
\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165\163

\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145\162
\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155\040
\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145\162
\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003\125
\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141\154
\055\060\063\061\030\060\026\006\003\125\004\003\014\017\101\055
\124\162\165\163\164\055\121\165\141\154\055\060\063\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\263\236
\044\210\034\322\317\100\003\110\152\252\245\240\053\275\226\365
\174\012\237\237\253\120\220\333\101\316\126\200\171\052\300\375
\223\123\172\234\133\363\131\141\044\210\143\243\325\030\356\233
\204\164\204\234\354\214\075\332\301\206\172\157\066\056\046\353
\176\075\311\076\255\347\256\113\164\167\050\053\044\040\377\052
\056\302\225\144\020\366\176\173\303\267\332\021\175\236\253\355
\057\214\031\242\034\235\214\314\063\160\165\011\007\376\136\373
\100\244\045\214\057\375\265\121\147\072\250\053\114\237\326\150
\235\140\233\244\305\143\260\356\160\315\050\077\112\164\352\131
\371\165\305\000\006\156\037\260\143\301\052\252\023\135\374\313
\322\145\033\071\061\042\132\302\171\042\135\031\361\113\302\276
\316\034\210\001\164\361\046\101\167\062\071\306\214\120\150\317
\123\205\103\212\017\240\217\356\216\013\222\243\000\100\276\300
\242\131\136\054\241\104\270\376\037\042\323\014\272\320\350\357
\051\344\162\067\112\213\370\026\354\042\062\007\052\043\054\363
\243\327\315\312\251\247\117\162\277\274\021\216\250\033\002\003
\001\000\001\243\066\060\064\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\021\006\003\125\035\016\004
\012\004\010\106\006\337\067\362\302\067\020\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\161
\010\324\046\104\276\200\342\153\102\265\052\120\375\135\350\214
\140\363\234\266\222\201\162\070\262\157\251\076\201\362\303\064
\044\123\241\121\122\310\245\211\323\274\334\333\022\271\333\251
\260\130\357\300\010\146\062\142\343\341\363\243\130\243\167\156
\356\344\241\273\127\021\150\167\063\010\364\315\131\270\352\135
\033\011\306\254\314\215\013\272\315\337\326\232\276\253\166\000
\255\175\026\113\144\134\337\230\076\153\155\136\054\174\071\025
\131\102\067\040\074\237\303\334\177\365\123\066\267\342\307\244
\042\214\172\276\161\275\115\263\150\310\270\251\211\377\161\060
\213\317\221\155\362\205\056\245\112\042\176\162\336\324\256\261
\355\014\357\374\105\175\055\334\044\255\355\171\007\345\255\117
\262\351\122\164\111\270\214\122\372\275\022\344\031\303\374\121
\215\026\343\153\150\156\071\232\337\051\071\245\273\261\241\027
\301\027\343\165\152\374\175\261\162\074\337\301\352\345\243\034
\324\235\131\033\032\164\037\151\052\203\124\044\030\323\356\345
\340\203\127\276\033\342\320\037\255\154\065\276\215\272\137
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "A-Trust-Qual-03"
Issuer: CN=A-Trust-Qual-03,OU=A-Trust-Qual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number: 255636 (0x3e694)
Subject: CN=A-Trust-Qual-03,OU=A-Trust-Qual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Thu Apr 24 22:00:00 2008
Not Valid After: Tue Apr 24 22:00:00 2018
Fingerprint (MD5): d8:7e:32:ef:69:f8:bf:72:03:1d:40:82:e8:a7:75:af
Fingerprint
(SHA1): 42:ef:dd:e6:bf:f3:5e:d0:ba:e6:ac:dd:20:4c:50:ae:86:c4:f4:fa
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-Qual-03"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\102\357\335\346\277\363\136\320\272\346\254\335\040\114\120\256
\206\304\364\372
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\330\176\062\357\151\370\277\162\003\035\100\202\350\247\165\257
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\213\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\030\060\026\006\003
\125\004\013\014\017\101\055\124\162\165\163\164\055\121\165\141
\154\055\060\063\061\030\060\026\006\003\125\004\003\014\017\101
\055\124\162\165\163\164\055\121\165\141\154\055\060\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\003\346\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

```
# Microsoft Code Signing Only Certificate
# Certificate "AddTrust External CA Root"
# Issuer: CN=AddTrust External CA Root,OU=AddTrust External TTP Network,O=AddTrust AB,C=SE
# Serial Number: 1 (0x1)
# Subject: CN=AddTrust External CA Root,OU=AddTrust External TTP Network,O=AddTrust AB,C=SE
# Not Valid Before: Tue May 30 10:48:38 2000
# Not Valid After: Sat May 30 10:48:38 2020
# Fingerprint (MD5): 1d:35:54:04:85:78:b0:3f:42:42:4d:bf:20:73:0a:3f
# Fingerprint (SHA1): 02:fa:f3:e2:91:43:54:68:60:78:57:69:4d:f5:e4:5b:68:85:18:68
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL
 CK_FALSE
CKA_LABEL UTF8 "AddTrust External CA Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\024\060\022\006\003\125\004\012\023\013\101\144\144\124\162\165
\163\164\040\101\102\061\046\060\044\006\003\125\004\013\023\035
\101\144\144\124\162\165\163\164\040\105\170\164\145\162\156\141
\154\040\124\124\120\040\116\145\164\167\157\162\153\061\042\060
\040\006\003\125\004\003\023\031\101\144\144\124\162\165\163\164
\040\105\170\164\145\162\156\141\154\040\103\101\040\122\157\157
\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\024\060\022\006\003\125\004\012\023\013\101\144\144\124\162\165
\163\164\040\101\102\061\046\060\044\006\003\125\004\013\023\035
\101\144\144\124\162\165\163\164\040\105\170\164\145\162\156\141
\154\040\124\124\120\040\116\145\164\167\157\162\153\061\042\060
\040\006\003\125\004\003\023\031\101\144\144\124\162\165\163\164
\040\105\170\164\145\162\156\141\154\040\103\101\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\066\060\202\003\036\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\157\061\013\060\011\006\003\125\004\006\023\002\123\105\061\024
\060\022\006\003\125\004\012\023\013\101\144\144\124\162\165\163
\164\040\101\102\061\046\060\044\006\003\125\004\013\023\035\101
\144\144\124\162\165\163\164\040\105\170\164\145\162\156\141\154
```

\040\124\124\120\040\116\145\164\167\157\162\153\061\042\060\040
\006\003\125\004\003\023\031\101\144\144\124\162\165\163\164\040
\105\170\164\145\162\156\141\154\040\103\101\040\122\157\157\164
\060\036\027\015\060\060\060\065\063\060\061\060\064\070\063\070
\132\027\015\062\060\060\065\063\060\061\060\064\070\063\070\132
\060\157\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\024\060\022\006\003\125\004\012\023\013\101\144\144\124\162\165
\163\164\040\101\102\061\046\060\044\006\003\125\004\013\023\035
\101\144\144\124\162\165\163\164\040\105\170\164\145\162\156\141
\154\040\124\124\120\040\116\145\164\167\157\162\153\061\042\060
\040\006\003\125\004\003\023\031\101\144\144\124\162\165\163\164
\040\105\170\164\145\162\156\141\154\040\103\101\040\122\157\157
\164\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\267\367\032\063\346\362\000\004\055\071\340\116\133\355
\037\274\154\017\315\265\372\043\266\316\336\233\021\063\227\244
\051\114\175\223\237\275\112\274\223\355\003\032\343\217\317\345
\155\120\132\326\227\051\224\132\200\260\111\172\333\056\225\375
\270\312\277\067\070\055\036\076\221\101\255\160\126\307\360\117
\077\350\062\236\164\312\310\220\124\351\306\137\017\170\235\232
\100\074\016\254\141\252\136\024\217\236\207\241\152\120\334\327
\232\116\257\005\263\246\161\224\234\161\263\120\140\012\307\023
\235\070\007\206\002\250\351\250\151\046\030\220\253\114\260\117
\043\253\072\117\204\330\337\316\237\341\151\157\273\327\102\327
\153\104\344\307\255\356\155\101\137\162\132\161\010\067\263\171
\145\244\131\240\224\067\367\000\057\015\302\222\162\332\320\070
\162\333\024\250\105\304\135\052\175\267\264\326\304\356\254\315
\023\104\267\311\053\335\103\000\045\372\141\271\151\152\130\043
\021\267\247\063\217\126\165\131\365\315\051\327\106\267\012\053
\145\266\323\102\157\025\262\270\173\373\357\351\135\123\325\064
\132\047\002\003\001\000\001\243\201\334\060\201\331\060\035\006
\003\125\035\016\004\026\004\024\255\275\230\172\064\264\046\367
\372\304\046\124\357\003\275\340\044\313\124\032\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\201\231\006\003\125
\035\043\004\201\221\060\201\216\200\024\255\275\230\172\064\264
\046\367\372\304\046\124\357\003\275\340\044\313\124\032\241\163
\244\161\060\157\061\013\060\011\006\003\125\004\006\023\002\123
\105\061\024\060\022\006\003\125\004\012\023\013\101\144\144\124
\162\165\163\164\040\101\102\061\046\060\044\006\003\125\004\013
\023\035\101\144\144\124\162\165\163\164\040\105\170\164\145\162
\156\141\154\040\124\124\120\040\116\145\164\167\157\162\153\061
\042\060\040\006\003\125\004\003\023\031\101\144\144\124\162\165
\163\164\040\105\170\164\145\162\156\141\154\040\103\101\040\122
\157\157\164\202\001\001\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\260\233\340\205\045\302
\326\043\342\017\226\006\222\235\101\230\234\331\204\171\201\331
\036\133\024\007\043\066\145\217\260\330\167\273\254\101\154\107

\140\203\121\260\371\062\075\347\374\366\046\023\307\200\026\245
\277\132\374\207\317\170\171\211\041\232\342\114\007\012\206\065
\274\362\336\121\304\322\226\267\334\176\116\356\160\375\034\071
\353\014\002\121\024\055\216\275\026\340\301\337\106\165\347\044
\255\354\364\102\264\205\223\160\020\147\272\235\006\065\112\030
\323\053\172\314\121\102\241\172\143\321\346\273\241\305\053\302
\066\276\023\015\346\275\143\176\171\173\247\011\015\100\253\152
\335\217\212\303\366\366\214\032\102\005\121\324\105\365\237\247
\142\041\150\025\040\103\074\231\347\174\275\044\330\251\221\027
\163\210\077\126\033\061\070\030\264\161\017\232\315\310\016\236
\216\056\033\341\214\230\203\313\037\061\361\104\114\306\004\163
\111\166\140\017\307\370\275\027\200\153\056\351\314\114\016\132
\232\171\017\040\012\056\325\236\143\046\036\125\222\224\330\202
\027\132\173\320\274\307\217\116\206\004
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "AddTrust External CA Root"
Issuer: CN=AddTrust External CA Root,OU=AddTrust External TTP Network,O=AddTrust AB,C=SE
Serial Number: 1 (0x1)
Subject: CN=AddTrust External CA Root,OU=AddTrust External TTP Network,O=AddTrust
AB,C=SE
Not Valid Before: Tue May 30 10:48:38 2000
Not Valid After: Sat May 30 10:48:38 2020
Fingerprint (MD5): 1d:35:54:04:85:78:b0:3f:42:42:4d:bf:20:73:0a:3f
Fingerprint (SHA1): 02:fa:f3:e2:91:43:54:68:60:78:57:69:4d:f5:e4:5b:68:85:18:68
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AddTrust External CA Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\002\372\363\342\221\103\124\150\140\170\127\151\115\365\344\133
\150\205\030\150
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\035\065\124\004\205\170\260\077\102\102\115\277\040\163\012\077
END
CKA_ISSUER MULTILINE_OCTAL
\060\157\061\013\060\011\006\003\125\004\006\023\002\123\105\061
\024\060\022\006\003\125\004\012\023\013\101\144\144\124\162\165
\163\164\040\101\102\061\046\060\044\006\003\125\004\013\023\035
\101\144\144\124\162\165\163\164\040\105\170\164\145\162\156\141
\154\040\124\124\120\040\116\145\164\167\157\162\153\061\042\060

\040\006\003\125\004\003\023\031\101\144\144\124\162\165\163\164
\040\105\170\164\145\162\156\141\154\040\103\101\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ECRaizEstado"
Issuer: CN=ECRaizEstado,O=SCEE,C=PT
Serial Number:42:ea:5b:0a:51:11:26:7c:d8:27:74:b7:df:7f:71
Subject: CN=ECRaizEstado,O=SCEE,C=PT
Not Valid Before: Fri Jun 23 13:41:27 2006
Not Valid After: Sun Jun 23 13:41:27 2030
Fingerprint (MD5): c2:db:ab:8e:96:52:c5:ee:ae:f2:55:00:89:6d:55:95
Fingerprint (SHA1): 39:13:85:3e:45:c4:39:a2:da:71:8c:df:b6:f3:e0:33:e0:4f:ee:71
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
 UTF8 "ECRaizEstado"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\015\060\013\006\003\125\004\012\014\004\123\103\105\105\061\025
\060\023\006\003\125\004\003\014\014\105\103\122\141\151\172\105
\163\164\141\144\157
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\015\060\013\006\003\125\004\012\014\004\123\103\105\105\061\025
\060\023\006\003\125\004\003\014\014\105\103\122\141\151\172\105
\163\164\141\144\157
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\102\352\133\012\121\021\046\174\330\047\164\267\337\177
\161
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\156\060\202\003\126\240\003\002\001\002\002\017\102

\352\133\012\121\021\046\174\330\047\164\267\337\177\161\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\060\063\061
\013\060\011\006\003\125\004\006\023\002\120\124\061\015\060\013
\006\003\125\004\012\014\004\123\103\105\105\061\025\060\023\006
\003\125\004\003\014\014\105\103\122\141\151\172\105\163\164\141
\144\157\060\036\027\015\060\066\060\066\062\063\061\063\064\061
\062\067\132\027\015\063\060\060\066\062\063\061\063\064\061\062
\067\132\060\063\061\013\060\011\006\003\125\004\006\023\002\120
\124\061\015\060\013\006\003\125\004\012\014\004\123\103\105\105
\061\025\060\023\006\003\125\004\003\014\014\105\103\122\141\151
\172\105\163\164\141\144\157\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\333\357\242\103\156\310\251\375
\156\327\337\254\242\222\204\241\310\131\240\014\232\123\376\357
\256\314\031\015\162\212\244\302\063\043\357\347\006\162\352\155
\113\072\101\122\017\311\110\016\055\347\272\144\356\242\072\114
\143\134\146\051\213\337\251\210\305\275\350\361\367\216\113\374
\001\074\104\022\071\052\160\242\300\333\305\242\337\137\307\113
\306\250\334\075\141\174\112\130\301\104\062\223\336\160\231\241
\043\046\126\077\243\341\352\137\060\106\330\170\365\060\243\226
\011\211\260\075\361\206\223\005\266\022\152\030\215\360\245\144
\073\053\207\144\136\075\027\216\013\156\346\230\314\227\070\070
\040\214\160\132\151\053\275\145\215\315\067\131\134\154\321\162
\164\131\006\116\310\267\001\327\167\277\360\110\206\250\263\032
\135\101\324\067\027\021\020\137\112\156\215\165\305\003\100\175
\041\256\000\360\333\374\237\154\072\146\244\337\367\312\337\200
\146\132\331\330\177\024\242\046\031\364\256\013\041\340\312\076
\005\335\026\330\176\131\332\241\260\151\303\235\064\023\372\145
\111\071\207\356\166\057\215\275\074\047\031\003\116\255\016\013
\053\054\306\056\161\023\065\051\127\351\160\334\033\121\352\315
\227\361\225\215\262\206\372\046\006\057\200\032\225\361\230\073
\356\366\345\206\245\316\033\001\345\364\351\063\312\017\125\104
\137\150\212\054\307\133\146\050\335\226\113\203\235\136\035\176
\030\325\376\262\140\373\232\121\150\303\226\214\037\150\113\120
\122\013\066\346\061\047\344\327\051\014\033\332\033\057\341\004
\123\270\324\171\111\260\073\201\136\010\210\042\167\342\051\300
\256\162\252\253\264\162\122\275\154\273\365\272\170\331\234\270
\040\157\060\215\112\235\062\371\364\001\346\142\171\230\102\100
\005\172\157\034\052\077\265\373\337\315\030\100\216\345\020\304
\071\133\126\361\074\127\005\253\322\071\115\077\370\213\043\307
\153\271\100\261\342\376\377\263\034\012\151\037\233\214\017\264
\037\340\012\336\110\375\215\137\217\231\365\001\166\005\066\135
\216\334\063\216\121\156\021\342\101\375\314\267\215\052\137\076
\222\345\362\261\340\244\043\342\242\267\306\215\030\233\051\112
\321\106\177\364\144\040\030\335\002\003\001\000\001\243\177\060
\175\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\161\177\065

\336\365\167\161\155\035\022\234\341\220\244\272\360\251\203\217
\200\060\073\006\003\125\035\040\004\064\060\062\060\060\006\004
\125\035\040\000\060\050\060\046\006\010\053\006\001\005\005\007
\002\001\026\032\150\164\164\160\072\057\057\167\167\167\056\145
\143\145\145\056\147\157\166\056\160\164\057\144\160\143\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002
\001\000\214\255\234\162\245\265\147\166\147\070\207\351\072\214
\376\235\131\065\276\220\361\003\000\240\130\330\230\321\277\374
\374\363\120\334\264\145\325\332\272\360\214\056\174\015\346\011
\221\137\115\243\366\135\170\234\130\135\152\160\224\243\257\333
\057\000\311\003\100\153\337\121\003\026\031\214\053\274\231\066
\366\300\255\222\030\023\214\247\355\035\322\337\003\220\005\354
\260\223\230\233\367\115\132\023\370\347\233\367\066\166\336\174
\046\370\021\070\117\111\116\263\163\037\137\047\133\341\236\062
\036\366\300\230\033\331\040\054\134\226\215\206\311\013\105\327
\222\255\212\275\352\127\242\243\126\266\040\074\354\262\307\071
\176\260\200\376\275\121\053\052\264\303\162\151\303\371\107\056
\156\377\234\207\355\334\165\313\020\210\340\264\316\056\016\123
\035\013\350\156\036\102\114\320\276\071\170\165\311\024\336\047
\221\163\252\354\152\200\360\360\027\226\142\117\276\004\313\342
\247\345\135\017\223\105\313\131\110\046\023\336\335\261\365\012
\332\026\261\250\035\217\176\130\033\267\325\011\336\210\153\316
\204\076\250\276\122\142\312\322\241\241\307\313\074\026\340\166
\126\060\077\346\017\153\006\167\376\144\235\132\152\163\174\356
\336\041\351\232\111\227\067\266\204\177\242\221\076\105\373\327
\132\006\305\207\065\334\272\110\114\206\001\010\107\066\266\070
\120\225\021\231\163\321\067\111\012\372\102\117\057\020\124\323
\101\220\372\310\334\273\021\334\015\314\175\174\233\334\016\221
\161\206\115\270\362\025\232\053\070\027\021\241\362\236\250\154
\234\343\316\256\342\346\113\213\362\212\006\073\007\167\002\021
\356\203\352\235\146\206\312\360\142\251\325\127\203\244\025\361
\105\024\376\032\165\177\245\017\334\122\164\131\165\012\370\373
\125\101\251\134\215\061\104\335\315\224\116\063\321\033\101\252
\333\327\241\074\360\305\110\155\105\101\065\265\171\203\346\371
\115\361\126\070\327\277\100\042\373\040\200\343\034\302\131\106
\007\143\002\141\000\073\233\120\273\103\303\260\351\012\232\270
\166\364\107\141\125\144\160\117\067\331\234\021\243\023\262\341
\335\100\102\273\230\327\240\006\213\346\150\127\113\016\070\150
\177\272
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ECRaizEstado"
Issuer: CN=ECRaizEstado,O=SCEE,C=PT

```
# Serial Number:42:ea:5b:0a:51:11:26:7c:d8:27:74:b7:df:7f:71
# Subject: CN=ECRaizEstado,O=SCEE,C=PT
# Not Valid Before: Fri Jun 23 13:41:27 2006
# Not Valid After: Sun Jun 23 13:41:27 2030
# Fingerprint (MD5): c2:db:ab:8e:96:52:c5:ee:ae:f2:55:00:89:6d:55:95
# Fingerprint (SHA1): 39:13:85:3e:45:c4:39:a2:da:71:8c:df:b6:f3:e0:33:e0:4f:ee:71
CKA_CLASS CK_OBJECT_CLASS
 CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ECRaizEstado"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\023\205\076\105\304\071\242\332\161\214\337\266\363\340\063
\340\117\356\161
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\302\333\253\216\226\122\305\356\256\362\125\000\211\155\125\225
END
CKA_ISSUER MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\120\124\061
\015\060\013\006\003\125\004\012\014\004\123\103\105\105\061\025
\060\023\006\003\125\004\003\014\014\105\103\122\141\151\172\105
\163\164\141\144\157
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\102\352\133\012\121\021\046\174\330\047\164\267\337\177
\161
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Configuration"
#
 Issuer: CN=Posta CA Root,CN=AIA,CN=Public Key
Services,CN=Services,CN=Configuration,DC=ca,DC=posta,DC=rs
# Serial Number:48:fc:7e:f5
# Subject: CN=Posta CA Root,CN=AIA,CN=Public Key
Services,CN=Services,CN=Configuration,DC=ca,DC=posta,DC=rs
# Not Valid Before: Mon Oct 20 12:22:08 2008
# Not Valid After: Fri Oct 20 12:52:08 2028
# Fingerprint (MD5): 18:02:b0:01:27:03:6a:19:1b:32:3b:83:de:9a:a9:85
# Fingerprint (SHA1): d6:bf:79:94:f4:2b:e5:fa:29:da:0b:d7:58:7b:59:1f:47:a4:4f:22
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
```

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Configuration"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\256\061\022\060\020\006\012\011\222\046\211\223\362\054
\144\001\031\026\002\162\163\061\025\060\023\006\012\011\222\046
\211\223\362\054\144\001\031\026\005\160\157\163\164\141\061\022
\060\020\006\012\011\222\046\211\223\362\054\144\001\031\026\002
\143\141\061\026\060\024\006\003\125\004\003\023\015\103\157\156
\146\151\147\165\162\141\164\151\157\156\061\021\060\017\006\003
\125\004\003\023\010\123\145\162\166\151\143\145\163\061\034\060
\032\006\003\125\004\003\023\023\120\165\142\154\151\143\040\113
\145\171\040\123\145\162\166\151\143\145\163\061\014\060\012\006
\003\125\004\003\023\003\101\111\101\061\026\060\024\006\003\125
\004\003\023\015\120\157\163\164\141\040\103\101\040\122\157\157
\164
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\022\060\020\006\012\011\222\046\211\223\362\054
\144\001\031\026\002\162\163\061\025\060\023\006\012\011\222\046
\211\223\362\054\144\001\031\026\005\160\157\163\164\141\061\022
\060\020\006\012\011\222\046\211\223\362\054\144\001\031\026\002
\143\141\061\026\060\024\006\003\125\004\003\023\015\103\157\156
\146\151\147\165\162\141\164\151\157\156\061\021\060\017\006\003
\125\004\003\023\010\123\145\162\166\151\143\145\163\061\034\060
\032\006\003\125\004\003\023\023\120\165\142\154\151\143\040\113
\145\171\040\123\145\162\166\151\143\145\163\061\014\060\012\006
\003\125\004\003\023\003\101\111\101\061\026\060\024\006\003\125
\004\003\023\015\120\157\163\164\141\040\103\101\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\110\374\176\365
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\037\060\202\006\007\240\003\002\001\002\002\004\110
\374\176\365\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\201\256\061\022\060\020\006\012\011\222\046\211\223
\362\054\144\001\031\026\002\162\163\061\025\060\023\006\012\011
\222\046\211\223\362\054\144\001\031\026\005\160\157\163\164\141
\061\022\060\020\006\012\011\222\046\211\223\362\054\144\001\031
\026\002\143\141\061\026\060\024\006\003\125\004\003\023\015\103
\157\156\146\151\147\165\162\141\164\151\157\156\061\021\060\017
\006\003\125\004\003\023\010\123\145\162\166\151\143\145\163\061

\034\060\032\006\003\125\004\003\023\023\120\165\142\154\151\143
\040\113\145\171\040\123\145\162\166\151\143\145\163\061\014\060
\012\006\003\125\004\003\023\003\101\111\101\061\026\060\024\006
\003\125\004\003\023\015\120\157\163\164\141\040\103\101\040\122
\157\157\164\060\036\027\015\060\070\061\060\062\060\061\062\062
\062\060\070\132\027\015\062\070\061\060\062\060\061\062\065\062
\060\070\132\060\201\256\061\022\060\020\006\012\011\222\046\211
\223\362\054\144\001\031\026\002\162\163\061\025\060\023\006\012
\011\222\046\211\223\362\054\144\001\031\026\005\160\157\163\164
\141\061\022\060\020\006\012\011\222\046\211\223\362\054\144\001
\031\026\002\143\141\061\026\060\024\006\003\125\004\003\023\015
\103\157\156\146\151\147\165\162\141\164\151\157\156\061\021\060
\017\006\003\125\004\003\023\010\123\145\162\166\151\143\145\163
\061\034\060\032\006\003\125\004\003\023\023\120\165\142\154\151
\143\040\113\145\171\040\123\145\162\166\151\143\145\163\061\014
\060\012\006\003\125\004\003\023\003\101\111\101\061\026\060\024
\006\003\125\004\003\023\015\120\157\163\164\141\040\103\101\040
\122\157\157\164\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\250\362\275\210\276\300\257\104\276\233\112
\242\143\034\326\126\253\035\051\262\034\252\025\036\105\321\254
\235\240\141\325\065\371\344\132\203\066\143\103\336\070\127\025
\374\360\224\142\364\007\200\127\203\127\250\263\025\274\373\115
\043\170\137\332\366\307\201\026\276\253\337\347\334\203\123\163
\053\266\335\143\210\215\105\363\015\335\175\277\350\210\260\146
\301\103\135\067\322\155\241\234\232\106\303\263\077\320\302\240
\212\224\056\203\246\074\303\140\275\054\314\036\213\143\202\166
\101\050\344\025\153\134\014\141\071\125\070\101\312\310\146\350
\307\270\227\122\020\046\160\267\007\267\011\036\246\023\136\256
\231\132\046\157\144\075\354\304\323\245\271\134\166\144\255\143
\175\210\203\342\113\314\015\336\324\306\323\010\102\365\133\027
\365\161\341\221\055\003\237\236\034\334\213\162\244\350\107\144
\020\207\144\060\163\330\362\264\361\127\046\223\127\313\266\307
\015\210\213\035\317\005\060\135\004\326\166\067\350\040\062\127
\277\017\234\063\306\010\214\366\264\302\251\006\260\133\060\241
\036\055\022\272\077\002\003\001\000\001\243\202\003\101\060\202
\003\075\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\201\272\006\003\125\035\040\004\201\262\060\201
\257\060\201\254\006\013\053\006\001\004\001\372\070\012\012\001
\001\060\201\234\060\060\006\010\053\006\001\005\005\007\002\001
\026\044\150\164\164\160\072\057\057\167\167\167\056\143\141\056
\160\157\163\164\141\056\162\163\057\144\157\153\165\155\145\156
\164\141\143\151\152\141\060\150\006\010\053\006\001\005\005\007
\002\002\060\134\032\132\117\166\157\040\152\145\040\145\154\145
\153\164\162\157\156\163\153\151\040\163\145\162\164\151\146\151
\153\141\164\040\122\117\117\124\040\103\101\040\163\145\162\166
\145\162\141\040\123\145\162\164\151\146\151\153\141\143\151\157

\156\157\147\040\164\145\154\141\040\120\157\163\164\145\072\040
\042\120\157\163\164\141\040\103\101\040\122\157\157\164\042\056
\060\021\006\011\140\206\110\001\206\370\102\001\001\004\004\003
\002\000\007\060\202\001\274\006\003\125\035\037\004\202\001\263
\060\202\001\257\060\201\311\240\201\306\240\201\303\244\201\300
\060\201\275\061\022\060\020\006\012\011\222\046\211\223\362\054
\144\001\031\026\002\162\163\061\025\060\023\006\012\011\222\046
\211\223\362\054\144\001\031\026\005\160\157\163\164\141\061\022
\060\020\006\012\011\222\046\211\223\362\054\144\001\031\026\002
\143\141\061\026\060\024\006\003\125\004\003\023\015\103\157\156
\146\151\147\165\162\141\164\151\157\156\061\021\060\017\006\003
\125\004\003\023\010\123\145\162\166\151\143\145\163\061\034\060
\032\006\003\125\004\003\023\023\120\165\142\154\151\143\040\113
\145\171\040\123\145\162\166\151\143\145\163\061\014\060\012\006
\003\125\004\003\023\003\101\111\101\061\026\060\024\006\003\125
\004\003\023\015\120\157\163\164\141\040\103\101\040\122\157\157
\164\061\015\060\013\006\003\125\004\003\023\004\103\122\114\061
\060\201\340\240\201\335\240\201\332\206\201\243\154\144\141\160
\072\057\057\154\144\141\160\056\143\141\056\160\157\163\164\141
\056\162\163\057\143\156\075\120\157\163\164\141\045\062\060\103
\101\045\062\060\122\157\157\164\054\143\156\075\101\111\101\054
\143\156\075\120\165\142\154\151\143\045\062\060\113\145\171\045
\062\060\123\145\162\166\151\143\145\163\054\143\156\075\123\145
\162\166\151\143\145\163\054\143\156\075\103\157\156\146\151\147
\165\162\141\164\151\157\156\054\144\143\075\143\141\054\144\143
\075\160\157\163\164\141\054\144\143\075\162\163\077\143\145\162
\164\151\146\151\143\141\164\145\122\145\166\157\143\141\164\151
\157\156\114\151\163\164\045\063\102\142\151\156\141\162\171\206
\062\150\164\164\160\072\057\057\163\145\162\164\151\146\151\153
\141\164\151\056\143\141\056\160\157\163\164\141\056\162\163\057
\143\162\154\057\120\157\163\164\141\103\101\122\157\157\164\056
\143\162\154\060\053\006\003\125\035\020\004\044\060\042\200\017
\062\060\060\070\061\060\062\060\061\062\062\062\060\070\132\201
\017\062\060\062\070\061\060\062\060\061\062\065\062\060\070\132
\060\037\006\003\125\035\043\004\030\060\026\200\024\362\313\215
\342\065\357\020\103\304\332\173\312\372\353\211\003\241\042\257
\270\060\035\006\003\125\035\016\004\026\004\024\362\313\215\342
\065\357\020\103\304\332\173\312\372\353\211\003\241\042\257\270
\060\035\006\011\052\206\110\206\366\175\007\101\000\004\020\060
\016\033\010\126\067\056\061\072\064\056\060\003\002\004\220\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\160\106\241\310\344\027\005\146\017\235\342\103\061
\110\035\222\220\031\304\205\001\205\026\156\370\222\316\173\256
\122\026\304\227\215\012\050\175\325\313\154\343\325\345\016\062
\117\310\150\055\064\010\075\163\250\223\102\051\063\106\014\104
\147\361\320\232\234\151\001\345\221\361\015\311\151\074\063\113
\116\031\223\143\063\005\051\041\241\330\377\076\124\253\236\366
\241\172\002\327\334\377\245\076\124\170\371\323\301\312\022\225

\371\211\236\024\342\362\241\104\262\313\351\055\165\065\314\226
\125\273\070\013\210\046\332\326\254\357\323\122\242\013\113\072
\123\332\113\042\123\314\312\052\044\232\142\252\304\062\232\176
\334\314\301\262\154\315\217\331\264\300\317\365\002\300\214\053
\204\133\033\100\274\020\320\120\341\141\326\146\126\232\004\221
\245\343\325\275\240\056\042\201\261\331\070\332\344\250\207\137
\074\106\004\226\336\311\232\073\277\255\170\154\035\111\111\264
\151\271\160\017\005\222\126\266\375\257\256\370\040\055\107\043
\317\266\034\315\304\233\200\116\371\277\061\300\124\276\273\061
\177\363\076
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Configuration"
Issuer: CN=Posta CA Root,CN=AIA,CN=Public Key
Services,CN=Services,CN=Configuration,DC=ca,DC=posta,DC=rs
Serial Number:48:fc:7e:f5
Subject: CN=Posta CA Root,CN=AIA,CN=Public Key
Services,CN=Services,CN=Configuration,DC=ca,DC=posta,DC=rs
Not Valid Before: Mon Oct 20 12:22:08 2008
Not Valid After: Fri Oct 20 12:52:08 2028
Fingerprint (MD5): 18:02:b0:01:27:03:6a:19:1b:32:3b:83:de:9a:a9:85
Fingerprint (SHA1): d6:bf:79:94:f4:2b:e5:fa:29:da:0b:d7:58:7b:59:1f:47:a4:4f:22
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Configuration"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\326\277\171\224\364\053\345\372\051\332\013\327\130\173\131\037
\107\244\117\042
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\030\002\260\001\047\003\152\031\033\062\073\203\336\232\251\205
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\022\060\020\006\012\011\222\046\211\223\362\054
\144\001\031\026\002\162\163\061\025\060\023\006\012\011\222\046
\211\223\362\054\144\001\031\026\005\160\157\163\164\141\061\022
\060\020\006\012\011\222\046\211\223\362\054\144\001\031\026\002
\143\141\061\026\060\024\006\003\125\004\003\023\015\103\157\156
\146\151\147\165\162\141\164\151\157\156\061\021\060\017\006\003
\125\004\003\023\010\123\145\162\166\151\143\145\163\061\034\060
\032\006\003\125\004\003\023\023\120\165\142\154\151\143\040\113

\145\171\040\123\145\162\166\151\143\145\163\061\014\060\012\006
\003\125\004\003\023\003\101\111\101\061\026\060\024\006\003\125
\004\003\023\015\120\157\163\164\141\040\103\101\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\110\374\176\365
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "StartCom Certification Authority"
Issuer: CN=StartCom Certification Authority,OU=Secure
Digital Certificate Signing,O=StartCom Ltd.,C=IL
Serial Number: 1 (0x1)
Subject: CN=StartCom Certification Authority,OU=Secure Digital Certificate Signing,O=StartCom Ltd.,C=IL
Not Valid Before: Sun Sep 17 19:46:36 2006
Not Valid After: Wed Sep 17 19:46:36 2036
Fingerprint (MD5): 22:4d:8f:8a:fc:f7:35:c2:bb:57:34:90:7b:8b:22:16
Fingerprint (SHA1): 3e:2b:f7:f2:03:1b:96:f3:8c:e6:c4:d8:a8:5d:3e:2d:58:47:6a:0f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "StartCom Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\053\060\051\006\003\125\004\013
\023\042\123\145\143\165\162\145\040\104\151\147\151\164\141\154
\040\103\145\162\164\151\146\151\143\141\164\145\040\123\151\147
\156\151\156\147\061\051\060\047\006\003\125\004\003\023\040\123
\164\141\162\164\103\157\155\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\053\060\051\006\003\125\004\013
\023\042\123\145\143\165\162\145\040\104\151\147\151\164\141\154
\040\103\145\162\164\151\146\151\143\141\164\145\040\123\151\147

\156\151\156\147\061\051\060\047\006\003\125\004\003\023\040\123
\164\141\162\164\103\157\155\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\311\060\202\005\261\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\175\061\013\060\011\006\003\125\004\006\023\002\111\114\061\026
\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103\157
\155\040\114\164\144\056\061\053\060\051\006\003\125\004\013\023
\042\123\145\143\165\162\145\040\104\151\147\151\164\141\154\040
\103\145\162\164\151\146\151\143\141\164\145\040\123\151\147\156
\151\156\147\061\051\060\047\006\003\125\004\003\023\040\123\164
\141\162\164\103\157\155\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036
\027\015\060\066\060\071\061\067\061\071\064\066\063\066\132\027
\015\063\066\060\071\061\067\061\071\064\066\063\066\132\060\175
\061\013\060\011\006\003\125\004\006\023\002\111\114\061\026\060
\024\006\003\125\004\012\023\015\123\164\141\162\164\103\157\155
\040\114\164\144\056\061\053\060\051\006\003\125\004\013\023\042
\123\145\143\165\162\145\040\104\151\147\151\164\141\154\040\103
\145\162\164\151\146\151\143\141\164\145\040\123\151\147\156\151
\156\147\061\051\060\047\006\003\125\004\003\023\040\123\164\141
\162\164\103\157\155\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\301\210
\333\011\274\154\106\174\170\237\225\173\265\063\220\362\162\142
\326\301\066\040\042\044\136\316\351\167\362\103\012\242\006\144
\244\314\216\066\370\070\346\043\360\156\155\261\074\335\162\243
\205\034\241\323\075\264\063\053\323\057\257\376\352\260\101\131
\147\266\304\006\175\012\236\164\205\326\171\114\200\067\172\337
\071\005\122\131\367\364\033\106\103\244\322\205\205\322\303\161
\363\165\142\064\272\054\212\177\036\217\356\355\064\320\021\307
\226\315\122\075\272\063\326\335\115\336\013\073\112\113\237\302
\046\057\372\265\026\034\162\065\167\312\074\135\346\312\341\046
\213\032\066\166\134\001\333\164\024\045\376\355\265\240\210\017
\335\170\312\055\037\007\227\060\001\055\162\171\372\106\326\023
\052\250\271\246\253\203\111\035\345\362\357\335\344\001\216\030
\012\217\143\123\026\205\142\251\016\031\072\314\265\146\246\302
\153\164\007\344\053\341\166\076\264\155\330\366\104\341\163\142
\037\073\304\276\240\123\126\045\154\121\011\367\252\253\312\277
\166\375\155\233\363\235\333\277\075\146\274\014\126\252\257\230
\110\225\072\113\337\247\130\120\331\070\165\251\133\352\103\014
\002\377\231\353\350\154\115\160\133\051\145\234\335\252\135\314

\257\001\061\354\014\353\322\215\350\352\234\173\346\156\367\047
\146\014\032\110\327\156\102\343\077\336\041\076\173\341\015\160
\373\143\252\250\154\032\124\264\134\045\172\311\242\311\213\026
\246\273\054\176\027\136\005\115\130\156\022\035\001\356\022\020
\015\306\062\177\030\377\374\364\372\315\156\221\350\066\111\276
\032\110\151\213\302\226\115\032\022\262\151\027\301\012\220\326
\372\171\042\110\277\272\173\151\370\160\307\372\172\067\330\330
\015\322\166\117\127\377\220\267\343\221\322\335\357\302\140\267
\147\072\335\376\252\234\360\324\213\177\162\042\316\306\237\227
\266\370\257\212\240\020\250\331\373\030\306\266\265\134\122\074
\211\266\031\052\163\001\012\017\003\263\022\140\362\172\057\201
\333\243\156\377\046\060\227\365\213\335\211\127\266\255\075\263
\257\053\305\267\166\002\360\245\326\053\232\206\024\052\162\366
\343\063\214\135\011\113\023\337\273\214\164\023\122\113\002\003
\001\000\001\243\202\002\122\060\202\002\116\060\014\006\003\125
\035\023\004\005\060\003\001\001\377\060\013\006\003\125\035\017
\004\004\003\002\001\256\060\035\006\003\125\035\016\004\026\004
\024\116\013\357\032\244\100\133\245\027\151\207\060\312\064\150
\103\320\101\256\362\060\144\006\003\125\035\037\004\135\060\133
\060\054\240\052\240\050\206\046\150\164\164\160\072\057\057\143
\145\162\164\056\163\164\141\162\164\143\157\155\056\157\162\147
\057\163\146\163\143\141\055\143\162\154\056\143\162\154\060\053
\240\051\240\047\206\045\150\164\164\160\072\057\057\143\162\154
\056\163\164\141\162\164\143\157\155\056\157\162\147\057\163\146
\163\143\141\055\143\162\154\056\143\162\154\060\202\001\135\006
\003\125\035\040\004\202\001\124\060\202\001\120\060\202\001\114
\006\013\053\006\001\004\001\201\265\067\001\001\001\060\202\001
\073\060\057\006\010\053\006\001\005\005\007\002\001\026\043\150
\164\164\160\072\057\057\143\145\162\164\056\163\164\141\162\164
\143\157\155\056\157\162\147\057\160\157\154\151\143\171\056\160
\144\146\060\065\006\010\053\006\001\005\005\007\002\001\026\051
\150\164\164\160\072\057\057\143\145\162\164\056\163\164\141\162
\164\143\157\155\056\157\162\147\057\151\156\164\145\162\155\145
\144\151\141\164\145\056\160\144\146\060\201\320\006\010\053\006
\001\005\005\007\002\002\060\201\303\060\047\026\040\123\164\141
\162\164\040\103\157\155\155\145\162\143\151\141\154\040\050\123
\164\141\162\164\103\157\155\051\040\114\164\144\056\060\003\002
\001\001\032\201\227\114\151\155\151\164\145\144\040\114\151\141
\142\151\154\151\164\171\054\040\162\145\141\144\040\164\150\145
\040\163\145\143\164\151\157\156\040\052\114\145\147\141\154\040
\114\151\155\151\164\141\164\151\157\156\163\052\040\157\146\040
\164\150\145\040\123\164\141\162\164\103\157\155\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\120\157\154\151\143\171\040\141\166\141\151
\154\141\142\154\145\040\141\164\040\150\164\164\160\072\057\057
\143\145\162\164\056\163\164\141\162\164\143\157\155\056\157\162
\147\057\160\157\154\151\143\171\056\160\144\146\060\021\006\011
\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007\060

\070\006\011\140\206\110\001\206\370\102\001\015\004\053\026\051
\123\164\141\162\164\103\157\155\040\106\162\145\145\040\123\123
\114\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\101\165\164\150\157\162\151\164\171\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\026\154\231
\364\146\014\064\365\320\205\136\175\012\354\332\020\116\070\034
\136\337\246\045\005\113\221\062\301\350\073\361\075\335\104\011
\133\007\111\212\051\313\146\002\267\261\232\367\045\230\011\074
\216\033\341\335\066\207\053\113\273\150\323\071\146\075\240\046
\307\362\071\221\035\121\253\202\173\176\325\316\132\344\342\003
\127\160\151\227\010\371\136\130\246\012\337\214\006\232\105\026
\026\070\012\136\127\366\142\307\172\002\005\346\274\036\265\362
\236\364\251\051\203\370\262\024\343\156\050\207\104\303\220\032
\336\070\251\074\254\103\115\144\105\316\335\050\251\134\362\163
\173\004\370\027\350\253\261\363\056\134\144\156\163\061\072\022
\270\274\263\021\344\175\217\201\121\232\073\215\211\364\115\223
\146\173\074\003\355\323\232\035\232\363\145\120\365\240\320\165
\237\057\257\360\352\202\103\230\370\151\234\211\171\304\103\216
\106\162\343\144\066\022\257\367\045\036\070\211\220\167\176\303
\153\152\271\303\313\104\113\254\170\220\213\347\307\054\036\113
\021\104\310\064\122\047\315\012\135\237\205\301\211\325\032\170
\362\225\020\123\062\335\200\204\146\165\331\265\150\050\373\141
\056\276\204\250\070\300\231\022\206\245\036\147\144\255\006\056
\057\251\160\205\307\226\017\174\211\145\365\216\103\124\016\253
\335\245\200\071\224\140\300\064\311\226\160\054\243\022\365\037
\110\173\275\034\176\153\267\235\220\364\042\073\256\370\374\052
\312\372\202\122\240\357\257\113\125\223\353\301\265\360\042\213
\254\064\116\046\042\004\241\207\054\165\112\267\345\175\023\327
\270\014\144\300\066\322\311\057\206\022\214\043\011\301\033\202
\073\163\111\243\152\127\207\224\345\326\170\305\231\103\143\343
\115\340\167\055\341\145\231\162\151\004\032\107\011\346\017\001
\126\044\373\037\277\016\171\251\130\056\271\304\011\001\176\225
\272\155\000\006\076\262\352\112\020\071\330\320\053\365\277\354
\165\277\227\002\305\011\033\010\334\125\067\342\201\373\067\204
\103\142\040\312\347\126\113\145\352\376\154\301\044\223\044\241
\064\353\005\377\232\042\256\233\175\077\361\145\121\012\246\060
\152\263\364\210\034\200\015\374\162\212\350\203\136
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL
 CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "StartCom Certification Authority"
Issuer: CN=StartCom Certification Authority,OU=Secure Digital Certificate Signing,O=StartCom Ltd.,C=IL
Serial Number: 1 (0x1)

Subject: CN=StartCom Certification Authority,OU=Secure Digital Certificate Signing,O=StartCom Ltd.,C=IL
Not Valid Before: Sun Sep 17 19:46:36 2006
Not Valid After: Wed Sep 17 19:46:36 2036
Fingerprint (MD5): 22:4d:8f:8a:fc:f7:35:c2:bb:57:34:90:7b:8b:22:16
Fingerprint (SHA1): 3e:2b:f7:f2:03:1b:96:f3:8c:e6:c4:d8:a8:5d:3e:2d:58:47:6a:0f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "StartCom Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\076\053\367\362\003\033\226\363\214\346\304\330\250\135\076\055
\130\107\152\017
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\042\115\217\212\374\367\065\302\273\127\064\220\173\213\042\026
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\111\114\061
\026\060\024\006\003\125\004\012\023\015\123\164\141\162\164\103
\157\155\040\114\164\144\056\061\053\060\051\006\003\125\004\013
\023\042\123\145\143\165\162\145\040\104\151\147\151\164\141\154
\040\103\145\162\164\151\146\151\143\141\164\145\040\123\151\147
\156\151\156\147\061\051\060\047\006\003\125\004\003\023\040\123
\164\141\162\164\103\157\155\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign Class 3 Public Primary Certification Authority
 - G4"
Issuer: CN=VeriSign Class 3 Public Primary Certification Authority - G4,OU=(c) 2007 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:2f:80:fe:23:8c:0e:22:0f:48:67:12:28:91:87:ac:b3
Subject: CN=VeriSign Class 3 Public Primary Certification Authority - G4,OU=(c) 2007 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 3a:52:e1:e7:fd:6f:3a:e3:6f:f3:6f:99:1b:f9:22:41
Fingerprint (SHA1): 22:d5:d8:df:8f:02:31:d1:8d:f7:9d:b7:cf:8a:2d:64:c9:3f:6c:3a

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G4"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\067\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\064
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\067\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\064
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\057\200\376\043\214\016\042\017\110\147\022\050\221\207
\254\263
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\204\060\202\003\012\240\003\002\001\002\002\020\057
\200\376\043\214\016\042\017\110\147\022\050\221\207\254\263\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\312\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006

\003\125\004\012\023\016\126\145\162\151\123\151\147\156\054\040
\111\156\143\056\061\037\060\035\006\003\125\004\013\023\026\126
\145\162\151\123\151\147\156\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\072\060\070\006\003\125\004\013\023\061
\050\143\051\040\062\060\060\067\040\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\105\060\103\006\003\125\004\003\023\074\126\145\162\151
\123\151\147\156\040\103\154\141\163\163\040\063\040\120\165\142
\154\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\055\040\107\064\060\036\027\015\060\067\061\061
\060\065\060\060\060\060\060\060\132\027\015\063\070\060\061\061
\070\062\063\065\071\065\071\132\060\201\312\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125\004
\012\023\016\126\145\162\151\123\151\147\156\054\040\111\156\143
\056\061\037\060\035\006\003\125\004\013\023\026\126\145\162\151
\123\151\147\156\040\124\162\165\163\164\040\116\145\164\167\157
\162\153\061\072\060\070\006\003\125\004\013\023\061\050\143\051
\040\062\060\060\067\040\126\145\162\151\123\151\147\156\054\040
\111\156\143\056\040\055\040\106\157\162\040\141\165\164\150\157
\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061\105
\060\103\006\003\125\004\003\023\074\126\145\162\151\123\151\147
\156\040\103\154\141\163\163\040\063\040\120\165\142\154\151\143
\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\064\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\247\126\172
\174\122\332\144\233\016\055\134\330\136\254\222\075\376\001\346
\031\112\075\024\003\113\372\140\047\040\331\203\211\151\372\124
\306\232\030\136\125\052\144\336\006\366\215\112\073\255\020\074
\145\075\220\210\004\211\340\060\141\263\256\135\001\247\173\336
\174\262\276\312\145\141\000\206\256\332\217\173\320\211\255\115
\035\131\232\101\261\274\107\200\334\236\142\303\371\243\201\262
\060\201\257\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\155\006\010\053\006\001\005\005\007\001\014
\004\141\060\137\241\135\240\133\060\131\060\127\060\125\026\011
\151\155\141\147\145\057\147\151\146\060\041\060\037\060\007\006
\005\053\016\003\002\032\004\024\217\345\323\032\206\254\215\216
\153\303\317\200\152\324\110\030\054\173\031\056\060\045\026\043
\150\164\164\160\072\057\057\154\157\147\157\056\166\145\162\151
\163\151\147\156\056\143\157\155\057\166\163\154\157\147\157\056
\147\151\146\060\035\006\003\125\035\016\004\026\004\024\263\026
\221\375\356\246\156\344\265\056\111\217\207\170\201\200\354\345
\261\265\060\012\006\010\052\206\110\316\075\004\003\003\003\150
\000\060\145\002\060\146\041\014\030\046\140\132\070\173\126\102
\340\247\374\066\204\121\221\040\054\166\115\103\075\304\035\204

\043\320\254\326\174\065\006\316\315\151\275\220\015\333\154\110
\102\035\016\252\102\002\061\000\234\075\110\071\043\071\130\032
\025\022\131\152\236\357\325\131\262\035\122\054\231\161\315\307
\051\337\033\052\141\173\161\321\336\363\300\345\015\072\112\252
\055\247\330\206\052\335\056\020
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign Class 3 Public Primary Certification Authority - G4"
Issuer: CN=VeriSign Class 3 Public Primary Certification Authority - G4,OU=(c) 2007 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:2f:80:fe:23:8c:0e:22:0f:48:67:12:28:91:87:ac:b3
Subject:
CN=VeriSign Class 3 Public Primary Certification Authority - G4,OU=(c) 2007 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 3a:52:e1:e7:fd:6f:3a:e3:6f:f3:6f:99:1b:f9:22:41
Fingerprint (SHA1): 22:d5:d8:df:8f:02:31:d1:8d:f7:9d:b7:cf:8a:2d:64:c9:3f:6c:3a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G4"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\042\325\330\337\217\002\061\321\215\367\235\267\317\212\055\144
\311\077\154\072
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\072\122\341\347\375\157\072\343\157\363\157\231\033\371\042\101
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\067\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101

\165\164\150\157\162\151\164\171\040\055\040\107\064
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\057\200\376\043\214\016\042\017\110\147\022\050\221\207
\254\263
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "thawte Primary Root CA - G2"
Issuer: CN=thawte Primary Root CA - G2,OU=(c) 2007 thawte\, Inc. - For authorized use only,O=thawte\, Inc.,C=US
Serial Number:35:fc:26:5c:d9:84:4f:c9:3d:26:3d:57:9b:ae:d7:56
Subject: CN=thawte Primary Root CA - G2,OU=(c) 2007 thawte\, Inc. - For authorized use only,O=thawte\, Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 74:9d:ea:60:24:c4:fd:22:53:3e:cc:3a:72:d9:29:4f
Fingerprint (SHA1): aa:db:bc:22:23:8f:c4:01:a1:27:bb:38:dd:f4:1d:db:08:9e:f0:12
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\204\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\070\060\066\006\003\125\004\013
\023\057\050\143\051\040\062\060\060\067\040\164\150\141\167\164
\145\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\044\060\042\006\003\125\004\003\023\033\164\150\141\167
\164\145\040\120\162\151\155\141\162\171\040\122\157\157\164\040
\103\101\040\055\040\107\062
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\204\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\070\060\066\006\003\125\004\013
\023\057\050\143\051\040\062\060\060\067\040\164\150\141\167\164

\145\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\044\060\042\006\003\125\004\003\023\033\164\150\141\167
\164\145\040\120\162\151\155\141\162\171\040\122\157\157\164\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\065\374\046\134\331\204\117\311\075\046\075\127\233\256
\327\126
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\210\060\202\002\015\240\003\002\001\002\002\020\065
\374\046\134\331\204\117\311\075\046\075\127\233\256\327\126\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\204\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006
\003\125\004\012\023\014\164\150\141\167\164\145\054\040\111\156
\143\056\061\070\060\066\006\003\125\004\013\023\057\050\143\051
\040\062\060\060\067\040\164\150\141\167\164\145\054\040\111\156
\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\044\060\042
\006\003\125\004\003\023\033\164\150\141\167\164\145\040\120\162
\151\155\141\162\171\040\122\157\157\164\040\103\101\040\055\040
\107\062\060\036\027\015\060\067\061\061\060\065\060\060\060\060
\060\060\132\027\015\063\070\060\061\061\070\062\063\065\071\065
\071\132\060\201\204\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\025\060\023\006\003\125\004\012\023\014\164\150\141
\167\164\145\054\040\111\156\143\056\061\070\060\066\006\003\125
\004\013\023\057\050\143\051\040\062\060\060\067\040\164\150\141
\167\164\145\054\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\044\060\042\006\003\125\004\003\023\033\164\150
\141\167\164\145\040\120\162\151\155\141\162\171\040\122\157\157
\164\040\103\101\040\055\040\107\062\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\242\325\234\202\173\225\235\361\122\170\207\376\212\026\277
\005\346\337\243\002\117\015\007\306\000\121\272\014\002\122\055
\042\244\102\071\304\376\217\352\311\301\276\324\115\377\237\172
\236\342\261\174\232\255\247\206\011\163\207\321\347\232\343\172
\245\252\156\373\272\263\160\300\147\210\242\065\324\243\232\261
\375\255\302\357\061\372\250\271\363\373\010\306\221\321\373\051
\225\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\232\330\000\060\000\347\153\177\205\030\356\213\266\316\212
\014\370\021\341\273\060\012\006\010\052\206\110\316\075\004\003
\003\003\151\000\060\146\002\061\000\335\370\340\127\107\133\247
\346\012\303\275\365\200\212\227\065\015\033\211\074\124\206\167

\050\312\241\364\171\336\265\346\070\260\360\145\160\214\177\002
\124\302\277\377\330\241\076\331\317\002\061\000\304\215\224\374
\334\123\322\334\235\170\026\037\025\063\043\123\122\343\132\061
\135\235\312\256\275\023\051\104\015\047\133\250\347\150\234\022
\367\130\077\056\162\002\127\243\217\241\024\056
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft
Code Signing Only Certificate
Trust for "thawte Primary Root CA - G2"
Issuer: CN=thawte Primary Root CA - G2,OU=(c) 2007 thawte\, Inc. - For authorized use only,O=thawte\, Inc.,C=US
Serial Number:35:fc:26:5c:d9:84:4f:c9:3d:26:3d:57:9b:ae:d7:56
Subject: CN=thawte Primary Root CA - G2,OU=(c) 2007 thawte\, Inc. - For authorized use only,O=thawte\, Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 74:9d:ea:60:24:c4:fd:22:53:3e:cc:3a:72:d9:29:4f
Fingerprint (SHA1): aa:db:bc:22:23:8f:c4:01:a1:27:bb:38:dd:f4:1d:db:08:9e:f0:12
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\252\333\274\042\043\217\304\001\241\047\273\070\335\364\035\333
\010\236\360\022
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\164\235\352\140\044\304\375\042\123\076\314\072\162\331\051\117
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\204\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\070\060\066\006\003\125\004\013
\023\057\050\143\051\040\062\060\060\067\040\164\150\141\167\164
\145\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\044\060\042\006\003\125\004\003\023\033\164\150\141\167
\164\145\040\120\162\151\155\141\162\171\040\122\157\157\164\040
\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\065\374\046\134\331\204\117\311\075\046\075\127\233\256
\327\126
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Primary
 Certification Authority - G2"
Issuer: CN=GeoTrust Primary Certification Authority - G2,OU=(c) 2007 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Serial Number:3c:b2:f4:48:0a:00:e2:fe:eb:24:3b:5e:60:3e:c3:6b
Subject: CN=GeoTrust Primary Certification Authority - G2,OU=(c) 2007 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 01:5e:d8:6b:bd:6f:3d:8e:a1:31:f8:12:e0:98:73:6a
Fingerprint (SHA1): 8d:17:84:d5:37:f3:03:7d:ec:70:fe:57:8b:51:9a:99:e6:10:d7:b0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\067\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145
\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\067\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145

\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\074\262\364\110\012\000\342\376\353\044\073\136\140\076
\303\153
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\256\060\202\002\065\240\003\002\001\002\002\020\074
\262\364\110\012\000\342\376\353\044\073\136\140\076\303\153\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\230\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\026\060\024\006
\003\125\004\012\023\015\107\145\157\124\162\165\163\164\040\111
\156\143\056\061\071\060\067\006\003\125\004\013\023\060\050\143
\051\040\062\060\060\067\040\107\145\157\124\162\165\163\164\040
\111\156\143\056\040\055\040\106\157\162\040\141\165\164\150\157
\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061\066
\060\064\006\003\125\004\003\023\055\107\145\157\124\162\165\163
\164\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\062\060\036\027\015\060\067\061\061\060\065
\060\060\060\060\060\060\132\027\015\063\070\060\061\061\070\062
\063\065\071\065\071\132\060\201\230\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\026\060\024\006\003\125\004\012\023
\015\107\145\157\124\162\165\163\164\040\111\156\143\056\061\071
\060\067\006\003\125\004\013\023\060\050\143\051\040\062\060\060
\067\040\107\145\157\124\162\165\163\164\040\111\156\143\056\040
\055\040\106\157\162\040\141\165\164\150\157\162\151\172\145\144
\040\165\163\145\040\157\156\154\171\061\066\060\064\006\003\125
\004\003\023\055\107\145\157\124\162\165\163\164\040\120\162\151
\155\141\162\171\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\040\055\040\107
\062\060\166\060\020\006\007\052\206\110\316\075\002\001\006\005
\053\201\004\000\042\003\142\000\004\025\261\350\375\003\025\103
\345\254\353\207\067\021\142\357\322\203\066\122\175\105\127\013
\112\215\173\124\073\072\156\137\025\002\300\120\246\317\045\057
\175\312\110\270\307\120\143\034\052\041\010\174\232\066\330\013
\376\321\046\305\130\061\060\050\045\363\135\135\243\270\266\245
\264\222\355\154\054\237\353\335\103\211\242\074\113\110\221\035
\120\354\046\337\326\140\056\275\041\243\102\060\100\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\025\137\065\127\121\125\373
\045\262\255\003\151\374\001\243\372\276\021\125\325\060\012\006
\010\052\206\110\316\075\004\003\003\003\147\000\060\144\002\060
\144\226\131\246\350\011\336\213\272\372\132\210\210\360\037\221

\323\106\250\362\112\114\002\143\373\154\137\070\333\056\101\223
\251\016\346\235\334\061\034\262\240\247\030\034\171\341\307\066
\002\060\072\126\257\232\164\154\366\373\203\340\063\323\010\137
\241\234\302\133\237\106\326\266\313\221\006\143\242\006\347\063
\254\076\250\201\022\320\313\272\320\222\013\266\236\226\252\004
\017\212
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Primary Certification Authority - G2"
Issuer: CN=GeoTrust Primary Certification Authority - G2,OU=(c) 2007 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Serial Number:3c:b2:f4:48:0a:00:e2:fe:eb:24:3b:5e:60:3e:c3:6b
Subject: CN=GeoTrust Primary Certification Authority - G2,OU=(c) 2007 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Not Valid Before: Mon Nov 05 00:00:00 2007
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 01:5e:d8:6b:bd:6f:3d:8e:a1:31:f8:12:e0:98:73:6a
Fingerprint (SHA1): 8d:17:84:d5:37:f3:03:7d:ec:70:fe:57:8b:51:9a:99:e6:10:d7:b0
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL
 CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\027\204\325\067\363\003\175\354\160\376\127\213\121\232\231
\346\020\327\260
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\001\136\330\153\275\157\075\216\241\061\370\022\340\230\163\152
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\067\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145
\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\062
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\074\262\364\110\012\000\342\376\353\044\073\136\140\076
\303\153
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign Universal Root Certification Authority"
Issuer: CN=VeriSign Universal Root Certification Authority,OU=(c) 2008 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:40:1a:c4:64:21:b3:13:21:03:0e:bb:e4:12:1a:c5:1d
Subject: CN=VeriSign Universal Root Certification Authority,OU=(c) 2008 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): 8e:ad:b5:01:aa:4d:81:e4:8c:1d:d1:e1:14:00:95:19
#
Fingerprint (SHA1): 36:79:ca:35:66:87:72:30:4d:30:a5:fb:87:3b:0f:a7:7b:b7:0d:54
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Universal Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\275\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\070\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\070\060\066\006\003\125\004\003\023
\057\126\145\162\151\123\151\147\156\040\125\156\151\166\145\162
\163\141\154\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\275\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125

\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\070\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\070\060\066\006\003\125\004\003\023
\057\126\145\162\151\123\151\147\156\040\125\156\151\166\145\162
\163\141\154\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\100\032\304\144\041\263\023\041\003\016\273\344\022\032
\305\035
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\004\271\060\202\003\241\240\003\002\001\002\002\020\100
\032\304\144\041\263\023\041\003\016\273\344\022\032\305\035\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\275\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\061\037\060\035\006\003\125\004\013
\023\026\126\145\162\151\123\151\147\156\040\124\162\165\163\164
\040\116\145\164\167\157\162\153\061\072\060\070\006\003\125\004
\013\023\061\050\143\051\040\062\060\060\070\040\126\145\162\151
\123\151\147\156\054\040\111\156\143\056\040\055\040\106\157\162
\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040
\157\156\154\171\061\070\060\066\006\003\125\004\003\023\057\126
\145\162\151\123\151\147\156\040\125\156\151\166\145\162\163\141
\154\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\036
\027\015\060\070\060\064\060\062\060\060\060\060\060\060\132\027
\015\063\067\061\062\060\061\062\063\065\071\065\071\132\060\201
\275\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\061\037\060\035\006\003\125\004\013
\023\026\126\145\162\151\123\151\147\156\040\124\162\165\163\164
\040\116\145\164\167\157\162\153\061\072\060\070\006\003\125\004
\013\023\061\050\143\051\040\062\060\060\070\040\126\145\162\151
\123\151\147\156\054\040\111\156\143\056\040\055\040\106\157\162
\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040
\157\156\154\171\061\070\060\066\006\003\125\004\003\023\057\126
\145\162\151\123\151\147\156\040\125\156\151\166\145\162\163\141
\154\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\307
\141\067\136\261\001\064\333\142\327\025\233\377\130\132\214\043

\043\326\140\216\221\327\220\230\203\172\346\130\031\070\214\305
\366\345\144\205\264\242\161\373\355\275\271\332\315\115\000\264
\310\055\163\245\307\151\161\225\037\071\074\262\104\007\234\350
\016\372\115\112\304\041\337\051\141\217\062\042\141\202\305\207
\037\156\214\174\137\026\040\121\104\321\160\117\127\352\343\034
\343\314\171\356\130\330\016\302\263\105\223\300\054\347\232\027
\053\173\000\067\172\101\063\170\341\063\342\363\020\032\177\207
\054\276\366\365\367\102\342\345\277\207\142\211\137\000\113\337
\305\335\344\165\104\062\101\072\036\161\156\151\313\013\165\106
\010\321\312\322\053\225\320\317\373\271\100\153\144\214\127\115
\374\023\021\171\204\355\136\124\366\064\237\010\001\363\020\045
\006\027\112\332\361\035\172\146\153\230\140\146\244\331\357\322
\056\202\361\360\357\011\352\104\311\025\152\342\003\156\063\323
\254\237\125\000\307\366\010\152\224\271\137\334\340\063\361\204
\140\371\133\047\021\264\374\026\362\273\126\152\200\045\215\002
\003\001\000\001\243\201\262\060\201\257\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\155\006\010\053
\006\001\005\005\007\001\014\004\141\060\137\241\135\240\133\060
\131\060\127\060\125\026\011\151\155\141\147\145\057\147\151\146
\060\041\060\037\060\007\006\005\053\016\003\002\032\004\024\217
\345\323\032\206\254\215\216\153\303\317\200\152\324\110\030\054
\173\031\056\060\045\026\043\150\164\164\160\072\057\057\154\157
\147\157\056\166\145\162\151\163\151\147\156\056\143\157\155\057
\166\163\154\157\147\157\056\147\151\146\060\035\006\003\125\035
\016\004\026\004\024\266\167\372\151\110\107\237\123\022\325\302
\352\007\062\166\007\321\227\007\031\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\001\001\000\112\370\370
\260\003\346\054\147\173\344\224\167\143\314\156\114\371\175\016
\015\334\310\271\065\271\160\117\143\372\044\372\154\203\214\107
\235\073\143\363\232\371\166\062\225\221\261\167\274\254\232\276
\261\344\061\041\306\201\225\126\132\016\261\302\324\261\246\131
\254\361\143\313\270\114\035\131\220\112\357\220\026\050\037\132
\256\020\373\201\120\070\014\154\314\361\075\303\365\143\343\263
\343\041\311\044\071\351\375\025\146\106\364\033\021\320\115\163
\243\175\106\371\075\355\250\137\142\324\361\077\370\340\164\127
\053\030\235\201\264\304\050\332\224\227\245\160\353\254\035\276
\007\021\360\325\333\335\345\214\360\325\062\260\203\346\127\342
\217\277\276\241\252\277\075\035\265\324\070\352\327\260\134\072
\117\152\077\217\300\146\154\143\252\351\331\244\026\364\201\321
\225\024\016\175\315\225\064\331\322\217\160\163\201\173\234\176
\275\230\141\330\105\207\230\220\305\353\206\060\306\065\277\360
\377\303\125\210\203\113\357\005\222\006\161\362\270\230\223\267
\354\315\202\141\361\070\346\117\227\230\052\132\215
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE

CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign Universal Root Certification Authority"
Issuer: CN=VeriSign Universal Root Certification Authority,OU=(c) 2008 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:40:1a:c4:64:21:b3:13:21:03:0e:bb:e4:12:1a:c5:1d
Subject: CN=VeriSign Universal Root Certification Authority,OU=(c) 2008 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): 8e:ad:b5:01:aa:4d:81:e4:8c:1d:d1:e1:14:00:95:19
Fingerprint (SHA1): 36:79:ca:35:66:87:72:30:4d:30:a5:fb:87:3b:0f:a7:7b:b7:0d:54
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Universal Root Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\066\171\312\065\146\207\162\060\115\060\245\373\207\073\017\247
\173\267\015\124
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\216\255\265\001\252\115\201\344\214\035\321\341\024\000\225\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\275\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\070\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\070\060\066\006\003\125\004\003\023
\057\126\145\162\151\123\151\147\156\040\125\156\151\166\145\162
\163\141\154\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\100\032\304\144\041\263\023\041\003\016\273\344\022\032
\305\035
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR

CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "thawte Primary Root CA - G3"
Issuer: CN=thawte Primary Root CA - G3,OU=(c) 2008 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Serial Number:60:01:97:b7:46:a7:ea:b4:b4:9a:d6:4b:2f:f7:90:fb
Subject: CN=thawte Primary Root CA - G3,OU=(c) 2008 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After:
Tue Dec 01 23:59:59 2037
Fingerprint (MD5): fb:1b:5d:43:8a:94:cd:44:c6:76:f2:43:4b:47:e7:31
Fingerprint (SHA1): f1:8b:53:8d:1b:e9:03:b6:a6:f0:56:43:5b:17:15:89:ca:f3:6b:f2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\070\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\044\060\042\006
\003\125\004\003\023\033\164\150\141\167\164\145\040\120\162\151
\155\141\162\171\040\122\157\157\164\040\103\101\040\055\040\107
\063
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\070\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\044\060\042\006
\003\125\004\003\023\033\164\150\141\167\164\145\040\120\162\151
\155\141\162\171\040\122\157\157\164\040\103\101\040\055\040\107

\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\140\001\227\267\106\247\352\264\264\232\326\113\057\367
\220\373
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\004\052\060\202\003\022\240\003\002\001\002\002\020\140
\001\227\267\106\247\352\264\264\232\326\113\057\367\220\373\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\256\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025
\060\023\006\003\125\004\012\023\014\164\150\141\167\164\145\054
\040\111\156\143\056\061\050\060\046\006\003\125\004\013\023\037
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\040\104\151\166\151\163\151\157\156\061
\070\060\066\006\003\125\004\013\023\057\050\143\051\040\062\060
\060\070\040\164\150\141\167\164\145\054\040\111\156\143\056\040
\055\040\106\157\162\040\141\165\164\150\157\162\151\172\145\144
\040\165\163\145\040\157\156\154\171\061\044\060\042\006\003\125
\004\003\023\033\164\150\141\167\164\145\040\120\162\151\155\141
\162\171\040\122\157\157\164\040\103\101\040\055\040\107\063\060
\036\027\015\060\070\060\064\060\062\060\060\060\060\060\060\132
\027\015\063\067\061\062\060\061\062\063\065\071\065\071\132\060
\201\256\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164\145
\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013\023
\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123
\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157\156
\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040\062
\060\060\070\040\164\150\141\167\164\145\054\040\111\156\143\056
\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172\145
\144\040\165\163\145\040\157\156\154\171\061\044\060\042\006\003
\125\004\003\023\033\164\150\141\167\164\145\040\120\162\151\155
\141\162\171\040\122\157\157\164\040\103\101\040\055\040\107\063
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\262\277\047\054\373\333\330\133\335\170\173\033\236\167\146
\201\313\076\274\174\256\363\246\047\232\064\243\150\061\161\070
\063\142\344\363\161\146\171\261\251\145\243\245\213\325\217\140
\055\077\102\314\252\153\062\300\043\313\054\101\335\344\337\374
\141\234\342\163\262\042\225\021\103\030\137\304\266\037\127\154
\012\005\130\042\310\066\114\072\174\245\321\317\206\257\210\247
\104\002\023\164\161\163\012\102\131\002\370\033\024\153\102\337
\157\137\272\153\202\242\235\133\347\112\275\036\001\162\333\113
\164\350\073\177\177\175\037\004\264\046\233\340\264\132\254\107
\075\125\270\327\260\046\122\050\001\061\100\146\330\331\044\275
\366\052\330\354\041\111\134\233\366\172\351\177\125\065\176\226

\153\215\223\223\047\313\222\273\352\254\100\300\237\302\370\200
\317\135\364\132\334\316\164\206\246\076\154\013\123\312\275\222
\316\031\006\162\346\014\134\070\151\307\004\326\274\154\316\133
\366\367\150\234\334\045\025\110\210\241\351\251\370\230\234\340
\363\325\061\050\141\021\154\147\226\215\071\231\313\302\105\044
\071\002\003\001\000\001\243\102\060\100\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\255\154\252\224\140\234\355\344\377\372
\076\012\164\053\143\003\367\266\131\277\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\001\001\000\032\100
\330\225\145\254\011\222\211\306\071\364\020\345\251\016\146\123
\135\170\336\372\044\221\273\347\104\121\337\306\026\064\012\357
\152\104\121\352\053\007\212\003\172\303\353\077\012\054\122\026
\240\053\103\271\045\220\077\160\251\063\045\155\105\032\050\073
\047\317\252\303\051\102\033\337\073\114\300\063\064\133\101\210
\277\153\053\145\257\050\357\262\365\303\252\146\316\173\126\356
\267\310\313\147\301\311\234\032\030\270\304\303\111\003\361\140
\016\120\315\106\305\363\167\171\367\266\025\340\070\333\307\057
\050\240\014\077\167\046\164\331\045\022\332\061\332\032\036\334
\051\101\221\042\074\151\247\273\002\362\266\134\047\003\211\364
\006\352\233\344\162\202\343\241\011\301\351\000\031\323\076\324
\160\153\272\161\246\252\130\256\364\273\351\154\266\357\207\314
\233\273\377\071\346\126\141\323\012\247\304\134\114\140\173\005
\167\046\172\277\330\007\122\054\142\367\160\143\331\071\274\157
\034\302\171\334\166\051\257\316\305\054\144\004\136\210\066\156
\061\324\100\032\142\064\066\077\065\001\256\254\143\240
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "thawte Primary Root CA - G3"
Issuer: CN=thawte Primary Root CA - G3,OU=(c) 2008 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Serial Number:60:01:97:b7:46:a7:ea:b4:b4:9a:d6:4b:2f:f7:90:fb
Subject: CN=thawte Primary Root CA - G3,OU=(c) 2008 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
#
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): fb:1b:5d:43:8a:94:cd:44:c6:76:f2:43:4b:47:e7:31
Fingerprint (SHA1): f1:8b:53:8d:1b:e9:03:b6:a6:f0:56:43:5b:17:15:89:ca:f3:6b:f2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\361\213\123\215\033\351\003\266\246\360\126\103\133\027\025\211
\312\363\153\362
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\373\033\135\103\212\224\315\104\306\166\362\103\113\107\347\061
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\070\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\044\060\042\006
\003\125\004\003\023\033\164\150\141\167\164\145\040\120\162\151
\155\141\162\171\040\122\157\157\164\040\103\101\040\055\040\107
\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\140\001\227\267\106\247\352\264\264\232\326\113\057\367
\220\373
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Primary Certification Authority - G3"
Issuer: CN=GeoTrust Primary Certification Authority - G3,OU=(c) 2008 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Serial Number:15:ac:6e:94:19:b2:79:4b:41:f6:27:a9:c3:18:0f:1f
#
 Subject: CN=GeoTrust Primary Certification Authority - G3,OU=(c) 2008 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): b5:e8:34:36:c9:10:44:58:48:70:6d:2e:83:d4:b8:05
Fingerprint (SHA1): 03:9e:ed:b8:0b:e7:a0:3c:69:53:89:3b:20:d2:d9:32:3a:4c:2a:fd
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\070\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145
\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\070\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145
\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\025\254\156\224\031\262\171\113\101\366\047\251\303\030
\017\037
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\376\060\202\002\346\240\003\002\001\002\002\020\025
\254\156\224\031\262\171\113\101\366\047\251\303\030\017\037\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\230\061\013\060\011\006\003\125\004\006\023\002\125\123\061\026
\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165\163
\164\040\111\156\143\056\061\071\060\067\006\003\125\004\013\023
\060\050\143\051\040\062\060\060\070\040\107\145\157\124\162\165
\163\164\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\066\060\064\006\003\125\004\003\023\055\107\145\157\124
\162\165\163\164\040\120\162\151\155\141\162\171\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\107\063\060\036\027\015\060\070\060

\064\060\062\060\060\060\060\060\060\132\027\015\063\067\061\062
\060\061\062\063\065\071\065\071\132\060\201\230\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\026\060\024\006\003\125
\004\012\023\015\107\145\157\124\162\165\163\164\040\111\156\143
\056\061\071\060\067\006\003\125\004\013\023\060\050\143\051\040
\062\060\060\070\040\107\145\157\124\162\165\163\164\040\111\156
\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\066\060\064
\006\003\125\004\003\023\055\107\145\157\124\162\165\163\164\040
\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\334\342\136\142\130\035\063\127\071\062\063
\372\353\313\207\214\247\324\112\335\006\210\352\144\216\061\230
\245\070\220\036\230\317\056\143\053\360\106\274\104\262\211\241
\300\050\014\111\160\041\225\237\144\300\246\223\022\002\145\046
\206\306\245\211\360\372\327\204\240\160\257\117\032\227\077\006
\104\325\311\353\162\020\175\344\061\050\373\034\141\346\050\007
\104\163\222\042\151\247\003\210\154\235\143\310\122\332\230\047
\347\010\114\160\076\264\311\022\301\305\147\203\135\063\363\003
\021\354\152\320\123\342\321\272\066\140\224\200\273\141\143\154
\133\027\176\337\100\224\036\253\015\302\041\050\160\210\377\326
\046\154\154\140\004\045\116\125\176\175\357\277\224\110\336\267
\035\335\160\215\005\137\210\245\233\362\302\356\352\321\100\101
\155\142\070\035\126\006\305\003\107\121\040\031\374\173\020\013
\016\142\256\166\125\277\137\167\276\076\111\001\123\075\230\045
\003\166\044\132\035\264\333\211\352\171\345\266\263\073\077\272
\114\050\101\177\006\254\152\216\301\320\366\005\035\175\346\102
\206\343\245\325\107\002\003\001\000\001\243\102\060\100\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\035\006\003\125\035\016\004\026\004\024\304\171\312\216\241\116
\003\035\034\334\153\333\061\133\224\076\077\060\177\055\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\001
\001\000\055\305\023\317\126\200\173\172\170\275\237\256\054\231
\347\357\332\337\224\136\011\151\247\347\156\150\214\275\162\276
\107\251\016\227\022\270\112\361\144\323\071\337\045\064\324\301
\315\116\201\360\017\004\304\044\263\064\226\306\246\252\060\337
\150\141\163\327\371\216\205\211\357\016\136\225\050\112\052\047
\217\020\216\056\174\206\304\002\236\332\014\167\145\016\104\015
\222\375\375\263\026\066\372\021\015\035\214\016\007\211\152\051
\126\367\162\364\335\025\234\167\065\146\127\253\023\123\330\216
\301\100\305\327\023\026\132\162\307\267\151\001\304\172\261\203
\001\150\175\215\101\241\224\030\301\045\134\374\360\376\203\002
\207\174\015\015\317\056\010\134\112\100\015\076\354\201\141\346
\044\333\312\340\016\055\007\262\076\126\334\215\365\101\205\007
\110\233\014\013\313\111\077\175\354\267\375\313\215\147\211\032

\253\355\273\036\243\000\010\010\027\052\202\134\061\135\106\212
\055\017\206\233\164\331\105\373\324\100\261\172\252\150\055\206
\262\231\042\341\301\053\307\234\370\363\137\250\202\022\353\031
\021\055
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Primary Certification Authority - G3"
Issuer: CN=GeoTrust Primary Certification Authority - G3,OU=(c) 2008 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Serial Number:15:ac:6e:94:19:b2:79:4b:41:f6:27:a9:c3:18:0f:1f
Subject: CN=GeoTrust Primary Certification Authority - G3,OU=(c) 2008 GeoTrust Inc. - For authorized use only,O=GeoTrust Inc.,C=US
Not Valid Before: Wed Apr 02 00:00:00 2008
Not Valid After: Tue Dec 01 23:59:59 2037
Fingerprint (MD5): b5:e8:34:36:c9:10:44:58:48:70:6d:2e:83:d4:b8:05
#
Fingerprint (SHA1): 03:9e:ed:b8:0b:e7:a0:3c:69:53:89:3b:20:d2:d9:32:3a:4c:2a:fd
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\003\236\355\270\013\347\240\074\151\123\211\073\040\322\331\062
\072\114\052\375
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\265\350\064\066\311\020\104\130\110\160\155\056\203\324\270\005
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\230\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\071\060\067\006\003\125\004
\013\023\060\050\143\051\040\062\060\060\070\040\107\145\157\124
\162\165\163\164\040\111\156\143\056\040\055\040\106\157\162\040
\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040\157
\156\154\171\061\066\060\064\006\003\125\004\003\023\055\107\145
\157\124\162\165\163\164\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\020\025\254\156\224\031\262\171\113\101\366\047\251\303\030
\017\037
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "E-ME SSI (RCA)"
Issuer: CN=E-ME SSI (RCA),OU=Sertifikacijas pakalpojumu dala,C=LV
Serial Number:2e:ef:db:fb:d8:89:3d:8f:49:1c:93:72:fe:45:df:ed
Subject: CN=E-ME SSI (RCA),OU=Sertifikacijas pakalpojumu dala,C=LV
Not Valid Before: Tue May 19 08:45:56 2009
Not Valid After: Wed May 19 08:48:15 2027
Fingerprint (MD5): cb:bd:c3:68:2d:b3:cb:18:59:d3:29:52:e8:c6:64:89
Fingerprint (SHA1): c9:32:1d:e6:b5:a8:26:66:cf:69:71:a1:8a:56:f2:d3:a8:67:56:02
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-ME SSI (RCA)"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\114\126\061
\050\060\046\006\003\125\004\013\023\037\123\145\162\164\151\146
\151\153\141\143\151\152\141\163\040\160\141\153\141\154\160\157
\152\165\155\165\040\144\141\154\141\061\027\060\025\006\003\125
\004\003\023\016\105\055\115\105\040\123\123\111\040\050\122\103
\101\051
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\114\126\061
\050\060\046\006\003\125\004\013\023\037\123\145\162\164\151\146
\151\153\141\143\151\152\141\163\040\160\141\153\141\154\160\157
\152\165\155\165\040\144\141\154\141\061\027\060\025\006\003\125
\004\003\023\016\105\055\115\105\040\123\123\111\040\050\122\103
\101\051
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\056\357\333\373\330\211\075\217\111\034\223\162\376\105
\337\355
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\340\060\202\003\310\240\003\002\001\002\002\020\056
\357\333\373\330\211\075\217\111\034\223\162\376\105\337\355\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\120
\061\013\060\011\006\003\125\004\006\023\002\114\126\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\164\151\146\151\153
\141\143\151\152\141\163\040\160\141\153\141\154\160\157\152\165
\155\165\040\144\141\154\141\061\027\060\025\006\003\125\004\003
\023\016\105\055\115\105\040\123\123\111\040\050\122\103\101\051
\060\036\027\015\060\071\060\065\061\071\060\070\064\065\065\066
\132\027\015\062\067\060\065\061\071\060\070\064\070\061\065\132
\060\120\061\013\060\011\006\003\125\004\006\023\002\114\126\061
\050\060\046\006\003\125\004\013\023\037\123\145\162\164\151\146
\151\153\141\143\151\152\141\163\040\160\141\153\141\154\160\157
\152\165\155\165\040\144\141\154\141\061\027\060\025\006\003\125
\004\003\023\016\105\055\115\105\040\123\123\111\040\050\122\103
\101\051\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\304\004\153\000\303\260\340\056\073\350\123\005\005
\010\276\310\204\047\125\326\035\212\022\342\027\042\132\154\377
\263\335\266\231\303\312\301\352\371\330\045\265\337\072\235\235
\077\122\305\351\362\254\277\211\164\212\124\256\116\317\156\362
\136\256\332\275\022\007\231\225\317\144\253\376\231\221\144\131
\214\311\276\104\152\061\233\230\352\272\352\321\041\016\050\013
\071\233\343\326\212\246\367\002\272\077\075\331\131\364\171\231
\336\323\044\233\213\160\033\052\204\326\345\011\017\046\046\044
\130\217\045\136\363\305\235\164\211\245\066\305\345\122\262\353
\350\206\223\107\156\247\051\207\244\176\334\264\243\313\062\126
\367\105\200\332\134\307\057\240\247\327\357\365\374\265\250\315
\204\225\142\370\251\053\043\073\155\323\267\222\310\352\301\274
\024\115\350\153\234\026\172\323\354\007\373\007\045\020\117\024
\207\173\222\066\316\126\202\145\113\023\046\006\330\243\243\246
\337\302\172\373\173\065\005\242\023\075\076\166\274\034\127\203
\003\121\307\064\336\132\365\074\275\066\045\234\026\017\115\316
\350\015\032\313\135\103\242\024\157\272\174\140\324\002\205\166
\305\153\052\270\105\261\134\167\107\021\255\240\045\251\146\221
\214\121\027\155\141\125\012\031\077\233\002\377\304\365\326\322
\263\351\045\123\341\004\075\217\042\320\242\145\345\256\247\264
\340\035\221\152\302\206\222\367\072\135\023\247\172\114\102\337
\132\263\112\210\104\054\357\107\272\251\257\326\317\142\163\212
\006\042\026\054\302\354\037\006\250\323\107\120\131\062\022\345
\271\235\142\065\236\312\136\012\264\235\043\210\302\323\117\054
\054\311\223\350\176\270\011\354\246\331\335\143\341\311\250\152
\150\334\204\121\254\132\022\347\073\246\265\007\012\261\252\116
\263\264\242\127\337\067\154\026\116\253\231\062\172\360\234\043
\045\213\312\232\250\214\340\070\041\264\316\367\154\141\310\342
\014\022\131\006\201\046\066\132\017\065\163\324\026\105\375\336
\225\336\326\113\134\237\163\331\276\031\275\347\277\344\125\152
\310\153\104\367\307\270\063\210\171\031\015\006\144\350\257\013

\241\165\014\122\145\272\012\043\225\161\367\143\374\176\345\214
\217\314\321\002\003\001\000\001\243\201\265\060\201\262\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\030
\006\010\053\006\001\005\005\007\001\003\004\014\060\012\060\010
\006\006\004\000\216\106\001\001\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\073\046\003\272\317\343\131\106\102\120\255\024
\234\277\003\073\357\326\076\061\060\020\006\011\053\006\001\004
\001\202\067\025\001\004\003\002\001\000\060\104\006\003\125\035
\040\004\075\060\073\060\071\006\013\053\006\001\004\001\201\372
\075\001\001\001\060\052\060\050\006\010\053\006\001\005\005\007
\002\001\026\034\150\164\164\160\072\057\057\167\167\167\056\145
\155\145\056\154\166\057\162\145\160\157\163\151\164\157\162\171
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\002\001\000\205\346\246\224\344\331\106\137\235\277\223\273
\371\153\166\144\050\256\277\074\105\052\212\223\171\154\323\113
\210\206\040\153\042\046\070\075\034\023\252\353\141\227\154\056
\076\127\234\154\103\242\336\155\100\304\061\362\155\272\106\026
\263\055\306\273\246\334\345\057\261\330\301\325\221\036\021\177
\373\137\241\334\035\141\370\155\233\141\360\342\077\053\161\325
\015\313\336\337\145\077\240\157\225\233\172\313\333\065\067\051
\135\136\235\271\124\261\254\140\022\345\143\331\315\257\122\033
\005\226\023\174\332\044\165\001\255\324\236\245\313\301\022\105
\117\127\257\043\277\051\274\352\216\255\170\370\207\043\350\110
\313\100\250\276\135\063\326\354\306\006\103\302\147\052\350\343
\205\056\140\236\104\057\053\117\061\261\007\235\225\041\325\052
\222\257\200\221\323\307\051\275\315\361\025\014\237\001\356\370
\055\073\244\007\160\111\171\044\355\274\241\323\226\121\202\237
\302\310\274\336\043\232\307\120\053\232\266\170\122\252\316\225
\366\140\073\242\231\371\046\146\364\107\054\101\045\274\101\372
\326\213\177\275\137\202\174\323\105\205\264\114\330\354\263\027
\357\104\072\365\050\145\357\365\236\161\314\041\336\350\326\121
\034\020\373\100\374\111\345\134\204\027\257\252\031\136\242\355
\116\036\242\373\312\107\034\034\144\076\024\221\242\071\031\064
\210\177\221\313\073\235\031\160\352\050\373\374\120\017\314\275
\075\136\002\003\153\171\065\104\101\166\356\266\055\164\204\341
\202\161\323\045\260\323\303\231\104\253\077\342\014\245\356\275
\246\374\244\021\000\356\234\275\067\321\326\142\304\060\024\055
\020\012\227\212\210\365\045\074\226\276\106\100\032\212\300\205
\166\304\240\111\340\111\245\347\031\265\011\363\314\115\355\026
\136\232\324\323\310\151\320\330\212\067\205\153\116\344\252\007
\222\134\324\161\161\201\110\323\170\365\126\140\376\314\002\324
\000\223\037\114\222\100\227\276\162\123\171\056\046\122\276\246
\243\164\261\224\331\024\143\072\156\133\321\074\222\047\122\220
\062\132\222\322\017\116\133\013\006\072\142\345\326\047\014\001
\366\045\002\270\213\020\051\102\251\367\151\312\334\353\012\222
\113\050\061\206
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "E-ME SSI (RCA)"
Issuer: CN=E-ME SSI (RCA),OU=Sertifikacijas pakalpojumu dala,C=LV
Serial Number:2e:ef:db:fb:d8:89:3d:8f:49:1c:93:72:fe:45:df:ed
Subject: CN=E-ME SSI (RCA),OU=Sertifikacijas pakalpojumu dala,C=LV
Not Valid Before: Tue May 19 08:45:56 2009
Not Valid After: Wed May 19 08:48:15 2027
Fingerprint (MD5): cb:bd:c3:68:2d:b3:cb:18:59:d3:29:52:e8:c6:64:89
Fingerprint (SHA1): c9:32:1d:e6:b5:a8:26:66:cf:69:71:a1:8a:56:f2:d3:a8:67:56:02
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL
CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-ME SSI (RCA)"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\311\062\035\346\265\250\046\146\317\151\161\241\212\126\362\323
\250\147\126\002
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\313\275\303\150\055\263\313\030\131\323\051\122\350\306\144\211
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\114\126\061
\050\060\046\006\003\125\004\013\023\037\123\145\162\164\151\146
\151\153\141\143\151\152\141\163\040\160\141\153\141\154\160\157
\152\165\155\165\040\144\141\154\141\061\027\060\025\006\003\125
\004\003\023\016\105\055\115\105\040\123\123\111\040\050\122\103
\101\051
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\056\357\333\373\330\211\075\217\111\034\223\162\376\105
\337\355
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

#
Microsoft Code Signing Only Certificate
Certificate "ACEDICOM Root"
Issuer: C=ES,O=EDICOM,OU=PKI,CN=ACEDICOM Root

Serial Number:61:8d:c7:86:3b:01:82:05
Subject: C=ES,O=EDICOM,OU=PKI,CN=ACEDICOM Root
Not Valid Before: Fri Apr 18 16:24:22 2008
Not Valid After: Thu Apr 13 16:24:22 2028
Fingerprint (MD5): 42:81:a0:e2:1c:e3:55:10:de:55:89:42:65:96:22:e6
Fingerprint (SHA1): e0:b4:32:2e:b2:f6:a5:68:b6:54:53:84:48:18:4a:50:36:87:43:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACEDICOM Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\026\060\024\006\003\125\004\003\014\015\101\103\105
\104\111\103\117\115\040\122\157\157\164\061\014\060\012\006\003
\125\004\013\014\003\120\113\111\061\017\060\015\006\003\125\004
\012\014\006\105\104\111\103\117\115\061\013\060\011\006\003\125
\004\006\023\002\105\123
END
CKA_ID UTF8 "0"
CKA_ISSUER
 MULTILINE_OCTAL
\060\104\061\026\060\024\006\003\125\004\003\014\015\101\103\105
\104\111\103\117\115\040\122\157\157\164\061\014\060\012\006\003
\125\004\013\014\003\120\113\111\061\017\060\015\006\003\125\004
\012\014\006\105\104\111\103\117\115\061\013\060\011\006\003\125
\004\006\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\141\215\307\206\073\001\202\005
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\265\060\202\003\235\240\003\002\001\002\002\010\141
\215\307\206\073\001\202\005\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\104\061\026\060\024\006\003\125\004
\003\014\015\101\103\105\104\111\103\117\115\040\122\157\157\164
\061\014\060\012\006\003\125\004\013\014\003\120\113\111\061\017
\060\015\006\003\125\004\012\014\006\105\104\111\103\117\115\061
\013\060\011\006\003\125\004\006\023\002\105\123\060\036\027\015
\060\070\060\064\061\070\061\066\062\064\062\062\132\027\015\062
\070\060\064\061\063\061\066\062\064\062\062\132\060\104\061\026
\060\024\006\003\125\004\003\014\015\101\103\105\104\111\103\117
\115\040\122\157\157\164\061\014\060\012\006\003\125\004\013\014
\003\120\113\111\061\017\060\015\006\003\125\004\012\014\006\105
\104\111\103\117\115\061\013\060\011\006\003\125\004\006\023\002
\105\123\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\377\222\225\341\150\006\166\264\054\310\130\110\312

\375\200\124\051\125\143\044\377\220\145\233\020\165\173\303\152
\333\142\002\001\362\030\206\265\174\132\070\261\344\130\271\373
\323\330\055\237\275\062\067\277\054\025\155\276\265\364\041\322
\023\221\331\007\255\001\005\326\363\275\167\316\137\102\201\012
\371\152\343\203\000\250\053\056\125\023\143\201\312\107\034\173
\134\026\127\172\033\203\140\004\072\076\145\303\315\001\336\336
\244\326\014\272\216\336\331\004\356\027\126\042\233\217\143\375
\115\026\013\267\173\167\214\371\045\265\321\155\231\022\056\117
\032\270\346\352\004\222\256\075\021\271\121\102\075\207\260\061
\205\257\171\132\234\376\347\116\136\222\117\103\374\253\072\255
\245\022\046\146\271\342\014\327\230\316\324\130\245\225\100\012
\267\104\235\023\164\053\302\245\353\042\025\230\020\330\213\305
\004\237\035\217\140\345\006\033\233\317\271\171\240\075\242\043
\077\102\077\153\372\034\003\173\060\215\316\154\300\277\346\033
\137\277\147\270\204\031\325\025\357\173\313\220\066\061\142\311
\274\002\253\106\137\233\376\032\150\224\064\075\220\216\255\366
\344\035\011\177\112\210\070\077\276\147\375\064\226\365\035\274
\060\164\313\070\356\325\154\253\324\374\364\000\267\000\133\205
\062\026\166\063\351\330\243\231\235\005\000\252\026\346\363\201
\175\157\175\252\206\155\255\025\164\323\304\242\161\252\364\024
\175\347\062\270\037\274\325\361\116\275\157\027\002\071\327\016
\225\102\072\307\000\076\351\046\143\021\352\013\321\112\377\030
\235\262\327\173\057\072\331\226\373\350\036\222\256\023\125\310
\331\047\366\334\110\033\260\044\301\205\343\167\235\232\244\363
\014\021\035\015\310\264\024\356\265\202\127\011\277\040\130\177
\057\042\043\330\160\313\171\154\311\113\362\251\052\310\374\207
\053\327\032\120\370\047\350\057\103\343\072\275\330\127\161\375
\316\246\122\133\371\335\115\355\345\366\157\211\355\273\223\234
\166\041\165\360\222\114\051\367\057\234\001\056\376\120\106\236
\144\014\024\263\007\133\305\302\163\154\361\007\134\105\044\024
\065\256\203\361\152\115\211\172\372\263\330\055\146\360\066\207
\365\053\123\002\003\001\000\001\243\201\252\060\201\247\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\037\006\003\125\035\043\004\030\060\026\200\024\246\263\341\053
\053\111\266\327\163\241\252\224\365\001\347\163\145\114\254\120
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\035\006\003\125\035\016\004\026\004\024\246\263\341\053\053
\111\266\327\163\241\252\224\365\001\347\163\145\114\254\120\060
\104\006\003\125\035\040\004\075\060\073\060\071\006\004\125\035
\040\000\060\061\060\057\006\010\053\006\001\005\005\007\002\001
\026\043\150\164\164\160\072\057\057\141\143\145\144\151\143\157
\155\056\145\144\151\143\157\155\147\162\157\165\160\056\143\157
\155\057\144\157\143\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\002\001\000\316\054\013\122\121\142\046
\175\014\047\203\217\305\366\332\240\150\173\117\222\136\352\244
\163\062\021\123\104\262\104\313\235\354\017\171\102\263\020\246
\307\015\235\313\266\372\077\072\174\352\277\210\123\033\074\367
\202\372\005\065\063\341\065\250\127\300\347\375\215\117\077\223

\062\117\170\146\003\167\007\130\351\225\310\176\076\320\171\000
\214\362\033\121\063\233\274\224\351\072\173\156\122\055\062\236
\043\244\105\373\266\056\023\260\213\030\261\335\316\325\035\247
\102\177\125\276\373\133\273\107\324\374\044\315\004\256\226\005
\025\326\254\316\060\363\312\013\305\272\342\042\340\246\255\042
\344\002\356\164\021\177\114\377\170\035\065\332\346\002\064\353
\030\022\141\167\006\011\026\143\352\030\255\242\207\037\362\307
\200\011\011\165\116\020\250\217\075\206\270\165\021\300\044\142
\212\226\173\112\105\351\354\131\305\276\153\203\346\341\350\254
\265\060\036\376\005\007\200\371\341\043\015\120\217\005\230\377
\054\137\350\073\266\255\317\201\265\041\207\312\010\052\043\047
\060\040\053\317\355\224\133\254\262\172\322\307\050\241\212\013
\233\115\112\054\155\205\077\011\162\074\147\342\331\334\007\272
\353\145\173\132\001\143\326\220\133\117\027\146\075\177\013\031
\243\223\143\020\122\052\237\024\026\130\342\334\245\364\241\026
\213\016\221\213\201\312\233\131\372\330\153\221\007\145\125\137
\122\037\257\072\373\220\335\151\245\133\234\155\016\054\266\372
\316\254\245\174\062\112\147\100\334\060\064\043\335\327\004\043
\146\360\374\125\200\247\373\146\031\202\065\147\142\160\071\136
\157\307\352\220\100\104\010\036\270\262\326\333\356\131\247\015
\030\171\064\274\124\030\136\123\312\064\121\355\105\012\346\216
\307\202\066\076\247\070\143\251\060\054\027\020\140\222\237\125
\207\022\131\020\302\017\147\151\021\314\116\036\176\112\232\255
\257\100\250\165\254\126\220\164\270\240\234\245\171\157\334\351
\032\310\151\005\351\272\372\003\263\174\344\340\116\302\316\235
\350\266\106\015\156\176\127\072\147\224\302\313\037\234\167\112
\147\116\151\206\103\223\070\373\266\333\117\203\221\324\140\176
\113\076\053\070\007\125\230\136\244
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ACEDICOM Root"
Issuer: C=ES,O=EDICOM,OU=PKI,CN=ACEDICOM Root
Serial Number:61:8d:c7:86:3b:01:82:05
Subject: C=ES,O=EDICOM,OU=PKI,CN=ACEDICOM Root
Not Valid Before: Fri Apr 18 16:24:22 2008
Not Valid After: Thu Apr 13 16:24:22 2028
Fingerprint (MD5): 42:81:a0:e2:1c:e3:55:10:de:55:89:42:65:96:22:e6
Fingerprint (SHA1): e0:b4:32:2e:b2:f6:a5:68:b6:54:53:84:48:18:4a:50:36:87:43:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "ACEDICOM Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\340\264\062\056\262\366\245\150\266\124\123\204\110\030\112\120
\066\207\103\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\102\201\240\342\034\343\125\020\336\125\211\102\145\226\042\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\026\060\024\006\003\125\004\003\014\015\101\103\105
\104\111\103\117\115\040\122\157\157\164\061\014\060\012\006\003
\125\004\013\014\003\120\113\111\061\017\060\015\006\003\125\004
\012\014\006\105\104\111\103\117\115\061\013\060\011\006\003\125
\004\006\023\002\105\123
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\141\215\307\206\073\001\202\005
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Certificate "Autoridad Certificadora Raiz de la Secretaria de Economia"
Issuer: 1.2.840.113549.1.9.1=acrse@economia.gob.mx,O=Secretaria de Economia,OU=Direccion General de Normatividad Mercantil,CN=Autoridad Certificadora Raiz de la Secretaria de Economia,STREET=Insurgentes Sur 1940,2.5.4.17=01030,C=MX,ST=Distrito Federal,L=Alvaro Obregon
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=acrse@economia.gob.mx,O=Secretaria de Economia,OU=Direccion General de Normatividad Mercantil,CN=Autoridad Certificadora Raiz de la Secretaria de Economia,STREET=Insurgentes Sur 1940,2.5.4.17=01030,C=MX,ST=Distrito Federal,L=Alvaro Obregon
Not Valid Before: Sun May 08 00:00:00 2005
Not Valid After: Thu May 08 00:00:00 2025
Fingerprint (MD5): 07:61:92:04:7e:a6:b9:cd:5e:6b:00:7a:e3:bf:1d:04
Fingerprint (SHA1): 34:d4:99:42:6f:9f:c2:bb:27:b0:75:ba:b6:82:aa:e5:ef:fc:ba:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad Certificadora Raiz de la Secretaria de Economia"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\202\001\061\061\027\060\025\006\003\125\004\007\023\016\101
\154\166\141\162\157\040\117\142\162\145\147\157\156\061\031\060
\027\006\003\125\004\010\023\020\104\151\163\164\162\151\164\157

\040\106\145\144\145\162\141\154\061\013\060\011\006\003\125\004
\006\023\002\115\130\061\016\060\014\006\003\125\004\021\023\005
\060\061\060\063\060\061\035\060\033\006\003\125\004\011\023\024
\111\156\163\165\162\147\145\156\164\145\163\040\123\165\162\040
\061\071\064\060\061\102\060\100\006\003\125\004\003\023\071\101
\165\164\157\162\151\144\141\144\040\103\145\162\164\151\146\151
\143\141\144\157\162\141\040\122\141\151\172\040\144\145\040\154
\141\040\123\145\143\162\145\164\141\162\151\141\040\144\145\040
\105\143\157\156\157\155\151\141\061\064\060\062\006\003\125\004
\013\023\053\104\151\162\145\143\143\151\157\156\040\107\145\156
\145\162\141\154\040\144\145\040\116\157\162\155\141\164\151\166
\151\144\141\144\040\115\145\162\143\141\156\164\151\154\061\037
\060\035\006\003\125\004\012\023\026\123\145\143\162\145\164\141
\162\151\141\040\144\145\040\105\143\157\156\157\155\151\141\061
\044\060\042\006\011\052\206\110\206\367\015\001\011\001\026\025
\141\143\162\163\145\100\145\143\157\156\157\155\151\141\056\147
\157\142\056\155\170
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\061\061\027\060\025\006\003\125\004\007\023\016\101
\154\166\141\162\157\040\117\142\162\145\147\157\156\061\031\060
\027\006\003\125\004\010\023\020\104\151\163\164\162\151\164\157
\040\106\145\144\145\162\141\154\061\013\060\011\006\003\125\004
\006\023\002\115\130\061\016\060\014\006\003\125\004\021\023\005
\060\061\060\063\060\061\035\060\033\006\003\125\004\011\023\024
\111\156\163\165\162\147\145\156\164\145\163\040\123\165\162\040
\061\071\064\060\061\102\060\100\006\003\125\004\003\023\071\101
\165\164\157\162\151\144\141\144\040\103\145\162\164\151\146\151
\143\141\144\157\162\141\040\122\141\151\172\040\144\145\040\154
\141\040\123\145\143\162\145\164\141\162\151\141\040\144\145\040
\105\143\157\156\157\155\151\141\061\064\060\062\006\003\125\004
\013\023\053\104\151\162\145\143\143\151\157\156\040\107\145\156
\145\162\141\154\040\144\145\040\116\157\162\155\141\164\151\166
\151\144\141\144\040\115\145\162\143\141\156\164\151\154\061\037
\060\035\006\003\125\004\012\023\026\123\145\143\162\145\164\141
\162\151\141\040\144\145\040\105\143\157\156\157\155\151\141\061
\044\060\042\006\011\052\206\110\206\367\015\001\011\001\026\025
\141\143\162\163\145\100\145\143\157\156\157\155\151\141\056\147
\157\142\056\155\170
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\224\060\202\004\174\240\003\002\001\002\002\001\001

\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\202\001\061\061\027\060\025\006\003\125\004\007\023\016\101\154
\166\141\162\157\040\117\142\162\145\147\157\156\061\031\060\027
\006\003\125\004\010\023\020\104\151\163\164\162\151\164\157\040
\106\145\144\145\162\141\154\061\013\060\011\006\003\125\004\006
\023\002\115\130\061\016\060\014\006\003\125\004\021\023\005\060
\061\060\063\060\061\035\060\033\006\003\125\004\011\023\024\111
\156\163\165\162\147\145\156\164\145\163\040\123\165\162\040\061
\071\064\060\061\102\060\100\006\003\125\004\003\023\071\101\165
\164\157\162\151\144\141\144\040\103\145\162\164\151\146\151\143
\141\144\157\162\141\040\122\141\151\172\040\144\145\040\154\141
\040\123\145\143\162\145\164\141\162\151\141\040\144\145\040\105
\143\157\156\157\155\151\141\061\064\060\062\006\003\125\004\013
\023\053\104\151\162\145\143\143\151\157\156\040\107\145\156\145
\162\141\154\040\144\145\040\116\157\162\155\141\164\151\166\151
\144\141\144\040\115\145\162\143\141\156\164\151\154\061\037\060
\035\006\003\125\004\012\023\026\123\145\143\162\145\164\141\162
\151\141\040\144\145\040\105\143\157\156\157\155\151\141\061\044
\060\042\006\011\052\206\110\206\367\015\001\011\001\026\025\141
\143\162\163\145\100\145\143\157\156\157\155\151\141\056\147\157
\142\056\155\170\060\036\027\015\060\065\060\065\060\070\060\060
\060\060\060\060\132\027\015\062\065\060\065\060\070\060\060\060
\060\060\060\132\060\202\001\061\061\027\060\025\006\003\125\004
\007\023\016\101\154\166\141\162\157\040\117\142\162\145\147\157
\156\061\031\060\027\006\003\125\004\010\023\020\104\151\163\164
\162\151\164\157\040\106\145\144\145\162\141\154\061\013\060\011
\006\003\125\004\006\023\002\115\130\061\016\060\014\006\003\125
\004\021\023\005\060\061\060\063\060\061\035\060\033\006\003\125
\004\011\023\024\111\156\163\165\162\147\145\156\164\145\163\040
\123\165\162\040\061\071\064\060\061\102\060\100\006\003\125\004
\003\023\071\101\165\164\157\162\151\144\141\144\040\103\145\162
\164\151\146\151\143\141\144\157\162\141\040\122\141\151\172\040
\144\145\040\154\141\040\123\145\143\162\145\164\141\162\151\141
\040\144\145\040\105\143\157\156\157\155\151\141\061\064\060\062
\006\003\125\004\013\023\053\104\151\162\145\143\143\151\157\156
\040\107\145\156\145\162\141\154\040\144\145\040\116\157\162\155
\141\164\151\166\151\144\141\144\040\115\145\162\143\141\156\164
\151\154\061\037\060\035\006\003\125\004\012\023\026\123\145\143
\162\145\164\141\162\151\141\040\144\145\040\105\143\157\156\157
\155\151\141\061\044\060\042\006\011\052\206\110\206\367\015\001
\011\001\026\025\141\143\162\163\145\100\145\143\157\156\157\155
\151\141\056\147\157\142\056\155\170\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\301\144\240\364\347\122
\160\262\352\223\023\364\065\072\037\352\072\034\305\033\213\130
\341\226\326\002\101\136\216\205\100\377\101\146\100\123\374\230
\265\321\062\062\227\147\100\200\235\356\040\077\016\124\373\102
\007\373\167\032\231\330\206\364\034\052\210\045\363\351\104\243

\116\376\007\276\261\310\357\074\215\207\340\036\312\111\020\073
\050\357\044\121\241\374\210\027\112\347\034\310\124\147\143\350
\152\061\346\103\154\366\100\021\206\304\126\356\275\311\035\246
\106\074\036\106\302\202\215\056\251\350\356\166\012\103\340\162
\115\214\364\305\006\372\054\001\000\063\140\316\070\160\064\153
\027\032\353\172\144\141\247\223\244\145\152\327\043\307\166\172
\224\121\013\354\236\250\317\073\242\120\062\034\102\275\143\341
\207\313\271\205\110\016\300\325\130\266\366\316\113\362\007\317
\343\004\325\037\302\326\243\156\243\273\266\267\156\304\361\242
\037\026\274\266\055\260\357\364\132\233\051\215\274\341\374\007
\133\036\011\063\202\170\314\100\155\161\263\143\023\057\323\114
\066\254\071\117\306\301\260\266\365\205\002\003\001\000\001\243
\201\262\060\201\257\060\063\006\003\125\035\037\004\054\060\052
\060\050\240\046\240\044\206\042\150\164\164\160\072\057\057\141
\143\056\145\143\157\156\157\155\151\141\056\147\157\142\056\155
\170\057\154\141\163\164\056\143\162\154\060\107\006\003\125\035
\040\004\100\060\076\060\074\006\010\140\203\144\145\012\202\074
\001\060\060\060\056\006\010\053\006\001\005\005\007\002\001\026
\042\150\164\164\160\072\057\057\141\143\056\145\143\157\156\157
\155\151\141\056\147\157\142\056\155\170\057\143\160\163\056\150
\164\155\154\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\013\006\003\125\035\017\004\004\003\002\001
\006\060\021\006\011\140\206\110\001\206\370\102\001\001\004\004
\003\002\000\007\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\001\001\000\114\052\170\123\004\226\163\140
\253\065\254\300\304\343\347\310\160\245\051\057\207\030\345\250
\202\336\007\325\010\364\317\236\075\236\374\112\054\026\174\237
\242\235\145\020\314\301\033\233\152\147\332\262\263\035\377\315
\144\172\070\143\255\110\375\363\162\341\372\237\273\127\335\277
\314\302\124\330\225\074\146\327\153\006\272\257\251\340\155\010
\357\244\266\220\075\014\156\040\027\247\226\247\174\150\112\234
\230\304\007\157\301\002\142\221\070\233\235\343\212\171\123\235
\237\044\166\045\366\255\050\126\006\252\357\007\254\272\366\154
\344\045\061\175\210\200\072\170\106\370\171\341\070\340\023\347
\141\051\107\363\313\024\000\323\332\342\335\355\163\337\113\362
\143\344\046\330\165\320\115\103\024\220\026\224\107\001\377\241
\131\113\344\166\233\131\003\336\326\027\366\173\327\134\370\351
\343\157\310\116\340\107\046\261\342\234\174\112\061\345\144\021
\340\260\137\332\221\066\110\037\372\011\212\145\150\365\016\302
\237\357\270\152\317\167\376\022\355\066\332\021\066\255\031\152
\302\324\216\122\327\150\357\061
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate

Trust for "Autoridad Certificadora Raiz de la Secretaria de Economia"
Issuer: 1.2.840.113549.1.9.1=acrse@economia.gob.mx,O=Secretaria de Economia,OU=Direccion General de Normatividad
Mercantil,CN=Autoridad Certificadora Raiz de la Secretaria de Economia,STREET=Insurgentes Sur 1940,2.5.4.17=01030,C=MX,ST=Distrito Federal,L=Alvaro Obregon
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=acrse@economia.gob.mx,O=Secretaria de Economia,OU=Direccion General de Normatividad Mercantil,CN=Autoridad Certificadora Raiz de la Secretaria de Economia,STREET=Insurgentes Sur 1940,2.5.4.17=01030,C=MX,ST=Distrito Federal,L=Alvaro Obregon
Not Valid Before: Sun May 08 00:00:00 2005
Not Valid After: Thu May 08 00:00:00 2025
Fingerprint (MD5): 07:61:92:04:7e:a6:b9:cd:5e:6b:00:7a:e3:bf:1d:04
Fingerprint (SHA1): 34:d4:99:42:6f:9f:c2:bb:27:b0:75:ba:b6:82:aa:e5:ef:fc:ba:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad Certificadora Raiz de la Secretaria de Economia"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\064\324\231\102\157\237\302\273\047\260\165\272\266\202\252\345
\357\374\272\164
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\007\141\222\004\176\246\271\315\136\153\000\172\343\277\035\004
END
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\061\061\027\060\025\006\003\125\004\007\023\016\101
\154\166\141\162\157\040\117\142\162\145\147\157\156\061\031\060
\027\006\003\125\004\010\023\020\104\151\163\164\162\151\164\157
\040\106\145\144\145\162\141\154\061\013\060\011\006\003\125\004
\006\023\002\115\130\061\016\060\014\006\003\125\004\021\023\005
\060\061\060\063\060\061\035\060\033\006\003\125\004\011\023\024
\111\156\163\165\162\147\145\156\164\145\163\040\123\165\162\040
\061\071\064\060\061\102\060\100\006\003\125\004\003\023\071\101
\165\164\157\162\151\144\141\144\040\103\145\162\164\151\146\151
\143\141\144\157\162\141\040\122\141\151\172\040\144\145\040\154
\141\040\123\145\143\162\145\164\141\162\151\141\040\144\145\040
\105\143\157\156\157\155\151\141\061\064\060\062\006\003\125\004
\013\023\053\104\151\162\145\143\143\151\157\156\040\107\145\156
\145\162\141\154\040\144\145\040\116\157\162\155\141\164\151\166
\151\144\141\144\040\115\145\162\143\141\156\164\151\154\061\037
\060\035\006\003\125\004\012\023\026\123\145\143\162\145\164\141
\162\151\141\040\144\145\040\105\143\157\156\157\155\151\141\061
\044\060\042\006\011\052\206\110\206\367\015\001\011\001\026\025
\141\143\162\163\145\100\145\143\157\156\157\155\151\141\056\147
\157\142\056\155\170
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Correo Uruguayo - Root CA"
Issuer: CN=Correo Uruguayo - Root CA,OU=SERVICIOS ELECTRONICOS,O=ADMINISTRACION NACIONAL DE CORREOS,C=UY
Serial Number:ca:22:79:08:23:2a:f0:f5:82:b8:85:d3:63:dd:f1
Subject: CN=Correo Uruguayo - Root CA,OU=SERVICIOS ELECTRONICOS,O=ADMINISTRACION NACIONAL DE CORREOS,C=UY
Not Valid Before: Mon Jul 14 16:52:15 2008
Not Valid After: Tue Dec 31 02:59:59 2030
Fingerprint (MD5): 24:6d:ab:d2:f2:ea:4a:66:ae:5b:bc:ae:50:ad:6e:56
Fingerprint (SHA1): f9:dd:19:26:6b:20:43:f1:fe:4b:3d:cb:01:90:af:f1:1f:31:a6:9d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Correo Uruguayo - Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\131\061
\053\060\051\006\003\125\004\012\014\042\101\104\115\111\116\111
\123\124\122\101\103\111\117\116\040\116\101\103\111\117\116\101
\114\040\104\105\040\103\117\122\122\105\117\123\061\037\060\035
\006\003\125\004\013\014\026\123\105\122\126\111\103\111\117\123
\040\105\114\105\103\124\122\117\116\111\103\117\123\061\042\060
\040\006\003\125\004\003\014\031\103\157\162\162\145\157\040\125
\162\165\147\165\141\171\157\040\055\040\122\157\157\164\040\103
\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\131\061
\053\060\051\006\003\125\004\012\014\042\101\104\115\111\116\111
\123\124\122\101\103\111\117\116\040\116\101\103\111\117\116\101
\114\040\104\105\040\103\117\122\122\105\117\123\061\037\060\035
\006\003\125\004\013\014\026\123\105\122\126\111\103\111\117\123
\040\105\114\105\103\124\122\117\116\111\103\117\123\061\042\060
\040\006\003\125\004\003\014\031\103\157\162\162\145\157\040\125
\162\165\147\165\141\171\157\040\055\040\122\157\157\164\040\103

\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\312\042\171\010\043\052\360\365\202\270\205\323\143
\335\361
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\032\060\202\004\002\240\003\002\001\002\002\020\000
\312\042\171\010\043\052\360\365\202\270\205\323\143\335\361\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\177
\061\013\060\011\006\003\125\004\006\023\002\125\131\061\053\060
\051\006\003\125\004\012\014\042\101\104\115\111\116\111\123\124
\122\101\103\111\117\116\040\116\101\103\111\117\116\101\114\040
\104\105\040\103\117\122\122\105\117\123\061\037\060\035\006\003
\125\004\013\014\026\123\105\122\126\111\103\111\117\123\040\105
\114\105\103\124\122\117\116\111\103\117\123\061\042\060\040\006
\003\125\004\003\014\031\103\157\162\162\145\157\040\125\162\165
\147\165\141\171\157\040\055\040\122\157\157\164\040\103\101\060
\036\027\015\060\070\060\067\061\064\061\066\065\062\061\065\132
\027\015\063\060\061\062\063\061\060\062\065\071\065\071\132\060
\177\061\013\060\011\006\003\125\004\006\023\002\125\131\061\053
\060\051\006\003\125\004\012\014\042\101\104\115\111\116\111\123
\124\122\101\103\111\117\116\040\116\101\103\111\117\116\101\114
\040\104\105\040\103\117\122\122\105\117\123\061\037\060\035\006
\003\125\004\013\014\026\123\105\122\126\111\103\111\117\123\040
\105\114\105\103\124\122\117\116\111\103\117\123\061\042\060\040
\006\003\125\004\003\014\031\103\157\162\162\145\157\040\125\162
\165\147\165\141\171\157\040\055\040\122\157\157\164\040\103\101
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\261\075\322\247\045\160\227\203\170\016\327\062\311\146\016
\170\043\344\052\033\354\303\357\123\205\203\273\312\317\176\352
\123\231\155\047\125\310\321\070\041\100\156\111\115\303\075\366
\011\053\006\031\103\251\230\311\001\116\364\252\200\060\007\125
\363\365\267\175\231\267\163\205\325\034\145\126\154\015\062\233
\010\016\064\141\052\100\011\204\067\303\146\355\015\114\234\014
\170\100\072\354\355\253\314\244\204\362\165\061\225\100\250\252
\273\223\265\167\230\154\362\310\340\041\132\043\344\102\247\223
\310\250\035\070\316\244\032\100\100\277\074\223\220\233\137\326
\224\301\042\133\106\327\305\000\025\325\217\306\367\336\013\257
\156\213\005\217\133\200\225\016\243\275\223\314\220\362\175\343
\110\176\262\315\007\075\033\355\024\220\164\363\335\064\037\174
\344\003\131\361\055\315\340\243\240\073\041\056\134\256\254\010
\006\120\025\061\065\356\137\371\037\015\064\245\200\156\142\162
\117\343\041\272\070\100\135\137\333\150\052\134\064\306\010\073
\366\174\056\250\215\304\267\246\255\331\233\277\031\101\016\110
\071\011\146\156\015\064\001\305\273\007\021\043\244\332\376\140
\226\050\107\334\217\147\233\023\257\175\171\016\170\315\300\214

\057\273\041\054\374\164\026\036\336\300\062\235\372\170\072\206
\272\076\311\170\012\000\321\344\340\311\022\342\133\334\353\273
\200\232\062\065\253\360\060\303\016\110\204\057\215\010\012\366
\054\214\115\062\200\105\125\010\333\315\015\250\277\010\172\270
\347\150\135\232\224\211\225\274\374\232\216\270\177\072\330\154
\325\364\030\254\151\342\244\301\013\263\037\243\202\237\363\212
\074\205\100\070\011\372\302\005\076\341\234\211\372\303\005\154
\010\217\135\121\364\177\273\304\363\154\001\275\075\117\304\031
\213\071\331\312\314\351\171\210\004\125\253\155\270\332\026\105
\145\071\025\005\030\373\013\054\163\001\355\224\122\345\175\014
\001\073\011\240\115\361\075\010\201\146\064\066\027\104\360\147
\363\133\362\005\266\041\230\130\331\364\241\067\331\157\346\357
\126\304\373\277\126\142\002\254\060\060\266\002\326\322\026\374
\116\352\207\103\232\150\135\210\243\221\106\050\053\277\071\025
\025\002\003\001\000\001\243\201\221\060\201\216\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\175\273\151\353\210\141\341\100
\317\107\043\144\000\206\242\146\153\334\204\225\060\114\006\003
\125\035\040\004\105\060\103\060\101\006\004\125\035\040\000\060
\071\060\067\006\010\053\006\001\005\005\007\002\001\026\053\150
\164\164\160\072\057\057\167\167\167\056\143\157\162\162\145\157
\056\143\157\155\056\165\171\057\143\157\162\162\145\157\143\145
\162\164\057\143\160\163\056\160\144\146\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\126\337
\023\211\276\142\267\016\201\041\163\244\324\067\312\355\267\057
\225\164\327\211\370\113\107\201\356\147\355\270\051\337\041\240
\374\124\147\147\310\127\054\133\241\012\165\170\041\041\312\240
\250\337\153\234\331\066\002\215\270\001\301\157\216\173\154\311
\244\262\305\106\251\312\114\002\201\372\243\173\235\075\110\346
\312\100\146\322\104\235\166\340\125\271\246\234\247\321\103\330
\365\240\264\235\370\367\345\246\246\102\363\002\062\131\106\162
\053\024\354\136\145\325\121\201\170\316\252\057\215\226\211\171
\152\373\017\310\133\317\264\256\220\266\137\343\174\142\154\267
\246\377\220\201\265\230\221\163\022\060\257\307\350\201\002\150
\163\051\273\130\165\075\267\326\103\325\256\115\362\102\271\360
\337\332\061\000\023\332\341\263\266\006\213\133\375\311\230\270
\242\023\321\272\217\301\212\032\236\017\377\202\276\004\202\345
\053\223\076\036\265\242\014\033\306\032\260\163\211\166\203\274
\216\073\273\027\155\024\303\213\276\175\025\046\265\251\234\027
\172\120\172\055\353\351\231\224\256\230\020\275\356\052\135\135
\326\216\064\133\254\036\207\140\153\230\307\207\217\323\234\262
\150\005\111\007\371\251\061\146\234\376\277\247\131\350\054\360
\066\324\362\250\031\202\300\236\247\071\371\261\230\064\243\037
\372\315\311\031\055\170\336\267\375\142\360\223\243\376\000\133
\326\012\344\363\176\174\227\050\341\005\354\005\064\105\023\377
\051\023\141\212\047\117\333\270\322\222\041\047\265\210\167\147
\250\176\317\044\074\207\010\004\063\163\217\013\266\206\370\317

\357\262\246\044\036\013\221\221\000\120\026\062\022\330\011\045
\332\143\116\335\333\055\327\347\004\153\343\143\037\251\376\251
\001\143\304\312\114\024\150\203\274\005\254\131\026\373\156\241
\007\157\273\113\276\155\230\110\166\045\173\112\021\226\124\010
\254\251\363\067\253\203\303\321\315\201\230\300\345\100\065\270
\237\221\347\157\346\113\040\026\212\123\173\254\072\321\230\065
\124\320\324\277\256\176\232\113\036\351\165\243\045\260\073\347
\145\277\117\225\364\035\275\304\272\311\115\201\121\302\077\132
\331\022\364\041\033\326\225\352\075\220\376\251\223\342
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Correo Uruguayo - Root CA"
Issuer: CN=Correo Uruguayo - Root CA,OU=SERVICIOS ELECTRONICOS,O=ADMINISTRACION
NACIONAL DE CORREOS,C=UY
Serial Number:ca:22:79:08:23:2a:f0:f5:82:b8:85:d3:63:dd:f1
Subject: CN=Correo Uruguayo - Root CA,OU=SERVICIOS ELECTRONICOS,O=ADMINISTRACION
NACIONAL DE CORREOS,C=UY
Not Valid Before: Mon Jul 14 16:52:15 2008
Not Valid After: Tue Dec 31 02:59:59 2030
Fingerprint (MD5): 24:6d:ab:d2:f2:ea:4a:66:ae:5b:bc:ae:50:ad:6e:56
Fingerprint (SHA1): f9:dd:19:26:6b:20:43:f1:fe:4b:3d:cb:01:90:af:f1:1f:31:a6:9d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Correo Uruguayo - Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\335\031\046\153\040\103\361\376\113\075\313\001\220\257\361
\037\061\246\235
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\044\155\253\322\362\352\112\146\256\133\274\256\120\255\156\126
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\131\061
\053\060\051\006\003\125\004\012\014\042\101\104\115\111\116\111
\123\124\122\101\103\111\117\116\040\116\101\103\111\117\116\101
\114\040\104\105\040\103\117\122\122\105\117\123\061\037\060\035
\006\003\125\004\013\014\026\123\105\122\126\111\103\111\117\123
\040\105\114\105\103\124\122\117\116\111\103\117\123\061\042\060
\040\006\003\125\004\003\014\031\103\157\162\162\145\157\040\125
\162\165\147\165\141\171\157\040\055\040\122\157\157\164\040\103

\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\312\042\171\010\043\052\360\365\202\270\205\323\143
\335\361
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Chambers of Commerce Root - 2008"
Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After: Sat Jul 31 12:29:50 2038
Fingerprint (MD5): 5e:80:9e:84:5a:0e:65:0b:17:02:f3:55:18:2a:3e:d7
Fingerprint (SHA1): 78:6a:74:ac:76:ab:14:7f:9c:6a:30:50:ba:9e:a8:7e:fe:9a:ce:3c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers
 of Commerce Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151

\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\011\000\243\332\102\176\244\261\256\332
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\117\060\202\005\067\240\003\002\001\002\002\011\000
\243\332\102\176\244\261\256\332\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\060\201\256\061\013\060\011\006\003
\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007
\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056
\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020
\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067
\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141
\155\145\162\146\151\162\155\141\040\123\056\101\056\061\051\060
\047\006\003\125\004\003\023\040\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164\040\055\040\062\060\060\070\060\036\027\015\060\070\060\070
\060\061\061\062\062\071\065\060\132\027\015\063\070\060\067\063
\061\061\062\062\071\065\060\132\060\201\256\061\013\060\011\006
\003\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004
\007\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143
\165\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141
\164\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141
\056\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060
\020\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070
\067\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103
\141\155\145\162\146\151\162\155\141\040\123\056\101\056\061\051
\060\047\006\003\125\004\003\023\040\103\150\141\155\142\145\162
\163\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157
\157\164\040\055\040\062\060\060\070\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\257\000\313\160\067\053
\200\132\112\072\154\170\224\175\243\177\032\037\366\065\325\275
\333\313\015\104\162\076\046\262\220\122\272\143\073\050\130\157
\245\263\155\224\246\363\335\144\014\125\366\366\347\362\042\042

\200\136\341\142\306\266\051\341\201\154\362\277\345\175\062\152
\124\240\062\031\131\376\037\213\327\075\140\206\205\044\157\343
\021\263\167\076\040\226\065\041\153\263\010\331\160\056\144\367
\204\222\123\326\016\260\220\212\212\343\207\215\006\323\275\220
\016\342\231\241\033\206\016\332\232\012\273\013\141\120\006\122
\361\236\177\166\354\313\017\320\036\015\317\231\060\075\034\304
\105\020\130\254\326\323\350\327\345\352\305\001\007\167\326\121
\346\003\177\212\110\245\115\150\165\271\351\274\236\116\031\161
\365\062\113\234\155\140\031\013\373\314\235\165\334\277\046\315
\217\223\170\071\171\163\136\045\016\312\134\353\167\022\007\313
\144\101\107\162\223\253\120\303\353\011\166\144\064\322\071\267
\166\021\011\015\166\105\304\251\256\075\152\257\265\175\145\057
\224\130\020\354\134\174\257\176\342\266\030\331\320\233\116\132
\111\337\251\146\013\314\074\306\170\174\247\234\035\343\316\216
\123\276\005\336\140\017\153\345\032\333\077\343\341\041\311\051
\301\361\353\007\234\122\033\001\104\121\074\173\045\327\304\345
\122\124\135\045\007\312\026\040\270\255\344\101\356\172\010\376
\231\157\203\246\221\002\260\154\066\125\152\347\175\365\226\346
\312\201\326\227\361\224\203\351\355\260\261\153\022\151\036\254
\373\135\251\305\230\351\264\133\130\172\276\075\242\104\072\143
\131\324\013\045\336\033\117\275\345\001\236\315\322\051\325\237
\027\031\012\157\277\014\220\323\011\137\331\343\212\065\314\171
\132\115\031\067\222\267\304\301\255\257\364\171\044\232\262\001
\013\261\257\134\226\363\200\062\373\134\075\230\361\240\077\112
\336\276\257\224\056\331\125\232\027\156\140\235\143\154\270\143
\311\256\201\134\030\065\340\220\273\276\074\117\067\042\271\176
\353\317\236\167\041\246\075\070\201\373\110\332\061\075\053\343
\211\365\320\265\275\176\340\120\304\022\211\263\043\232\020\061
\205\333\256\157\357\070\063\030\166\021\002\003\001\000\001\243
\202\001\154\060\202\001\150\060\022\006\003\125\035\023\001\001
\377\004\010\060\006\001\001\377\002\001\014\060\035\006\003\125
\035\016\004\026\004\024\371\044\254\017\262\265\370\171\300\372
\140\210\033\304\331\115\002\236\027\031\060\201\343\006\003\125
\035\043\004\201\333\060\201\330\200\024\371\044\254\017\262\265
\370\171\300\372\140\210\033\304\331\115\002\236\027\031\241\201
\264\244\201\261\060\201\256\061\013\060\011\006\003\125\004\006
\023\002\105\125\061\103\060\101\006\003\125\004\007\023\072\115
\141\144\162\151\144\040\050\163\145\145\040\143\165\162\162\145
\156\164\040\141\144\144\162\145\163\163\040\141\164\040\167\167
\167\056\143\141\155\145\162\146\151\162\155\141\056\143\157\155
\057\141\144\144\162\145\163\163\051\061\022\060\020\006\003\125
\004\005\023\011\101\070\062\067\064\063\062\070\067\061\033\060
\031\006\003\125\004\012\023\022\101\103\040\103\141\155\145\162
\146\151\162\155\141\040\123\056\101\056\061\051\060\047\006\003
\125\004\003\023\040\103\150\141\155\142\145\162\163\040\157\146
\040\103\157\155\155\145\162\143\145\040\122\157\157\164\040\055
\040\062\060\060\070\202\011\000\243\332\102\176\244\261\256\332
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006

\060\075\006\003\125\035\040\004\066\060\064\060\062\006\004\125
\035\040\000\060\052\060\050\006\010\053\006\001\005\005\007\002
\001\026\034\150\164\164\160\072\057\057\160\157\154\151\143\171
\056\143\141\155\145\162\146\151\162\155\141\056\143\157\155\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\002\001\000\220\022\257\042\065\302\243\071\360\056\336\351\265
\351\170\174\110\276\077\175\105\222\136\351\332\261\031\374\026
\074\237\264\133\146\236\152\347\303\271\135\210\350\017\255\317
\043\017\336\045\072\136\314\117\245\301\265\055\254\044\322\130
\007\336\242\317\151\204\140\063\350\020\015\023\251\043\320\205
\345\216\173\246\236\075\162\023\162\063\365\252\175\306\143\037
\010\364\376\001\177\044\317\053\054\124\011\336\342\053\155\222
\306\071\117\026\352\074\176\172\106\324\105\152\106\250\353\165
\202\126\247\253\240\174\150\023\063\366\235\060\360\157\047\071
\044\043\052\220\375\220\051\065\362\223\337\064\245\306\367\370
\357\214\017\142\112\174\256\323\365\124\370\215\266\232\126\207
\026\202\072\063\253\132\042\010\367\202\272\352\056\340\107\232
\264\265\105\243\005\073\331\334\056\105\100\073\352\334\177\350
\073\353\321\354\046\330\065\244\060\305\072\254\127\236\263\166
\245\040\173\371\036\112\005\142\001\246\050\165\140\227\222\015
\156\076\115\067\103\015\222\025\234\030\042\315\121\231\240\051
\032\074\137\212\062\063\133\060\307\211\057\107\230\017\243\003
\306\366\361\254\337\062\360\331\201\032\344\234\275\366\200\024
\360\321\054\271\205\365\330\243\261\310\245\041\345\034\023\227
\356\016\275\337\051\251\357\064\123\133\323\344\152\023\204\006
\266\062\002\304\122\256\042\322\334\262\041\102\032\332\100\360
\051\311\354\012\014\134\342\320\272\314\110\323\067\012\314\022
\012\212\171\260\075\003\177\151\113\364\064\040\175\263\064\352
\216\113\144\365\076\375\263\043\147\025\015\004\270\360\055\301
\011\121\074\262\154\025\360\245\043\327\203\164\344\345\056\311
\376\230\047\102\306\253\306\236\260\320\133\070\245\233\120\336
\176\030\230\265\105\073\366\171\264\350\367\032\173\006\203\373
\320\213\332\273\307\275\030\253\010\157\074\200\153\100\077\031
\031\272\145\212\346\276\325\134\323\066\327\357\100\122\044\140
\070\147\004\061\354\217\363\202\306\336\271\125\363\073\061\221
\132\334\265\010\025\255\166\045\012\015\173\056\207\342\014\246
\006\274\046\020\155\067\235\354\335\170\214\174\200\305\360\331
\167\110\320
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Chambers of Commerce Root - 2008"
Issuer: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU

Serial Number:a3:da:42:7e:a4:b1:ae:da
Subject: CN=Chambers of Commerce Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:29:50 2008
Not Valid After: Sat Jul 31 12:29:50 2038
Fingerprint
(MD5): 5e:80:9e:84:5a:0e:65:0b:17:02:f3:55:18:2a:3e:d7
Fingerprint (SHA1): 78:6a:74:ac:76:ab:14:7f:9c:6a:30:50:ba:9e:a8:7e:fe:9a:ce:3c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\170\152\164\254\166\253\024\177\234\152\060\120\272\236\250\176
\376\232\316\074
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\136\200\236\204\132\016\145\013\027\002\363\125\030\052\076\327
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\051\060\047\006\003\125\004\003\023
\040\103\150\141\155\142\145\162\163\040\157\146\040\103\157\155
\155\145\162\143\145\040\122\157\157\164\040\055\040\062\060\060
\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\243\332\102\176\244\261\256\332
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Global Chambersign Root - 2008"
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:c9:cd:d3:e9:d5:7d:23:ce

Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address
 at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After: Sat Jul 31 12:31:40 2038
Fingerprint (MD5): 9e:80:ff:78:01:0c:2e:c1:36:bd:fe:96:90:6e:08:f3
Fingerprint (SHA1): 4a:bd:ee:ec:95:0d:35:9c:89:ae:c7:52:a1:2c:5b:29:f6:d6:aa:0c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\111\060\202\005\061\240\003\002\001\002\002\011\000
\311\315\323\351\325\175\043\316\060\015\006\011\052\206\110\206

\367\015\001\001\005\005\000\060\201\254\061\013\060\011\006\003
\125\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007
\023\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165
\162\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164
\040\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056
\143\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020
\006\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067
\061\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141
\155\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060
\045\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040
\055\040\062\060\060\070\060\036\027\015\060\070\060\070\060\061
\061\062\063\061\064\060\132\027\015\063\070\060\067\063\061\061
\062\063\061\064\060\132\060\201\254\061\013\060\011\006\003\125
\004\006\023\002\105\125\061\103\060\101\006\003\125\004\007\023
\072\115\141\144\162\151\144\040\050\163\145\145\040\143\165\162
\162\145\156\164\040\141\144\144\162\145\163\163\040\141\164\040
\167\167\167\056\143\141\155\145\162\146\151\162\155\141\056\143
\157\155\057\141\144\144\162\145\163\163\051\061\022\060\020\006
\003\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061
\033\060\031\006\003\125\004\012\023\022\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\056\101\056\061\047\060\045
\006\003\125\004\003\023\036\107\154\157\142\141\154\040\103\150
\141\155\142\145\162\163\151\147\156\040\122\157\157\164\040\055
\040\062\060\060\070\060\202\002\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002
\012\002\202\002\001\000\300\337\126\323\344\072\233\166\105\264
\023\333\377\301\266\031\213\067\101\030\225\122\107\353\027\235
\051\210\216\065\154\006\062\056\107\142\363\111\004\277\175\104
\066\261\161\314\275\132\011\163\325\331\205\104\377\221\127\045
\337\136\066\216\160\321\134\161\103\035\331\332\357\134\322\373
\033\275\072\265\313\255\243\314\104\247\015\256\041\025\077\271
\172\133\222\165\330\244\022\070\211\031\212\267\200\322\342\062
\157\126\234\221\326\210\020\013\263\164\144\222\164\140\363\366
\317\030\117\140\262\043\320\307\073\316\141\113\231\217\302\014
\320\100\262\230\334\015\250\116\243\271\012\256\140\240\255\105
\122\143\272\146\275\150\340\371\276\032\250\201\273\036\101\170
\165\323\301\376\000\125\260\207\124\350\047\220\065\035\114\063
\255\227\374\227\056\230\204\277\054\311\243\277\321\230\021\024
\355\143\370\312\230\210\130\027\231\355\105\003\227\176\074\206
\036\210\214\276\362\221\204\217\145\064\330\000\114\175\267\061
\027\132\051\172\012\030\044\060\243\067\265\172\251\001\175\046
\326\371\016\216\131\361\375\033\063\265\051\073\027\073\101\266
\041\335\324\300\075\245\237\237\037\103\120\311\273\274\154\172
\227\230\356\315\214\037\373\234\121\256\213\160\275\047\237\161
\300\153\254\175\220\146\350\327\135\072\015\260\325\302\215\325
\310\235\235\301\155\320\320\277\121\344\343\370\303\070\066\256
\326\247\165\346\257\204\103\135\223\222\014\152\007\336\073\035

\230\042\326\254\301\065\333\243\240\045\377\162\265\166\035\336
\155\351\054\146\054\122\204\320\105\222\316\034\345\345\063\035
\334\007\123\124\243\252\202\073\232\067\057\334\335\240\144\351
\346\335\275\256\374\144\205\035\074\247\311\006\336\204\377\153
\350\153\032\074\305\242\263\102\373\213\011\076\137\010\122\307
\142\304\324\005\161\277\304\144\344\370\241\203\350\076\022\233
\250\036\324\066\115\057\161\366\215\050\366\203\251\023\322\141
\301\221\273\110\300\064\217\101\214\113\114\333\151\022\377\120
\224\234\040\203\131\163\355\174\241\362\361\375\335\367\111\323
\103\130\240\126\143\312\075\075\345\065\126\131\351\016\312\040
\314\053\113\223\051\017\002\003\001\000\001\243\202\001\152\060
\202\001\146\060\022\006\003\125\035\023\001\001\377\004\010\060
\006\001\001\377\002\001\014\060\035\006\003\125\035\016\004\026
\004\024\271\011\312\234\036\333\323\154\072\153\256\355\124\361
\133\223\006\065\056\136\060\201\341\006\003\125\035\043\004\201
\331\060\201\326\200\024\271\011\312\234\036\333\323\154\072\153
\256\355\124\361\133\223\006\065\056\136\241\201\262\244\201\257
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070\202
\011\000\311\315\323\351\325\175\043\316\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\006\060\075\006\003\125\035
\040\004\066\060\064\060\062\006\004\125\035\040\000\060\052\060
\050\006\010\053\006\001\005\005\007\002\001\026\034\150\164\164
\160\072\057\057\160\157\154\151\143\171\056\143\141\155\145\162
\146\151\162\155\141\056\143\157\155\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\200\210\177
\160\336\222\050\331\005\224\106\377\220\127\251\361\057\337\032
\015\153\372\174\016\034\111\044\171\047\330\106\252\157\051\131
\122\210\160\022\352\335\075\365\233\123\124\157\341\140\242\250
\011\271\354\353\131\174\306\065\361\334\030\351\361\147\345\257
\272\105\340\011\336\312\104\017\302\027\016\167\221\105\172\063
\137\137\226\054\150\213\301\107\217\230\233\075\300\354\313\365
\325\202\222\204\065\321\276\066\070\126\162\061\133\107\055\252
\027\244\143\121\353\012\001\255\177\354\165\236\313\241\037\361
\177\022\261\271\344\144\177\147\326\043\052\364\270\071\135\230
\350\041\247\341\275\075\102\032\164\232\160\257\150\154\120\135
\111\317\377\373\016\135\346\054\107\327\201\072\131\000\265\163
\153\143\040\366\061\105\010\071\016\364\160\176\100\160\132\077
\320\153\102\251\164\075\050\057\002\155\165\162\225\011\215\110

\143\306\306\043\127\222\223\136\065\301\215\371\012\367\054\235
\142\034\366\255\174\335\246\061\036\266\261\307\176\205\046\372
\244\152\265\332\143\060\321\357\223\067\262\146\057\175\005\367
\347\267\113\230\224\065\300\331\072\051\301\235\262\120\063\035
\112\251\132\246\311\003\357\355\364\347\250\156\212\264\127\204
\353\244\077\320\356\252\252\207\133\143\350\223\342\153\250\324
\270\162\170\153\033\355\071\344\135\313\233\252\207\325\117\116
\000\376\331\152\237\074\061\017\050\002\001\175\230\350\247\260
\242\144\236\171\370\110\362\025\251\314\346\310\104\353\077\170
\231\362\173\161\076\074\361\230\247\305\030\022\077\346\273\050
\063\102\351\105\012\174\155\362\206\171\057\305\202\031\175\011
\211\174\262\124\166\210\256\336\301\363\314\341\156\333\061\326
\223\256\231\240\357\045\152\163\230\211\133\072\056\023\210\036
\277\300\222\224\064\033\343\047\267\213\036\157\102\377\347\351
\067\233\120\035\055\242\371\002\356\313\130\130\072\161\274\150
\343\252\301\257\034\050\037\242\334\043\145\077\201\352\256\231
\323\330\060\317\023\015\117\025\311\204\274\247\110\055\370\060
\043\167\330\106\113\171\155\366\214\355\072\177\140\021\170\364
\351\233\256\325\124\300\164\200\321\013\102\237\301
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Global Chambersign Root - 2008"
Issuer: CN=Global Chambersign Root - 2008,O=AC Camerfirma
S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Serial Number:c9:cd:d3:e9:d5:7d:23:ce
Subject: CN=Global Chambersign Root - 2008,O=AC Camerfirma S.A.,2.5.4.5=A82743287,L=Madrid (see current address at www.camerfirma.com/address),C=EU
Not Valid Before: Fri Aug 01 12:31:40 2008
Not Valid After: Sat Jul 31 12:31:40 2038
Fingerprint (MD5): 9e:80:ff:78:01:0c:2e:c1:36:bd:fe:96:90:6e:08:f3
Fingerprint (SHA1): 4a:bd:ee:ec:95:0d:35:9c:89:ae:c7:52:a1:2c:5b:29:f6:d6:aa:0c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root - 2008"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\112\275\356\354\225\015\065\234\211\256\307\122\241\054\133\051
\366\326\252\014
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\236\200\377\170\001\014\056\301\066\275\376\226\220\156\010\363
END

CKA_ISSUER MULTILINE_OCTAL
\060\201\254\061\013\060\011\006\003\125\004\006\023\002\105\125
\061\103\060\101\006\003\125\004\007\023\072\115\141\144\162\151
\144\040\050\163\145\145\040\143\165\162\162\145\156\164\040\141
\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143\141
\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144\144
\162\145\163\163\051\061\022\060\020\006\003\125\004\005\023\011
\101\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125
\004\012\023\022\101\103\040\103\141\155\145\162\146\151\162\155
\141\040\123\056\101\056\061\047\060\045\006\003\125\004\003\023
\036\107\154\157\142\141\154\040\103\150\141\155\142\145\162\163
\151\147\156\040\122\157\157\164\040\055\040\062\060\060\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\011\000\311\315\323\351\325\175\043\316
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only
Certificate
Certificate "CNNIC ROOT"
Issuer: CN=CNNIC ROOT,O=CNNIC,C=CN
Serial Number:49:33:00:01
Subject: CN=CNNIC ROOT,O=CNNIC,C=CN
Not Valid Before: Mon Apr 16 07:09:14 2007
Not Valid After: Fri Apr 16 07:09:14 2027
Fingerprint (MD5): 21:bc:82:ab:49:c4:13:3b:4b:b2:2b:5c:6b:90:9c:19
Fingerprint (SHA1): 8b:af:4c:9b:1d:f0:2a:92:f7:da:12:8e:b9:1b:ac:f4:98:60:4b:6f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CNNIC ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\062\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\016\060\014\006\003\125\004\012\023\005\103\116\116\111\103\061
\023\060\021\006\003\125\004\003\023\012\103\116\116\111\103\040
\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\062\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\016\060\014\006\003\125\004\012\023\005\103\116\116\111\103\061

\023\060\021\006\003\125\004\003\023\012\103\116\116\111\103\040
\122\117\117\124
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\111\063\000\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\125\060\202\002\075\240\003\002\001\002\002\004\111
\063\000\001\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\062\061\013\060\011\006\003\125\004\006\023\002\103
\116\061\016\060\014\006\003\125\004\012\023\005\103\116\116\111
\103\061\023\060\021\006\003\125\004\003\023\012\103\116\116\111
\103\040\122\117\117\124\060\036\027\015\060\067\060\064\061\066
\060\067\060\071\061\064\132\027\015\062\067\060\064\061\066\060
\067\060\071\061\064\132\060\062\061\013\060\011\006\003\125\004
\006\023\002\103\116\061\016\060\014\006\003\125\004\012\023\005
\103\116\116\111\103\061\023\060\021\006\003\125\004\003\023\012
\103\116\116\111\103\040\122\117\117\124\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\323\065\367\077\163
\167\255\350\133\163\027\302\321\157\355\125\274\156\352\350\244
\171\262\154\303\243\357\341\237\261\073\110\205\365\232\134\041
\042\020\054\305\202\316\332\343\232\156\067\341\207\054\334\271
\014\132\272\210\125\337\375\252\333\037\061\352\001\361\337\071
\001\301\023\375\110\122\041\304\125\337\332\330\263\124\166\272
\164\261\267\175\327\300\350\366\131\305\115\310\275\255\037\024
\332\337\130\104\045\062\031\052\307\176\176\216\256\070\260\060
\173\107\162\011\061\360\060\333\303\033\166\051\273\151\166\116
\127\371\033\144\242\223\126\267\157\231\156\333\012\004\234\021
\343\200\037\313\143\224\020\012\251\341\144\202\061\371\214\047
\355\246\231\000\366\160\223\030\370\241\064\206\243\335\172\302
\030\171\366\172\145\065\317\220\353\275\063\223\237\123\253\163
\073\346\233\064\040\057\035\357\251\035\143\032\240\200\333\003
\057\371\046\032\206\322\215\273\251\276\122\072\207\147\110\015
\277\264\240\330\046\276\043\137\163\067\177\046\346\222\004\243
\177\317\040\247\267\363\072\312\313\231\313\002\003\001\000\001
\243\163\060\161\060\021\006\011\140\206\110\001\206\370\102\001
\001\004\004\003\002\000\007\060\037\006\003\125\035\043\004\030
\060\026\200\024\145\362\061\255\052\367\367\335\122\226\012\307
\002\301\016\357\246\325\073\021\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\013\006\003\125\035\017
\004\004\003\002\001\376\060\035\006\003\125\035\016\004\026\004
\024\145\362\061\255\052\367\367\335\122\226\012\307\002\301\016
\357\246\325\073\021\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\113\065\356\314\344\256\277
\303\156\255\237\225\073\113\077\133\036\337\127\051\242\131\312
\070\342\271\032\377\236\346\156\062\335\036\256\352\065\267\365

\223\221\116\332\102\341\303\027\140\120\362\321\134\046\271\202
\267\352\155\344\234\204\347\003\171\027\257\230\075\224\333\307
\272\000\347\270\277\001\127\301\167\105\062\014\073\361\264\034
\010\260\375\121\240\241\335\232\035\023\066\232\155\267\307\074
\271\341\305\331\027\372\203\325\075\025\240\074\273\036\013\342
\310\220\077\250\206\014\374\371\213\136\205\313\117\133\113\142
\021\107\305\105\174\005\057\101\261\236\020\151\033\231\226\340
\125\171\373\116\206\231\270\224\332\206\070\152\223\243\347\313
\156\345\337\352\041\125\211\234\175\175\177\230\365\000\211\356
\343\204\300\134\226\265\305\106\352\106\340\205\125\266\033\311
\022\326\301\315\315\200\363\002\001\074\310\151\313\105\110\143
\330\224\320\354\205\016\073\116\021\145\364\202\214\246\075\256
\056\042\224\011\310\134\352\074\201\135\026\052\003\227\026\125
\011\333\212\101\202\236\146\233\021
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CNNIC ROOT"
Issuer: CN=CNNIC ROOT,O=CNNIC,C=CN
Serial Number:49:33:00:01
Subject: CN=CNNIC ROOT,O=CNNIC,C=CN
Not Valid Before:
Mon Apr 16 07:09:14 2007
Not Valid After: Fri Apr 16 07:09:14 2027
Fingerprint (MD5): 21:bc:82:ab:49:c4:13:3b:4b:b2:2b:5c:6b:90:9c:19
Fingerprint (SHA1): 8b:af:4c:9b:1d:f0:2a:92:f7:da:12:8e:b9:1b:ac:f4:98:60:4b:6f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CNNIC ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\213\257\114\233\035\360\052\222\367\332\022\216\271\033\254\364
\230\140\113\157
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\041\274\202\253\111\304\023\073\113\262\053\134\153\220\234\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\062\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\016\060\014\006\003\125\004\012\023\005\103\116\116\111\103\061
\023\060\021\006\003\125\004\003\023\012\103\116\116\111\103\040
\122\117\117\124
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\111\063\000\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST
CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Common Policy"
Issuer: CN=Common Policy,OU=FBCA,O=U.S. Government,C=us
Serial Number:29:36:47:aa:e3:8a:ac:86:4a:23:56:f2:ca:b7:61:af
Subject: CN=Common Policy,OU=FBCA,O=U.S. Government,C=us
Not Valid Before: Mon Oct 15 15:58:00 2007
Not Valid After: Fri Oct 15 16:08:00 2027
Fingerprint (MD5): f0:58:c5:03:82:67:17:ab:8f:da:03:10:27:8e:19:c2
Fingerprint (SHA1): cb:44:a0:97:85:7c:45:fa:18:7e:d9:52:08:6c:b9:84:1f:2d:51:b5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Common Policy"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\165\163\061
\030\060\026\006\003\125\004\012\023\017\125\056\123\056\040\107
\157\166\145\162\156\155\145\156\164\061\015\060\013\006\003\125
\004\013\023\004\106\102\103\101\061\026\060\024\006\003\125\004
\003\023\015\103\157\155\155\157\156\040\120\157\154\151\143\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\165\163\061
\030\060\026\006\003\125\004\012\023\017\125\056\123\056\040\107
\157\166\145\162\156\155\145\156\164\061\015\060\013\006\003\125
\004\013\023\004\106\102\103\101\061\026\060\024\006\003\125\004
\003\023\015\103\157\155\155\157\156\040\120\157\154\151\143\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\051\066\107\252\343\212\254\206\112\043\126\362\312\267
\141\257
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\241\060\202\002\211\240\003\002\001\002\002\020\051
\066\107\252\343\212\254\206\112\043\126\362\312\267\141\257\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\116

\061\013\060\011\006\003\125\004\006\023\002\165\163\061\030\060
\026\006\003\125\004\012\023\017\125\056\123\056\040\107\157\166
\145\162\156\155\145\156\164\061\015\060\013\006\003\125\004\013
\023\004\106\102\103\101\061\026\060\024\006\003\125\004\003\023
\015\103\157\155\155\157\156\040\120\157\154\151\143\171\060\036
\027\015\060\067\061\060\061\065\061\065\065\070\060\060\132\027
\015\062\067\061\060\061\065\061\066\060\070\060\060\132\060\116
\061\013\060\011\006\003\125\004\006\023\002\165\163\061\030\060
\026\006\003\125\004\012\023\017\125\056\123\056\040\107\157\166
\145\162\156\155\145\156\164\061\015\060\013\006\003\125\004\013
\023\004\106\102\103\101\061\026\060\024\006\003\125\004\003\023
\015\103\157\155\155\157\156\040\120\157\154\151\143\171\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\227
\215\275\063\047\344\255\133\373\170\275\057\107\107\156\307\170
\351\223\234\244\336\311\034\375\057\033\071\070\254\107\027\300
\176\167\051\000\073\003\037\150\017\315\115\245\356\167\270\054
\142\153\061\366\372\162\011\175\060\051\006\174\347\174\243\075
\204\030\212\035\256\054\222\250\037\350\136\117\215\216\353\077
\032\370\234\012\147\235\260\147\115\360\056\320\060\336\303\224
\260\240\317\056\012\064\177\124\011\323\066\275\244\111\127\122
\163\351\235\376\344\110\171\106\033\133\215\062\344\245\110\144
\363\042\015\222\235\010\025\277\140\074\203\367\107\042\045\042
\255\051\161\267\167\357\027\311\242\266\224\136\310\060\220\244
\024\110\134\126\127\013\101\114\005\324\052\114\077\256\022\233
\131\021\165\160\007\042\151\055\054\323\061\314\222\176\314\315
\244\176\224\107\252\234\011\010\366\113\257\122\350\152\100\221
\305\125\275\100\261\310\155\127\206\225\027\346\037\163\276\107
\056\076\213\114\027\271\271\045\034\245\122\027\066\010\131\300
\102\276\012\053\264\126\121\074\033\125\311\214\220\167\353\002
\003\001\000\001\243\173\060\171\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\057\130\227\330\251\005\230\245\126\037\373\331
\253\165\357\002\074\066\064\307\060\022\006\011\053\006\001\004
\001\202\067\025\001\004\005\002\003\001\000\001\060\043\006\011
\053\006\001\004\001\202\067\025\002\004\026\004\024\166\267\140
\226\335\024\126\051\254\165\205\323\160\143\301\274\107\206\034
\213\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\140\256\363\110\026\100\162\246\010\210\311
\274\107\054\044\113\135\240\221\163\355\145\170\220\360\147\220
\172\245\277\012\255\266\052\371\231\147\337\203\305\167\037\064
\011\070\371\176\236\101\340\110\140\376\342\252\135\207\210\352
\210\375\134\105\262\311\152\332\175\244\255\261\117\277\034\015
\237\036\232\300\325\024\163\070\053\212\170\100\156\060\367\142
\341\315\231\374\121\151\147\154\021\335\270\020\243\150\336\046
\245\126\375\066\154\067\230\154\373\356\174\074\154\153\160\077
\367\110\067\011\217\013\102\201\255\106\106\270\013\203\006\364

\033\070\240\177\117\315\013\357\203\211\207\227\034\212\060\147
\334\375\124\241\003\176\001\313\205\114\261\013\051\303\276\354
\174\341\077\017\011\122\074\057\247\232\110\376\067\351\021\006
\130\341\066\101\212\304\266\277\216\335\316\112\263\274\032\300
\315\372\032\231\322\161\233\372\317\274\362\304\124\243\210\065
\166\314\033\054\106\157\014\264\321\303\141\166\222\164\021\352
\113\200\215\034\211\021\213\354\133\377\027\311\110\374\347\340
\006\021\342\204\136
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Common Policy"
Issuer: CN=Common Policy,OU=FBCA,O=U.S. Government,C=us
Serial Number:29:36:47:aa:e3:8a:ac:86:4a:23:56:f2:ca:b7:61:af
Subject: CN=Common Policy,OU=FBCA,O=U.S. Government,C=us
Not Valid Before: Mon Oct 15 15:58:00 2007
Not Valid After: Fri Oct 15 16:08:00 2027
Fingerprint (MD5):
f0:58:c5:03:82:67:17:ab:8f:da:03:10:27:8e:19:c2
Fingerprint (SHA1): cb:44:a0:97:85:7c:45:fa:18:7e:d9:52:08:6c:b9:84:1f:2d:51:b5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Common Policy"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\313\104\240\227\205\174\105\372\030\176\331\122\010\154\271\204
\037\055\121\265
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\360\130\305\003\202\147\027\253\217\332\003\020\047\216\031\302
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\165\163\061
\030\060\026\006\003\125\004\012\023\017\125\056\123\056\040\107
\157\166\145\162\156\155\145\156\164\061\015\060\013\006\003\125
\004\013\023\004\106\102\103\101\061\026\060\024\006\003\125\004
\003\023\015\103\157\155\155\157\156\040\120\157\154\151\143\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\051\066\107\252\343\212\254\206\112\043\126\362\312\267
\141\257
END
CKA_TRUST_SERVER_AUTH

CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Staat der Nederlanden Root CA - G2"
Issuer: CN=Staat der Nederlanden Root CA - G2,O=Staat der Nederlanden,C=NL
Serial Number:98:96:8c
Subject: CN=Staat der Nederlanden Root CA - G2,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Mar 26 11:18:17 2008
Not Valid After: Wed Mar 25 11:03:10 2020
Fingerprint (MD5): 7c:a5:0f:f8:5b:9a:7d:6d:30:ae:54:5a:e3:42:a2:8a
Fingerprint (SHA1): 59:af:82:79:91:86:c7:b4:75:07:cb:cf:03:57:46:eb:04:dd:b7:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\214
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\312\060\202\003\262\240\003\002\001\002\002\004\000
\230\226\214\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\132\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\014\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\053\060\051\006\003\125\004\003\014\042\123\164\141\141

\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\122\157\157\164\040\103\101\040\055\040\107\062\060\036
\027\015\060\070\060\063\062\066\061\061\061\070\061\067\132\027
\015\062\060\060\063\062\065\061\061\060\063\061\060\132\060\132
\061\013\060\011\006\003\125\004\006\023\002\116\114\061\036\060
\034\006\003\125\004\012\014\025\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\061\053\060
\051\006\003\125\004\003\014\042\123\164\141\141\164\040\144\145
\162\040\116\145\144\145\162\154\141\156\144\145\156\040\122\157
\157\164\040\103\101\040\055\040\107\062\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\305\131\347\157\165
\252\076\113\234\265\270\254\236\013\344\371\331\312\253\135\217
\265\071\020\202\327\257\121\340\073\341\000\110\152\317\332\341
\006\103\021\231\252\024\045\022\255\042\350\000\155\103\304\251
\270\345\037\211\113\147\275\141\110\357\375\322\340\140\210\345
\271\030\140\050\303\167\053\255\260\067\252\067\336\144\131\052
\106\127\344\113\271\370\067\174\325\066\347\200\301\266\363\324
\147\233\226\350\316\327\306\012\123\320\153\111\226\363\243\013
\005\167\110\367\045\345\160\254\060\024\040\045\343\177\165\132
\345\110\370\116\173\003\007\004\372\202\141\207\156\360\073\304
\244\307\320\365\164\076\245\135\032\010\362\233\045\322\366\254
\004\046\076\125\072\142\050\245\173\262\060\257\370\067\302\321
\272\326\070\375\364\357\111\060\067\231\046\041\110\205\001\251
\345\026\347\334\220\125\337\017\350\070\315\231\067\041\117\135
\365\042\157\152\305\022\026\140\027\125\362\145\146\246\247\060
\221\070\301\070\035\206\004\204\272\032\045\170\136\235\257\314
\120\140\326\023\207\122\355\143\037\155\145\175\302\025\030\164
\312\341\176\144\051\214\162\330\026\023\175\013\111\112\361\050
\033\040\164\153\305\075\335\260\252\110\011\075\056\202\224\315
\032\145\331\053\210\232\231\274\030\176\237\356\175\146\174\076
\275\224\270\201\316\315\230\060\170\301\157\147\320\276\137\340
\150\355\336\342\261\311\054\131\170\222\252\337\053\140\143\362
\345\136\271\343\312\372\177\120\206\076\242\064\030\014\011\150
\050\021\034\344\341\271\134\076\107\272\062\077\030\314\133\204
\365\363\153\164\304\162\164\341\343\213\240\112\275\215\146\057
\352\255\065\332\040\323\210\202\141\360\022\042\266\274\320\325
\244\354\257\124\210\045\044\074\247\155\261\162\051\077\076\127
\246\177\125\257\156\046\306\376\347\314\100\134\121\104\201\012
\170\336\112\316\125\277\035\325\331\267\126\357\360\166\377\013
\171\265\257\275\373\251\151\221\106\227\150\200\024\066\035\263
\177\273\051\230\066\245\040\372\202\140\142\063\244\354\326\272
\007\247\156\305\317\024\246\347\326\222\064\330\201\365\374\035
\135\252\134\036\366\243\115\073\270\367\071\002\003\001\000\001
\243\201\227\060\201\224\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\122\006\003\125\035\040\004\113
\060\111\060\107\006\004\125\035\040\000\060\077\060\075\006\010
\053\006\001\005\005\007\002\001\026\061\150\164\164\160\072\057

\057\167\167\167\056\160\153\151\157\166\145\162\150\145\151\144
\056\156\154\057\160\157\154\151\143\151\145\163\057\162\157\157
\164\055\160\157\154\151\143\171\055\107\062\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\221\150\062\207\025\035\211\342\265\361
\254\066\050\064\215\013\174\142\210\353\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\002\001\000\250\101
\112\147\052\222\201\202\120\156\341\327\330\263\071\073\363\002
\025\011\120\121\357\055\275\044\173\210\206\073\371\264\274\222
\011\226\271\366\300\253\043\140\006\171\214\021\116\121\322\171
\200\063\373\235\110\276\354\101\103\201\037\176\107\100\034\345
\172\010\312\252\213\165\255\024\304\302\350\146\074\202\007\247
\346\047\202\133\030\346\017\156\331\120\076\212\102\030\051\306
\264\126\374\126\020\240\005\027\275\014\043\177\364\223\355\234
\032\121\276\335\105\101\277\221\044\264\037\214\351\137\317\173
\041\231\237\225\237\071\072\106\034\154\371\315\173\234\220\315
\050\251\307\251\125\273\254\142\064\142\065\023\113\024\072\125
\203\271\206\215\222\246\306\364\007\045\124\314\026\127\022\112
\202\170\310\024\331\027\202\046\055\135\040\037\171\256\376\324
\160\026\026\225\203\330\065\071\377\122\135\165\034\026\305\023
\125\317\107\314\165\145\122\112\336\360\260\247\344\012\226\013
\373\255\302\342\045\204\262\335\344\275\176\131\154\233\360\360
\330\347\312\362\351\227\070\176\211\276\314\373\071\027\141\077
\162\333\072\221\330\145\001\031\035\255\120\244\127\012\174\113
\274\234\161\163\052\105\121\031\205\314\216\375\107\247\164\225
\035\250\321\257\116\027\261\151\046\302\252\170\127\133\305\115
\247\345\236\005\027\224\312\262\137\240\111\030\215\064\351\046
\154\110\036\252\150\222\005\341\202\163\132\233\334\007\133\010
\155\175\235\327\215\041\331\374\024\040\252\302\105\337\077\347
\000\262\121\344\302\370\005\271\171\032\214\064\363\236\133\344
\067\133\153\112\337\054\127\212\100\132\066\272\335\165\104\010
\067\102\160\014\376\334\136\041\240\243\212\300\220\234\150\332
\120\346\105\020\107\170\266\116\322\145\311\303\067\337\341\102
\143\260\127\067\105\055\173\212\234\277\005\352\145\125\063\367
\071\020\305\050\052\041\172\033\212\304\044\371\077\025\310\232
\025\040\365\125\142\226\355\155\223\120\274\344\252\170\255\331
\313\012\145\207\246\146\301\304\201\243\167\072\130\036\013\356
\203\213\235\036\322\122\244\314\035\157\260\230\155\224\061\265
\370\161\012\334\271\374\175\062\140\346\353\257\212\001
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Staat der Nederlanden Root CA - G2"

Issuer: CN=Staat der Nederlanden Root CA - G2,O=Staat der Nederlanden,C=NL
Serial Number:98:96:8c
Subject: CN=Staat der Nederlanden Root CA - G2,O=Staat der Nederlanden,C=NL
Not Valid Before: Wed Mar 26 11:18:17 2008
Not Valid After: Wed Mar 25 11:03:10 2020
Fingerprint (MD5): 7c:a5:0f:f8:5b:9a:7d:6d:30:ae:54:5a:e3:42:a2:8a
Fingerprint (SHA1): 59:af:82:79:91:86:c7:b4:75:07:cb:cf:03:57:46:eb:04:dd:b7:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\131\257\202\171\221\206\307\264\165\007\313\317\003\127\106\353
\004\335\267\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\174\245\017\370\133\232\175\155\060\256\124\132\343\102\242\212
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\014\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\053\060\051\006\003\125\004\003\014\042\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\000\230\226\214
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "NetLock Platina (Class Platinum) Ftanúsítvány"
Issuer: CN=NetLock Platina (Class Platinum) Ftanúsítvány,OU=Tanúsítványkiadók (Certification
Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2d:ec:00:10
Subject: CN=NetLock Platina (Class Platinum) Ftanúsítvány,OU=Tanúsítványkiadók
 (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:12:44 2008
Not Valid After: Wed Dec 06 15:12:44 2028
Fingerprint (MD5): d5:97:88:da:64:16:e7:1d:66:4a:a6:ea:37:fc:7a:dc
Fingerprint (SHA1): ec:93:de:08:3c:93:d9:33:a9:86:b3:d5:cd:e2:5a:cb:2f:ee:cf:8e
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Platina (Class Platinum) Ftanúsítvány"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\255\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\073\060\071\006\003\125\004\003\014\062\116\145
\164\114\157\143\153\040\120\154\141\164\151\156\141\040\050\103
\154\141\163\163\040\120\154\141\164\151\156\165\155\051\040\106
\305\221\164\141\156\303\272\163\303\255\164\166\303\241\156\171
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\255\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\073\060\071\006\003\125\004\003\014\062\116\145
\164\114\157\143\153\040\120\154\141\164\151\156\141\040\050\103
\154\141\163\163\040\120\154\141\164\151\156\165\155\051\040\106
\305\221\164\141\156\303\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\006\111\101\055\354\000\020
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\041\060\202\004\011\240\003\002\001\002\002\006\111
\101\055\354\000\020\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\060\201\255\061\013\060\011\006\003\125\004\006
\023\002\110\125\061\021\060\017\006\003\125\004\007\014\010\102
\165\144\141\160\145\163\164\061\025\060\023\006\003\125\004\012
\014\014\116\145\164\114\157\143\153\040\113\146\164\056\061\067
\060\065\006\003\125\004\013\014\056\124\141\156\303\272\163\303
\255\164\166\303\241\156\171\153\151\141\144\303\263\153\040\050
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\051\061\073\060\071\006\003\125\004\003

\014\062\116\145\164\114\157\143\153\040\120\154\141\164\151\156
\141\040\050\103\154\141\163\163\040\120\154\141\164\151\156\165
\155\051\040\106\305\221\164\141\156\303\272\163\303\255\164\166
\303\241\156\171\060\036\027\015\060\070\061\062\061\061\061\065
\061\062\064\064\132\027\015\062\070\061\062\060\066\061\065\061
\062\064\064\132\060\201\255\061\013\060\011\006\003\125\004\006
\023\002\110\125\061\021\060\017\006\003\125\004\007\014\010\102
\165\144\141\160\145\163\164\061\025\060\023\006\003\125\004\012
\014\014\116\145\164\114\157\143\153\040\113\146\164\056\061\067
\060\065\006\003\125\004\013\014\056\124\141\156\303\272\163\303
\255\164\166\303\241\156\171\153\151\141\144\303\263\153\040\050
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\051\061\073\060\071\006\003\125\004\003
\014\062\116\145\164\114\157\143\153\040\120\154\141\164\151\156
\141\040\050\103\154\141\163\163\040\120\154\141\164\151\156\165
\155\051\040\106\305\221\164\141\156\303\272\163\303\255\164\166
\303\241\156\171\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\315\362\356\304\032\172\353\164\051\114\266
\275\344\326\012\027\154\145\342\146\075\304\321\274\014\266\132
\326\053\160\137\055\314\041\321\131\020\344\261\023\275\366\314
\042\225\326\154\106\116\221\062\263\353\365\254\313\004\001\117
\166\335\123\076\170\237\371\136\274\265\202\023\106\312\020\343
\035\055\151\053\224\062\020\163\041\253\251\070\305\343\156\023
\144\325\143\251\355\011\146\354\212\157\211\215\021\206\320\365
\277\062\226\013\165\160\365\050\130\102\136\254\151\264\365\374
\221\071\056\242\221\100\321\074\124\101\207\043\144\120\110\171
\150\113\150\223\113\162\353\200\151\263\112\034\220\276\262\101
\243\245\315\027\300\321\032\151\177\002\030\112\265\142\207\046
\127\055\154\250\054\041\071\365\227\136\233\232\246\370\347\114
\171\304\173\073\126\334\172\370\264\130\316\166\012\256\042\125
\353\217\307\204\144\173\275\153\312\225\117\330\276\061\023\277
\215\241\012\053\325\171\267\365\166\255\332\121\134\201\107\142
\250\252\377\317\123\340\064\161\317\015\045\123\251\236\143\107
\257\205\221\370\317\031\021\345\116\371\317\355\343\065\005\001
\042\003\317\232\174\352\035\121\132\313\375\163\075\071\013\061
\353\304\073\312\205\052\021\024\000\240\033\201\242\011\210\110
\363\174\242\144\241\354\147\264\130\207\360\024\352\251\276\245
\042\101\115\354\275\244\016\350\075\207\367\057\252\316\065\206
\117\060\127\222\215\066\256\170\326\375\030\374\327\045\036\317
\172\374\031\375\240\077\162\027\066\010\101\077\227\066\225\014
\211\225\161\105\372\204\326\324\040\140\263\105\012\362\267\225
\075\013\345\244\303\270\022\362\221\154\351\155\140\203\366\105
\021\005\272\346\107\203\331\221\342\156\341\273\106\153\110\033
\274\306\373\317\176\336\054\273\220\204\356\266\047\071\347\215
\242\061\017\337\201\267\054\154\000\342\261\330\052\027\134\033
\036\107\211\113\027\121\024\100\100\117\304\071\030\062\302\200
\140\066\345\172\107\147\366\250\005\124\301\135\226\240\037\266

\210\122\014\002\276\215\125\176\024\113\303\242\001\356\234\212
\101\135\371\137\226\221\011\216\264\344\265\305\004\337\326\066
\255\131\264\262\327\002\003\000\363\221\243\105\060\103\060\022
\006\003\125\035\023\001\001\377\004\010\060\006\001\001\377\002
\001\004\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\035\006\003\125\035\016\004\026\004\024\346\241\023
\203\376\227\113\362\330\377\061\241\247\164\063\211\316\136\177
\244\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000
\003\202\002\001\000\151\204\102\300\343\136\023\141\227\040\111
\361\364\026\205\245\237\244\021\010\045\304\143\206\217\360\113
\257\263\051\365\007\127\032\142\307\033\105\156\257\135\026\267
\301\320\144\203\073\227\365\103\266\105\220\361\146\052\203\044
\052\377\210\351\172\013\371\302\133\172\257\143\367\011\170\206
\110\131\064\136\233\152\020\116\361\156\225\211\066\112\150\320
\157\233\340\176\117\267\065\017\343\171\261\005\257\047\174\252
\211\012\103\336\372\014\357\331\127\057\050\161\315\151\153\122
\102\311\212\060\105\131\241\314\372\131\112\217\367\326\335\104
\245\263\056\133\021\030\342\262\265\347\021\123\070\376\202\114
\323\163\276\145\222\032\072\250\322\322\252\274\324\276\155\066
\122\377\153\324\322\265\033\067\363\027\102\361\056\247\325\220
\154\164\235\164\365\372\137\042\033\323\334\165\250\265\377\362
\032\321\274\053\000\134\074\305\270\206\010\124\111\242\234\043
\373\357\246\215\160\364\102\122\115\033\040\000\201\370\240\270
\364\164\043\234\276\364\271\016\354\036\152\330\145\112\025\165
\361\167\133\156\330\261\346\017\264\226\270\035\372\206\310\222
\156\213\351\175\337\242\016\325\361\361\174\256\112\343\146\277
\135\374\133\357\110\262\236\151\307\175\220\240\125\266\224\160
\201\271\012\275\211\165\123\354\204\251\003\245\337\121\231\010
\320\164\014\002\326\163\162\006\173\213\273\135\252\116\374\147
\147\330\216\020\003\031\055\067\072\324\167\251\072\034\235\300
\171\173\154\051\167\062\115\112\213\060\210\302\347\066\316\150
\243\232\230\206\371\211\025\236\277\252\121\175\361\120\106\124
\017\002\056\134\237\343\336\127\063\025\376\030\222\141\250\322
\051\005\135\145\104\036\233\343\357\373\334\005\337\025\253\246
\330\013\244\163\262\114\072\340\236\324\263\152\345\072\016\012
\360\116\317\170\201\037\276\251\230\157\261\107\121\175\102\063
\066\263\246\251\002\122\005\164\176\052\154\324\252\222\126\260
\076\073\043\130\261\215\065\247\023\217\147\036\161\025\246\263
\265\003\206\270\040\146\300\110\157\271\254\324\112\003\125\262
\067\337\004\335\042\014\123\206\052\112\052\241\301\070\076\074
\345\074\337\165\227
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate

Trust for "NetLock Platina (Class Platinum) Ftanúsítvány"
Issuer: CN=NetLock Platina (Class Platinum) Ftanúsítvány,OU=Tanúsítványkiadók (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Serial Number:49:41:2d:ec:00:10
Subject: CN=NetLock Platina (Class Platinum) Ftanúsítvány,OU=Tanúsítványkiadók (Certification Services),O=NetLock Kft.,L=Budapest,C=HU
Not Valid Before: Thu Dec 11 15:12:44 2008
Not Valid After: Wed Dec 06 15:12:44 2028
Fingerprint (MD5): d5:97:88:da:64:16:e7:1d:66:4a:a6:ea:37:fc:7a:dc
Fingerprint (SHA1): ec:93:de:08:3c:93:d9:33:a9:86:b3:d5:cd:e2:5a:cb:2f:ee:cf:8e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Platina (Class Platinum) Ftanúsítvány"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\354\223\336\010\074\223\331\063\251\206\263\325\315\342\132\313
\057\356\317\216
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\325\227\210\332\144\026\347\035\146\112\246\352\067\374\172\334
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\255\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\014\010\102\165\144\141\160
\145\163\164\061\025\060\023\006\003\125\004\012\014\014\116\145
\164\114\157\143\153\040\113\146\164\056\061\067\060\065\006\003
\125\004\013\014\056\124\141\156\303\272\163\303\255\164\166\303
\241\156\171\153\151\141\144\303\263\153\040\050\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\051\061\073\060\071\006\003\125\004\003\014\062\116\145
\164\114\157\143\153\040\120\154\141\164\151\156\141\040\050\103
\154\141\163\163\040\120\154\141\164\151\156\165\155\051\040\106
\305\221\164\141\156\303\272\163\303\255\164\166\303\241\156\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\006\111\101\055\354\000\020
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "AC Raíz Certicámara S.A."
Issuer: CN=AC Raíz Certicámara S.A.,O=Sociedad Cameral de Certificación Digital - Certicámara S.A.,C=CO

```
#
 Serial Number:07:7e:52:93:7b:e0:15:e3:57:f0:69:8c:cb:ec:0c
# Subject: CN=AC Raíz Certicámara S.A.,O=Sociedad Cameral de Certificación Digital - Certicámara S.A.,C=CO
# Not Valid Before: Mon Nov 27 20:46:29 2006
# Not Valid After: Tue Apr 02 21:42:02 2030
# Fingerprint (MD5): 93:2a:3e:f6:fd:23:69:0d:71:20:d4:2b:47:99:2b:a6
# Fingerprint (SHA1): cb:a1:c5:f8:b0:e3:5e:b8:b9:45:12:d3:f9:34:a2:e9:06:10:d3:36
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC Raíz Certicámara S.A."
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\103\117\061
\107\060\105\006\003\125\004\012\014\076\123\157\143\151\145\144
\141\144\040\103\141\155\145\162\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\303\263\156\040\104\151\147
\151\164\141\154\040\055\040\103\145\162\164\151\143\303\241\155
\141\162\141\040\123\056\101\056\061\043\060\041\006\003\125\004
\003\014\032\101\103\040\122\141\303\255\172\040\103\145\162\164
\151\143\303\241\155\141\162\141\040\123\056\101\056
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\103\117\061
\107\060\105\006\003\125\004\012\014\076\123\157\143\151\145\144
\141\144\040\103\141\155\145\162\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\303\263\156\040\104\151\147
\151\164\141\154\040\055\040\103\145\162\164\151\143\303\241\155
\141\162\141\040\123\056\101\056\061\043\060\041\006\003\125\004
\003\014\032\101\103\040\122\141\303\255\172\040\103\145\162\164
\151\143\303\241\155\141\162\141\040\123\056\101\056
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\007\176\122\223\173\340\025\343\127\360\151\214\313\354
\014
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\146\060\202\004\116\240\003\002\001\002\002\017\007
\176\122\223\173\340\025\343\127\360\151\214\313\354\014\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\060\173\061
\013\060\011\006\003\125\004\006\023\002\103\117\061\107\060\105
\006\003\125\004\012\014\076\123\157\143\151\145\144\141\144\040
\103\141\155\145\162\141\154\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\303\263\156\040\104\151\147\151\164\141
\154\040\055\040\103\145\162\164\151\143\303\241\155\141\162\141
```

\040\123\056\101\056\061\043\060\041\006\003\125\004\003\014\032
\101\103\040\122\141\303\255\172\040\103\145\162\164\151\143\303
\241\155\141\162\141\040\123\056\101\056\060\036\027\015\060\066
\061\061\062\067\062\060\064\066\062\071\132\027\015\063\060\060
\064\060\062\062\061\064\062\060\062\132\060\173\061\013\060\011
\006\003\125\004\006\023\002\103\117\061\107\060\105\006\003\125
\004\012\014\076\123\157\143\151\145\144\141\144\040\103\141\155
\145\162\141\154\040\144\145\040\103\145\162\164\151\146\151\143
\141\143\151\303\263\156\040\104\151\147\151\164\141\154\040\055
\040\103\145\162\164\151\143\303\241\155\141\162\141\040\123\056
\101\056\061\043\060\041\006\003\125\004\003\014\032\101\103\040
\122\141\303\255\172\040\103\145\162\164\151\143\303\241\155\141
\162\141\040\123\056\101\056\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\253\153\211\243\123\314\110\043
\010\373\303\317\121\226\010\056\270\010\172\155\074\220\027\206
\251\351\355\056\023\064\107\262\320\160\334\311\074\320\215\312
\356\113\027\253\320\205\260\247\043\004\313\250\242\374\345\165
\333\100\312\142\211\217\120\236\001\075\046\133\030\204\034\313
\174\067\267\175\354\323\177\163\031\260\152\262\330\210\212\055
\105\164\250\367\263\270\300\324\332\315\042\211\164\115\132\025
\071\163\030\164\117\265\353\231\247\301\036\210\264\302\223\220
\143\227\363\247\247\022\262\011\042\007\063\331\221\315\016\234
\037\016\040\307\356\273\063\215\217\302\322\130\247\137\375\145
\067\342\210\302\330\217\206\165\136\371\055\247\207\063\362\170
\067\057\213\274\035\206\067\071\261\224\362\330\274\112\234\203
\030\132\006\374\363\324\324\272\214\025\011\045\360\371\266\215
\004\176\027\022\063\153\127\110\114\117\333\046\036\353\314\220
\347\213\371\150\174\160\017\243\052\320\072\070\337\067\227\342
\133\336\200\141\323\200\330\221\203\102\132\114\004\211\150\021
\074\254\137\150\200\101\314\140\102\316\015\132\052\014\017\233
\060\300\246\360\206\333\253\111\327\227\155\110\213\371\003\300
\122\147\233\022\367\302\362\056\230\145\102\331\326\232\343\320
\031\061\014\255\207\325\127\002\172\060\350\206\046\373\217\043
\212\124\207\344\277\074\356\353\303\165\110\137\036\071\157\201
\142\154\305\055\304\027\124\031\267\067\215\234\067\221\310\366
\013\325\352\143\157\203\254\070\302\363\077\336\232\373\341\043
\141\360\310\046\313\066\310\241\363\060\217\244\243\242\241\335
\123\263\336\360\232\062\037\203\221\171\060\301\251\037\123\233
\123\242\025\123\077\335\235\263\020\073\110\175\211\017\374\355
\003\365\373\045\144\165\016\027\031\015\217\000\026\147\171\172
\100\374\055\131\007\331\220\372\232\255\075\334\200\212\346\134
\065\242\147\114\021\153\261\370\200\144\000\055\157\042\141\305
\254\113\046\345\132\020\202\233\244\203\173\064\367\236\211\221
\040\227\216\267\102\307\146\303\320\351\244\326\365\040\215\304
\303\225\254\104\012\235\133\163\074\046\075\057\112\276\247\311
\247\020\036\373\237\120\151\363\002\003\001\000\001\243\201\346
\060\201\343\060\017\006\003\125\035\023\001\001\377\004\005\060

\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\035\006\003\125\035\016\004\026\004\024\321
\011\320\351\327\316\171\164\124\371\072\060\263\364\155\054\003
\003\033\150\060\201\240\006\003\125\035\040\004\201\230\060\201
\225\060\201\222\006\004\125\035\040\000\060\201\211\060\053\006
\010\053\006\001\005\005\007\002\001\026\037\150\164\164\160\072
\057\057\167\167\167\056\143\145\162\164\151\143\141\155\141\162
\141\056\143\157\155\057\144\160\143\057\060\132\006\010\053\006
\001\005\005\007\002\002\060\116\032\114\114\151\155\151\164\141
\143\151\157\156\145\163\040\144\145\040\147\141\162\141\156\164
\355\141\163\040\144\145\040\145\163\164\145\040\143\145\162\164
\151\146\151\143\141\144\157\040\163\145\040\160\165\145\144\145
\156\040\145\156\143\157\156\164\162\141\162\040\145\156\040\154
\141\040\104\120\103\056\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\002\001\000\134\224\265\270\105\221
\115\216\141\037\003\050\017\123\174\346\244\131\251\263\212\172
\305\260\377\010\174\054\243\161\034\041\023\147\241\225\022\100
\065\203\203\217\164\333\063\134\360\111\166\012\201\122\335\111
\324\232\062\063\357\233\247\313\165\345\172\313\227\022\220\134
\272\173\305\233\337\273\071\043\310\377\230\316\012\115\042\001
\110\007\176\212\300\325\040\102\224\104\357\277\167\242\211\147
\110\033\100\003\005\241\211\354\317\142\343\075\045\166\146\277
\046\267\273\042\276\157\377\071\127\164\272\172\311\001\225\301
\225\121\350\253\054\370\261\206\040\351\077\313\065\133\322\027
\351\052\376\203\023\027\100\356\210\142\145\133\325\073\140\351
\173\074\270\311\325\177\066\002\045\252\150\302\061\025\267\060
\145\353\177\035\110\171\261\317\071\342\102\200\026\323\365\223
\043\374\114\227\311\132\067\154\174\042\330\112\315\322\216\066
\203\071\221\220\020\310\361\311\065\176\077\270\323\201\306\040
\144\032\266\120\302\041\244\170\334\320\057\073\144\223\164\360
\226\220\361\357\373\011\132\064\100\226\360\066\022\301\243\164
\214\223\176\101\336\167\213\354\206\331\322\017\077\055\321\314
\100\242\211\146\110\036\040\263\234\043\131\163\251\104\163\274
\044\171\220\126\067\263\306\051\176\243\017\361\051\071\357\176
\134\050\062\160\065\254\332\270\310\165\146\374\233\114\071\107
\216\033\157\233\115\002\124\042\063\357\141\272\236\051\204\357
\116\113\063\107\166\227\152\313\176\137\375\025\246\236\102\103
\133\146\132\212\210\015\367\026\271\077\121\145\053\146\152\213
\321\070\122\242\326\106\021\372\374\232\034\164\236\217\227\013
\002\117\144\306\365\150\323\113\055\377\244\067\036\213\077\277
\104\276\141\106\241\204\075\010\047\114\201\040\167\211\010\352
\147\100\136\154\010\121\137\064\132\214\226\150\315\327\367\211
\302\034\323\062\000\257\122\313\323\140\133\052\072\107\176\153
\060\063\241\142\051\177\112\271\341\055\347\024\043\016\016\030
\107\341\171\374\025\125\320\261\374\045\161\143\165\063\034\043
\053\257\134\331\355\107\167\140\016\073\017\036\322\300\334\144
\005\211\374\170\326\134\054\046\103\251
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "AC Raíz Certicámara S.A."
Issuer: CN=AC Raíz Certicámara S.A.,O=Sociedad Cameral de Certificación Digital - Certicámara S.A.,C=CO
Serial Number:07:7e:52:93:7b:e0:15:e3:57:f0:69:8c:cb:ec:0c
Subject: CN=AC Raíz Certicámara S.A.,O=Sociedad Cameral de Certificación
Digital - Certicámara S.A.,C=CO
Not Valid Before: Mon Nov 27 20:46:29 2006
Not Valid After: Tue Apr 02 21:42:02 2030
Fingerprint (MD5): 93:2a:3e:f6:fd:23:69:0d:71:20:d4:2b:47:99:2b:a6
Fingerprint (SHA1): cb:a1:c5:f8:b0:e3:5e:b8:b9:45:12:d3:f9:34:a2:e9:06:10:d3:36
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC Raíz Certicámara S.A."
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\313\241\305\370\260\343\136\270\271\105\022\323\371\064\242\351
\006\020\323\066
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\223\052\076\366\375\043\151\015\161\040\324\053\107\231\053\246
END
CKA_ISSUER MULTILINE_OCTAL
\060\173\061\013\060\011\006\003\125\004\006\023\002\103\117\061
\107\060\105\006\003\125\004\012\014\076\123\157\143\151\145\144
\141\144\040\103\141\155\145\162\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\303\263\156\040\104\151\147
\151\164\141\154\040\055\040\103\145\162\164\151\143\303\241\155
\141\162\141\040\123\056\101\056\061\043\060\041\006\003\125\004
\003\014\032\101\103\040\122\141\303\255\172\040\103\145\162\164
\151\143\303\241\155\141\162\141\040\123\056\101\056
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\017\007\176\122\223\173\340\025\343\127\360\151\214\313\354
\014
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate

Certificate "Cisco Root CA 2048"
Issuer: CN=Cisco Root CA 2048,O=Cisco Systems
Serial Number:5f:f8:7b:28:2b:54:dc:8d:42:a3:15:b5:68:c9:ad:ff
Subject: CN=Cisco Root CA 2048,O=Cisco Systems
Not Valid Before: Fri May 14 20:17:12 2004
Not Valid After: Mon May 14 20:25:42 2029
Fingerprint (MD5): be:39:5a:be:07:8a:b1:12:17:25:cc:1d:46:34:3c:b2
Fingerprint (SHA1): de:99:0c:ed:99:e0:43:1f:60:ed:c3:93:7e:7c:d5:bf:0e:d9:e5:fa
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Cisco Root CA 2048"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\065\061\026\060\024\006\003\125\004\012\023\015\103\151\163
\143\157\040\123\171\163\164\145\155\163\061\033\060\031\006\003
\125\004\003\023\022\103\151\163\143\157\040\122\157\157\164\040
\103\101\040\062\060\064\070
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\065\061\026\060\024\006\003\125\004\012\023\015\103\151\163
\143\157\040\123\171\163\164\145\155\163\061\033\060\031\006\003
\125\004\003\023\022\103\151\163\143\157\040\122\157\157\164\040
\103\101\040\062\060\064\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\370\173\050\053\124\334\215\102\243\025\265\150\311
\255\377
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\103\060\202\002\053\240\003\002\001\002\002\020\137
\370\173\050\053\124\334\215\102\243\025\265\150\311\255\377\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\065
\061\026\060\024\006\003\125\004\012\023\015\103\151\163\143\157
\040\123\171\163\164\145\155\163\061\033\060\031\006\003\125\004
\003\023\022\103\151\163\143\157\040\122\157\157\164\040\103\101
\040\062\060\064\070\060\036\027\015\060\064\060\065\061\064\062
\060\061\067\061\062\132\027\015\062\071\060\065\061\064\062\060
\062\065\064\062\132\060\065\061\026\060\024\006\003\125\004\012
\023\015\103\151\163\143\157\040\123\171\163\164\145\155\163\061
\033\060\031\006\003\125\004\003\023\022\103\151\163\143\157\040
\122\157\157\164\040\103\101\040\062\060\064\070\060\202\001\040
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\015\000\060\202\001\010\002\202\001\001\000\260\232\271
\253\247\257\012\167\247\342\161\266\264\146\142\224\170\210\107

\306\142\125\204\100\062\277\300\253\056\245\034\161\326\274\156
\173\250\252\272\156\322\025\210\110\105\235\242\374\203\320\314
\271\214\340\046\150\160\112\170\337\041\027\236\364\141\005\311
\025\310\317\026\332\065\141\211\224\103\250\204\250\061\230\170
\233\271\116\157\054\123\022\154\315\035\255\053\044\273\061\304
\053\377\203\104\157\266\075\044\167\011\352\277\052\250\037\152
\126\366\040\017\021\124\227\201\165\247\045\316\131\152\202\145
\357\267\352\347\342\215\165\213\156\362\335\117\246\136\142\234
\317\020\012\144\320\116\155\316\053\314\133\365\140\245\047\107
\215\151\364\177\316\033\160\336\160\033\040\326\156\315\246\001
\250\074\022\322\251\077\240\153\136\273\216\040\213\172\221\343
\265\150\356\240\347\304\001\164\250\123\013\053\112\232\017\145
\022\016\202\115\216\143\375\357\353\233\032\333\123\246\023\140
\257\302\175\327\307\154\027\045\324\163\373\107\144\120\201\200
\224\114\341\277\256\113\034\337\222\355\056\005\337\002\001\003
\243\121\060\117\060\013\006\003\125\035\017\004\004\003\002\001
\206\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\047\363\310
\025\036\156\232\002\011\026\255\053\240\211\140\137\332\173\057
\252\060\020\006\011\053\006\001\004\001\202\067\025\001\004\003
\002\001\000\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\001\001\000\235\235\204\204\243\101\251\174\167
\014\267\123\312\116\104\120\142\357\124\174\323\165\027\034\350
\340\306\110\113\266\376\114\072\031\201\126\260\126\356\031\226
\142\252\132\243\144\301\366\116\124\063\306\167\376\305\034\272
\345\135\045\312\365\360\223\232\203\021\056\346\313\370\164\105
\376\347\005\270\253\347\337\313\113\341\067\204\332\271\213\227
\160\036\360\342\213\327\260\330\016\235\261\151\326\052\221\173
\251\111\117\176\346\216\225\330\203\047\074\325\150\111\016\324
\235\366\056\353\247\276\353\060\244\254\037\104\374\225\253\063
\006\373\175\140\012\336\264\212\143\260\234\251\362\244\271\123
\001\207\320\150\244\047\177\253\377\351\372\311\100\070\210\147
\264\071\306\204\157\127\311\123\333\272\216\356\300\103\262\370
\011\203\156\377\146\317\076\357\027\263\130\030\045\011\064\136
\343\313\326\024\266\354\362\222\157\164\344\057\201\052\325\222
\221\340\340\227\074\062\150\005\205\113\321\367\127\342\122\035
\223\032\124\237\005\160\300\112\161\140\036\103\013\140\036\376
\243\316\201\031\341\013\065
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Cisco Root CA 2048"
Issuer: CN=Cisco Root CA 2048,O=Cisco Systems
Serial Number:5f:f8:7b:28:2b:54:dc:8d:42:a3:15:b5:68:c9:ad:ff

Subject: CN=Cisco Root CA 2048,O=Cisco Systems
Not Valid Before: Fri May 14 20:17:12 2004
Not Valid After: Mon May 14 20:25:42 2029
Fingerprint (MD5): be:39:5a:be:07:8a:b1:12:17:25:cc:1d:46:34:3c:b2
Fingerprint (SHA1): de:99:0c:ed:99:e0:43:1f:60:ed:c3:93:7e:7c:d5:bf:0e:d9:e5:fa
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Cisco Root CA 2048"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\336\231\014\355\231\340\103\037\140\355\303\223\176\174\325\277
\016\331\345\372
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\276\071\132\276\007\212\261\022\027\045\314\035\106\064\074\262
END
CKA_ISSUER MULTILINE_OCTAL
\060\065\061\026\060\024\006\003\125\004\012\023\015\103\151\163
\143\157\040\123\171\163\164\145\155\163\061\033\060\031\006\003
\125\004\003\023\022\103\151\163\143\157\040\122\157\157\164\040
\103\101\040\062\060\064\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\137\370\173\050\053\124\334\215\102\243\025\265\150\311
\255\377
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CA Disig"
Issuer: CN=CA Disig,O=Disig
 a.s.,L=Bratislava,C=SK
Serial Number: 1 (0x1)
Subject: CN=CA Disig,O=Disig a.s.,L=Bratislava,C=SK
Not Valid Before: Wed Mar 22 01:39:34 2006
Not Valid After: Tue Mar 22 01:39:34 2016
Fingerprint (MD5): 3f:45:96:39:e2:50:87:f7:bb:fe:98:0c:3c:20:98:e6
Fingerprint (SHA1): 2a:c8:d5:8b:57:ce:bf:2f:49:af:f2:fc:76:8f:51:14:62:90:7a:41
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\021\060\017\006\003\125
\004\003\023\010\103\101\040\104\151\163\151\147
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\021\060\017\006\003\125
\004\003\023\010\103\101\040\104\151\163\151\147
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\017\060\202\002\367\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\112\061\013\060\011\006\003\125\004\006\023\002\123\113\061\023
\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163\154
\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104\151
\163\151\147\040\141\056\163\056\061\021\060\017\006\003\125\004
\003\023\010\103\101\040\104\151\163\151\147\060\036\027\015\060
\066\060\063\062\062\060\061\063\071\063\064\132\027\015\061\066
\060\063\062\062\060\061\063\071\063\064\132\060\112\061\013\060
\011\006\003\125\004\006\023\002\123\113\061\023\060\021\006\003
\125\004\007\023\012\102\162\141\164\151\163\154\141\166\141\061
\023\060\021\006\003\125\004\012\023\012\104\151\163\151\147\040
\141\056\163\056\061\021\060\017\006\003\125\004\003\023\010\103
\101\040\104\151\163\151\147\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\222\366\061\301\175\210\375\231
\001\251\330\173\362\161\165\361\061\306\363\165\146\372\121\050
\106\204\227\170\064\274\154\374\274\105\131\210\046\030\112\304
\067\037\241\112\104\275\343\161\004\365\104\027\342\077\374\110
\130\157\134\236\172\011\272\121\067\042\043\146\103\041\260\074
\144\242\370\152\025\016\077\353\121\341\124\251\335\006\231\327
\232\074\124\213\071\003\077\017\305\316\306\353\203\162\002\250
\037\161\363\055\370\165\010\333\142\114\350\372\316\371\347\152
\037\266\153\065\202\272\342\217\026\222\175\005\014\154\106\003
\135\300\355\151\277\072\301\212\240\350\216\331\271\105\050\207
\010\354\264\312\025\276\202\335\265\104\213\055\255\206\014\150
\142\155\205\126\362\254\024\143\072\306\321\231\254\064\170\126

\113\317\266\255\077\214\212\327\004\345\343\170\114\365\206\252
\365\217\372\075\154\161\243\055\312\147\353\150\173\156\063\251
\014\202\050\250\114\152\041\100\025\040\014\046\133\203\302\251
\026\025\300\044\202\135\053\026\255\312\143\366\164\000\260\337
\103\304\020\140\126\147\143\105\002\003\001\000\001\243\201\377
\060\201\374\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\215
\262\111\150\235\162\010\045\271\300\047\365\120\223\126\110\106
\161\371\217\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\066\006\003\125\035\021\004\057\060\055\201\023
\143\141\157\160\145\162\141\164\157\162\100\144\151\163\151\147
\056\163\153\206\026\150\164\164\160\072\057\057\167\167\167\056
\144\151\163\151\147\056\163\153\057\143\141\060\146\006\003\125
\035\037\004\137\060\135\060\055\240\053\240\051\206\047\150\164
\164\160\072\057\057\167\167\167\056\144\151\163\151\147\056\163
\153\057\143\141\057\143\162\154\057\143\141\137\144\151\163\151
\147\056\143\162\154\060\054\240\052\240\050\206\046\150\164\164
\160\072\057\057\143\141\056\144\151\163\151\147\056\163\153\057
\143\141\057\143\162\154\057\143\141\137\144\151\163\151\147\056
\143\162\154\060\032\006\003\125\035\040\004\023\060\021\060\017
\006\015\053\201\036\221\223\346\012\000\000\000\001\001\001\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\135\064\164\141\114\257\073\330\377\237\155\130\066
\034\075\013\201\015\022\053\106\020\200\375\347\074\047\320\172
\310\251\266\176\164\060\063\243\072\212\173\164\300\171\171\102
\223\155\377\261\051\024\202\253\041\214\057\027\371\077\046\057
\365\131\306\357\200\006\267\232\111\051\354\316\176\161\074\152
\020\101\300\366\323\232\262\174\132\221\234\300\254\133\310\115
\136\367\341\123\377\103\167\374\236\113\147\154\327\363\203\321
\240\340\177\045\337\270\230\013\232\062\070\154\060\240\363\377
\010\025\063\367\120\112\173\076\243\076\040\251\334\057\126\200
\012\355\101\120\260\311\364\354\262\343\046\104\000\016\157\236
\006\274\042\226\123\160\145\304\120\012\106\153\244\057\047\201
\022\047\023\137\020\241\166\316\212\173\067\352\303\071\141\003
\225\230\072\347\154\210\045\010\374\171\150\015\207\175\142\370
\264\137\373\305\330\114\275\130\274\077\103\133\324\036\001\115
\074\143\276\043\357\214\315\132\120\270\150\124\371\012\231\063
\021\000\341\236\302\106\167\202\365\131\006\214\041\114\207\011
\315\345\250
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CA Disig"
Issuer: CN=CA Disig,O=Disig a.s.,L=Bratislava,C=SK

```
# Serial Number: 1 (0x1)
# Subject: CN=CA Disig,O=Disig a.s.,L=Bratislava,C=SK
# Not Valid Before: Wed Mar 22 01:39:34 2006
# Not Valid After: Tue Mar 22 01:39:34 2016
#
 Fingerprint (MD5): 3f:45:96:39:e2:50:87:f7:bb:fe:98:0c:3c:20:98:e6
# Fingerprint (SHA1): 2a:c8:d5:8b:57:ce:bf:2f:49:af:f2:fc:76:8f:51:14:62:90:7a:41
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CA Disig"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\052\310\325\213\127\316\277\057\111\257\362\374\166\217\121\024
\142\220\172\101
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\077\105\226\071\342\120\207\367\273\376\230\014\074\040\230\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\123\113\061
\023\060\021\006\003\125\004\007\023\012\102\162\141\164\151\163
\154\141\166\141\061\023\060\021\006\003\125\004\012\023\012\104
\151\163\151\147\040\141\056\163\056\061\021\060\017\006\003\125
\004\003\023\010\103\101\040\104\151\163\151\147
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "UCA Global Root"
# Issuer: CN=UCA Global Root,O=UniTrust,C=CN
# Serial Number: 8 (0x8)
# Subject: CN=UCA Global Root,O=UniTrust,C=CN
# Not Valid Before: Tue Jan 01 00:00:00 2008
# Not Valid After: Thu Dec 31 00:00:00 2037
# Fingerprint (MD5): c1:d9:51:c0:84:b8:6a:75:e8:2f:d7:d6:5f:7e:ac:46
# Fingerprint (SHA1): 0b:97:2c:9e:a6:e7:cc:58:d9:3b:20:bf:71:ec:41:2e:72:09:fa:bf
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
```

CKA_LABEL UTF8 "UCA Global Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\030\060\026\006\003\125\004\003\023\017\125\103\101
\040\107\154\157\142\141\154\040\122\157\157\164
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\030\060\026\006\003\125\004\003\023\017\125\103\101
\040\107\154\157\142\141\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\010
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\222\060\202\003\172\240\003\002\001\002\002\001\010
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\072\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021
\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165\163
\164\061\030\060\026\006\003\125\004\003\023\017\125\103\101\040
\107\154\157\142\141\154\040\122\157\157\164\060\036\027\015\060
\070\060\061\060\061\060\060\060\060\060\060\132\027\015\063\067
\061\062\063\061\060\060\060\060\060\060\060\132\060\072\061\013\060
\011\006\003\125\004\006\023\002\103\116\061\021\060\017\006\003
\125\004\012\023\010\125\156\151\124\162\165\163\164\061\030\060
\026\006\003\125\004\003\023\017\125\103\101\040\107\154\157\142
\141\154\040\122\157\157\164\060\202\002\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060
\202\002\012\002\202\002\001\000\332\263\345\006\120\077\366\163
\367\304\062\277\106\245\045\142\063\207\260\150\376\247\337\210
\003\143\175\002\226\375\353\207\311\356\342\010\273\235\273\273
\344\101\217\307\060\211\017\155\044\300\004\154\024\224\201\115
\240\015\164\146\363\360\205\257\370\144\031\336\271\351\201\223
\320\050\205\231\107\102\112\054\074\070\047\112\314\377\371\154
\031\327\265\363\357\233\256\133\064\006\327\217\242\023\006\234
\212\204\102\325\263\243\220\150\155\201\220\356\115\204\354\114
\160\116\055\336\044\071\316\031\000\103\223\170\371\010\206\035
\103\321\364\162\274\005\300\147\372\300\121\322\311\205\007\044
\256\071\036\172\315\101\322\066\253\141\352\053\253\360\040\125
\231\074\155\055\034\056\056\165\226\330\162\227\340\014\312\151
\163\356\165\053\025\011\340\216\155\273\332\023\377\106\250\350
\000\014\254\007\057\035\271\272\271\321\240\367\231\236\164\134
\031\005\146\061\317\076\052\122\376\157\237\363\271\275\371\301

\201\365\067\332\056\114\201\045\135\366\331\224\232\323\065\213
\040\050\067\137\121\353\175\142\307\251\223\321\371\320\064\313
\251\047\046\054\050\220\222\073\125\143\267\027\016\124\163\253
\257\174\354\072\253\160\063\254\041\373\042\046\263\206\254\043
\251\327\177\155\313\010\040\362\257\100\365\377\104\107\161\335
\047\335\023\050\241\352\166\071\371\020\240\240\115\100\244\047
\262\131\025\053\154\055\044\267\044\143\170\367\103\030\172\017
\115\021\343\350\254\207\102\215\347\130\161\244\253\156\242\300
\227\174\273\343\023\113\312\333\273\153\010\371\151\264\004\162
\325\303\106\271\167\352\377\272\373\351\360\072\014\065\366\217
\017\256\006\204\026\335\224\125\324\357\312\047\267\003\074\305
\034\046\052\365\074\250\245\225\233\206\361\212\211\147\370\307
\014\146\261\355\101\277\202\246\000\150\072\042\064\356\036\353
\345\157\211\164\117\152\252\152\250\127\147\122\324\040\141\301
\316\123\313\375\044\177\137\046\337\241\010\151\226\240\236\376
\111\103\342\323\352\332\304\361\210\061\041\156\034\341\315\363
\165\016\040\104\026\314\175\163\164\065\105\054\073\201\324\040
\354\266\011\214\076\110\262\111\002\003\001\000\001\243\201\242
\060\201\237\060\013\006\003\125\035\017\004\004\003\002\001\006
\060\014\006\003\125\035\023\004\005\060\003\001\001\377\060\143
\006\003\125\035\045\004\134\060\132\006\010\053\006\001\005\005
\007\003\001\006\010\053\006\001\005\005\007\003\002\006\010\053
\006\001\005\005\007\003\003\006\010\053\006\001\005\005\007\003
\004\006\010\053\006\001\005\005\007\003\005\006\010\053\006\001
\005\005\007\003\006\006\010\053\006\001\005\005\007\003\007\006
\010\053\006\001\005\005\007\003\010\006\010\053\006\001\005\005
\007\003\011\060\035\006\003\125\035\016\004\026\004\024\331\303
\323\370\200\222\147\314\135\322\072\242\327\161\242\264\304\070
\200\055\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\002\001\000\320\210\171\312\010\252\367\013\064\240
\116\011\302\351\176\065\110\211\160\204\043\057\121\303\053\057
\136\333\123\153\133\165\010\052\124\272\062\016\325\306\161\205
\261\227\111\200\366\204\320\360\272\267\161\224\310\171\153\246
\305\104\350\102\242\255\045\055\127\057\346\326\061\051\372\031
\211\124\051\176\267\176\107\066\151\055\156\062\274\324\165\332
\102\163\270\116\345\203\100\163\262\135\337\324\104\163\246\142
\013\333\252\156\005\214\310\177\106\117\071\205\220\235\274\033
\124\051\254\245\327\376\345\130\126\127\155\054\231\241\111\041
\325\141\306\214\141\341\165\044\301\001\335\055\033\066\303\057
\022\314\013\326\170\213\165\200\351\101\271\210\261\312\074\251
\026\306\116\025\343\162\066\366\324\240\101\205\257\212\145\160
\115\265\104\020\120\354\355\337\155\346\331\306\300\022\361\113
\072\057\163\351\074\251\356\033\252\057\065\245\233\237\115\305
\064\204\137\046\024\151\263\043\261\211\162\024\370\351\115\121
\042\003\377\112\206\304\034\350\173\171\012\333\107\045\201\176
\374\064\204\254\131\270\130\103\344\075\103\011\124\164\302\320
\375\331\357\156\131\367\162\140\231\166\157\365\047\247\273\203
\244\112\201\354\051\201\364\167\113\341\102\022\125\324\206\052

\022\266\360\125\233\001\056\335\366\250\343\031\303\316\107\057
\300\170\141\030\132\307\145\374\235\106\133\127\334\174\016\273
\226\203\020\174\125\030\011\004\256\321\367\213\052\076\240\346
\120\326\060\066\327\347\213\070\123\354\111\104\340\317\244\337
\361\123\173\213\132\266\366\021\220\113\326\165\363\376\002\363
\051\257\360\043\162\175\024\355\251\135\337\172\201\236\233\222
\042\374\036\370\001\105\101\227\307\153\001\141\276\063\150\362
\240\145\204\146\274\340\052\244\150\323\161\354\307\010\336\243
\303\311\066\112\064\361\027\342\200\257\040\041\223\224\036\346
\025\323\124\142\361\265\070\057\343\314\271\147\004\251\272\345
\356\371\020\156\313\056\176\023\257\222\024\376\363\047\163\173
\070\374\163\155\271\271\210\366\156\214\013\365\374\377\011\016
\263\055\136\173\165\343\222\044\342\346\341\130\076\113\050\003
\165\153\030\233\107\014
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "UCA Global Root"
Issuer: CN=UCA Global Root,O=UniTrust,C=CN
Serial Number: 8 (0x8)
Subject: CN=UCA Global Root,O=UniTrust,C=CN
Not Valid Before: Tue Jan 01 00:00:00 2008
Not Valid After: Thu Dec 31 00:00:00 2037
Fingerprint (MD5): c1:d9:51:c0:84:b8:6a:75:e8:2f:d7:d6:5f:7e:ac:46
Fingerprint (SHA1): 0b:97:2c:9e:a6:e7:cc:58:d9:3b:20:bf:71:ec:41:2e:72:09:fa:bf
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Global Root"
CKA_CERT_SHA1_HASH
 MULTILINE_OCTAL
\013\227\054\236\246\347\314\130\331\073\040\277\161\354\101\056
\162\011\372\277
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\301\331\121\300\204\270\152\165\350\057\327\326\137\176\254\106
END
CKA_ISSUER MULTILINE_OCTAL
\060\072\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\030\060\026\006\003\125\004\003\023\017\125\103\101
\040\107\154\157\142\141\154\040\122\157\157\164
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\010
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "UCA Root"
Issuer: CN=UCA Root,O=UniTrust,C=CN
Serial Number: 9 (0x9)
Subject: CN=UCA Root,O=UniTrust,C=CN
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid After: Mon Dec 31 00:00:00
 2029
Fingerprint (MD5): 8f:91:e7:ee:e3:fc:da:86:ca:fc:dc:70:ed:b7:b7:0c
Fingerprint (SHA1): 82:50:be:d5:a2:14:43:3a:66:37:7c:bc:10:ef:83:f6:69:da:3a:67
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\021\060\017\006\003\125\004\003\023\010\125\103\101
\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\021\060\017\006\003\125\004\003\023\010\125\103\101
\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\011
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\204\060\202\002\154\240\003\002\001\002\002\001\011
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\063\061\013\060\011\006\003\125\004\006\023\002\103\116\061\021
\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165\163
\164\061\021\060\017\006\003\125\004\003\023\010\125\103\101\040
\122\157\157\164\060\036\027\015\060\064\060\061\060\061\060\060
\060\060\060\060\132\027\015\062\071\061\062\063\061\060\060\060

\060\060\060\132\060\063\061\013\060\011\006\003\125\004\006\023
\002\103\116\061\021\060\017\006\003\125\004\012\023\010\125\156
\151\124\162\165\163\164\061\021\060\017\006\003\125\004\003\023
\010\125\103\101\040\122\157\157\164\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\263\135\007\312\206\046
\175\153\342\373\070\011\016\314\202\302\152\032\000\242\025\137
\326\351\324\001\267\126\003\001\131\217\365\070\151\044\166\302
\136\053\305\366\053\277\257\373\101\375\017\132\374\253\327\203
\160\115\060\230\321\236\262\166\273\222\326\273\351\020\050\151
\050\066\104\350\361\054\327\130\174\044\326\177\002\072\360\201
\153\141\140\077\364\063\336\155\345\352\050\122\117\374\251\035
\143\174\013\272\352\256\304\150\106\344\336\217\301\247\262\266
\130\132\155\035\054\331\214\072\267\210\313\205\324\367\350\003
\136\375\262\115\120\350\326\037\377\256\002\077\213\117\226\041
\074\233\327\045\311\035\077\373\230\261\131\344\360\251\073\257
\263\315\205\054\342\140\106\314\157\216\240\353\360\064\305\361
\102\030\140\256\022\355\106\165\034\345\330\251\226\132\276\336
\132\326\170\147\226\133\223\167\120\362\156\033\336\226\121\112
\246\326\113\103\165\041\146\215\167\354\002\204\166\134\104\020
\266\035\141\154\344\243\040\175\267\215\272\017\221\165\307\215
\337\274\002\140\250\051\250\275\075\103\002\003\001\000\001\243
\201\242\060\201\237\060\013\006\003\125\035\017\004\004\003\002
\001\006\060\014\006\003\125\035\023\004\005\060\003\001\001\377
\060\143\006\003\125\035\045\004\134\060\132\006\010\053\006\001
\005\005\007\003\001\006\010\053\006\001\005\005\007\003\002\006
\010\053\006\001\005\005\007\003\003\006\010\053\006\001\005\005
\007\003\004\006\010\053\006\001\005\005\007\003\005\006\010\053
\006\001\005\005\007\003\006\006\010\053\006\001\005\005\007\003
\007\006\010\053\006\001\005\005\007\003\010\006\010\053\006\001
\005\005\007\003\011\060\035\006\003\125\035\016\004\026\004\024
\333\037\065\363\153\114\377\102\061\144\233\315\273\132\036\035
\110\020\267\356\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\001\001\000\070\154\267\210\361\255\372\130
\067\164\321\350\160\336\234\047\131\313\344\025\327\240\303\140
\327\210\200\004\305\060\114\075\324\032\353\006\136\131\107\346
\274\146\313\340\010\374\350\065\354\142\175\312\300\332\301\170
\257\345\106\157\373\211\202\043\217\366\327\123\146\125\240\336
\045\022\073\161\066\026\125\022\166\373\075\370\124\133\061\272
\000\006\370\175\125\345\247\166\203\252\134\112\227\246\052\050
\337\275\306\154\013\043\225\216\063\177\036\136\100\037\023\124
\054\234\345\265\016\335\027\050\256\153\001\323\122\051\365\042
\037\220\071\364\334\142\150\360\074\206\107\354\270\005\105\273
\267\014\226\224\306\147\313\043\161\320\216\164\042\326\101\353
\003\250\266\352\276\304\001\022\265\263\135\100\166\006\040\324
\144\270\051\106\006\212\316\037\223\232\020\356\373\252\132\264
\334\057\325\053\313\366\327\005\204\230\005\221\013\204\367\075
\372\326\371\172\372\054\025\352\066\202\103\267\267\270\343\363

\161\001\355\103\103\242\005\105\303\050\005\007\065\343\001\245
\070\036\200\324\327\303\331\336
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "UCA Root"
Issuer: CN=UCA Root,O=UniTrust,C=CN
Serial Number: 9 (0x9)
Subject: CN=UCA Root,O=UniTrust,C=CN
Not Valid Before: Thu Jan 01 00:00:00 2004
Not Valid
After: Mon Dec 31 00:00:00 2029
Fingerprint (MD5): 8f:91:e7:ee:e3:fc:da:86:ca:fc:dc:70:ed:b7:b7:0c
Fingerprint (SHA1): 82:50:be:d5:a2:14:43:3a:66:37:7c:bc:10:ef:83:f6:69:da:3a:67
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UCA Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\202\120\276\325\242\024\103\072\146\067\174\274\020\357\203\366
\151\332\072\147
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\217\221\347\356\343\374\332\206\312\374\334\160\355\267\267\014
END
CKA_ISSUER MULTILINE_OCTAL
\060\063\061\013\060\011\006\003\125\004\006\023\002\103\116\061
\021\060\017\006\003\125\004\012\023\010\125\156\151\124\162\165
\163\164\061\021\060\017\006\003\125\004\003\023\010\125\103\101
\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\011
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Starfield Services Root Certificate Authority"
Issuer: CN=Starfield Services Root Certificate

Authority,OU=http://certificates.starfieldtech.com/repository/,O=Starfield Technologies\,
Inc.,L=Scottsdale,ST=Arizona,C=US
Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate
Authority,OU=http://certificates.starfieldtech.com/repository/,O=Starfield Technologies\,
Inc.,L=Scottsdale,ST=Arizona,C=US
Not Valid Before: Mon Jun 02 00:00:00 2008
Not Valid After: Mon Dec 31 23:59:59 2029
Fingerprint (MD5): cf:8f:3b:62:a3:ca:ca:71:1b:a3:e1:cb:48:57:35:1f
Fingerprint (SHA1): 5d:00:38:60:f0:02:ed:82:9d:ea:a4:18:68:f7:88:18:6d:62:12:7f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\072
\060\070\006\003\125\004\013\023\061\150\164\164\160\072\057\057
\143\145\162\164\151\146\151\143\141\164\145\163\056\163\164\141
\162\146\151\145\154\144\164\145\143\150\056\143\157\155\057\162
\145\160\157\163\151\164\157\162\171\057\061\066\060\064\006\003
\125\004\003\023\055\123\164\141\162\146\151\145\154\144\040\123
\145\162\166\151\143\145\163\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\072
\060\070\006\003\125\004\013\023\061\150\164\164\160\072\057\057
\143\145\162\164\151\146\151\143\141\164\145\163\056\163\164\141
\162\146\151\145\154\144\164\145\143\150\056\143\157\155\057\162
\145\160\157\163\151\164\157\162\171\057\061\066\060\064\006\003
\125\004\003\023\055\123\164\141\162\146\151\145\154\144\040\123
\145\162\166\151\143\145\163\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151

\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\176\060\202\003\146\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\317\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157\156
\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157\164
\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012\023
\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150\156
\157\154\157\147\151\145\163\054\040\111\156\143\056\061\072\060
\070\006\003\125\004\013\023\061\150\164\164\160\072\057\057\143
\145\162\164\151\146\151\143\141\164\145\163\056\163\164\141\162
\146\151\145\154\144\164\145\143\150\056\143\157\155\057\162\145
\160\157\163\151\164\157\162\171\057\061\066\060\064\006\003\125
\004\003\023\055\123\164\141\162\146\151\145\154\144\040\123\145
\162\166\151\143\145\163\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171\060\036\027\015\060\070\060\066\060\062\060\060\060\060\060
\060\132\027\015\062\071\061\062\063\061\062\063\065\071\065\071
\132\060\201\317\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172
\157\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143
\157\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004
\012\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143
\150\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061
\072\060\070\006\003\125\004\013\023\061\150\164\164\160\072\057
\057\143\145\162\164\151\146\151\143\141\164\145\163\056\163\164
\141\162\146\151\145\154\144\164\145\143\150\056\143\157\155\057
\162\145\160\157\163\151\164\157\162\171\057\061\066\060\064\006
\003\125\004\003\023\055\123\164\141\162\146\151\145\154\144\040
\123\145\162\166\151\143\145\163\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162
\151\164\171\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\362\314\126\052\115\346\026\067\132\227\352\155
\065\070\321\020\233\333\270\334\251\004\011\225\063\056\011\305
\000\173\032\170\102\217\310\364\005\216\376\322\150\203\036\116
\231\315\027\333\107\076\120\363\211\322\347\334\230\373\005\370
\252\326\143\364\124\115\301\161\003\260\037\033\166\263\032\064
\060\163\361\050\062\140\203\375\264\234\327\266\322\042\067\174
\031\252\073\336\023\020\151\156\134\006\323\157\243\362\146\132
\166\102\110\257\200\321\124\131\075\324\271\324\333\355\271\253
\071\231\364\356\142\253\341\170\162\173\330\070\215\100\266\314

\334\022\000\160\103\205\151\330\030\343\312\127\162\237\264\337
\077\374\042\250\102\122\365\167\133\231\360\126\055\046\160\026
\066\022\302\047\236\127\246\174\320\043\361\171\334\243\223\130
\050\070\075\237\255\066\103\356\067\373\370\371\103\255\310\126
\362\224\022\136\102\353\163\270\023\015\313\246\325\206\271\252
\050\152\124\003\241\077\017\051\353\011\000\350\077\136\242\177
\027\075\241\053\370\276\320\165\035\244\204\343\253\027\145\006
\122\000\257\261\002\003\001\000\001\243\143\060\141\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\264\306\177\032\103\314\233
\165\135\057\304\113\362\213\230\020\351\361\121\020\060\037\006
\003\125\035\043\004\030\060\026\200\024\264\306\177\032\103\314
\233\165\135\057\304\113\362\213\230\020\351\361\121\020\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001
\001\000\254\200\273\304\045\005\013\130\244\344\176\051\176\257
\274\073\354\055\300\104\056\371\221\340\322\073\062\047\220\055
\366\200\011\134\302\253\145\044\332\070\020\106\304\111\322\375
\232\253\050\110\167\210\306\351\157\321\107\221\325\065\117\024
\011\250\133\100\007\035\174\161\126\313\211\102\324\277\141\300
\042\367\056\337\253\363\162\103\213\100\350\224\353\260\046\332
\321\023\323\253\320\066\055\056\072\225\263\167\056\025\071\030
\014\151\272\252\200\355\361\123\116\063\233\150\004\342\240\060
\056\327\321\135\324\246\146\235\204\346\347\273\074\211\273\066
\235\374\027\251\075\125\053\212\373\233\304\114\204\377\337\322
\276\151\033\164\260\250\366\352\260\234\262\051\164\201\114\150
\072\232\177\163\045\071\365\023\340\146\221\151\324\127\113\267
\356\255\105\340\054\303\210\323\276\224\111\211\037\377\160\325
\133\155\071\023\260\035\313\230\346\147\143\015\143\366\373\303
\327\141\162\203\210\077\160\176\123\311\236\211\124\326\117\177
\175\161\271\256\361\140\213\167\140\354\370\277\372\152\243\234
\001\042
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Starfield Services Root Certificate Authority"
Issuer: CN=Starfield Services Root Certificate
Authority,OU=http://certificates.starfieldtech.com/repository/,O=Starfield Technologies\,
Inc.,L=Scottsdale,ST=Arizona,C=US
#
 Serial Number: 0 (0x0)
Subject: CN=Starfield Services Root Certificate
Authority,OU=http://certificates.starfieldtech.com/repository/,O=Starfield Technologies\,
Inc.,L=Scottsdale,ST=Arizona,C=US

```
# Not Valid Before: Mon Jun 02 00:00:00 2008
# Not Valid After: Mon Dec 31 23:59:59 2029
# Fingerprint (MD5): cf:8f:3b:62:a3:ca:ca:71:1b:a3:e1:cb:48:57:35:1f
# Fingerprint (SHA1): 5d:00:38:60:f0:02:ed:82:9d:ea:a4:18:68:f7:88:18:6d:62:12:7f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Starfield Services Root Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\135\000\070\140\360\002\355\202\235\352\244\030\150\367\210\030
\155\142\022\177
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\317\217\073\142\243\312\312\161\033\243\341\313\110\127\065\037
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\317\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\020\060\016\006\003\125\004\010\023\007\101\162\151\172\157
\156\141\061\023\060\021\006\003\125\004\007\023\012\123\143\157
\164\164\163\144\141\154\145\061\045\060\043\006\003\125\004\012
\023\034\123\164\141\162\146\151\145\154\144\040\124\145\143\150
\156\157\154\157\147\151\145\163\054\040\111\156\143\056\061\072
\060\070\006\003\125\004\013\023\061\150\164\164\160\072\057\057
\143\145\162\164\151\146\151\143\141\164\145\163\056\163\164\141
\162\146\151\145\154\144\164\145\143\150\056\143\157\155\057\162
\145\160\157\163\151\164\157\162\171\057\061\066\060\064\006\003
\125\004\003\023\055\123\164\141\162\146\151\145\154\144\040\123
\145\162\166\151\143\145\163\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "I.CA - Qualified root certificate"
# Issuer: O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified root certificate,C=CZ
# Serial Number:9d:2a:60
# Subject: O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified root certificate,C=CZ
# Not Valid Before: Tue Apr 01 00:00:00 2008
```

```
# Not Valid After: Sun Apr 01 00:00:00 2018
# Fingerprint (MD5): 48:d1:1e:62:78:01:c2:6e:43:69:a4:2c:ee:13:0a:b5
# Fingerprint (SHA1): 64:90:2a:d7:27:7a:f3:e3:2c:d8:cc:1d:c7:9d:e1:fd:7f:80:69:ea
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Qualified root certificate"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\052\060\050\006\003\125\004\003\014\041\111\056\103\101\040\055
\040\121\165\141\154\151\146\151\145\144\040\162\157\157\164\040
\143\145\162\164\151\146\151\143\141\164\145\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\052\060\050\006\003\125\004\003\014\041\111\056\103\101\040\055
\040\121\165\141\154\151\146\151\145\144\040\162\157\157\164\040
\143\145\162\164\151\146\151\143\141\164\145\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\235\052\140
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\071\060\202\003\041\240\003\002\001\002\002\004\000
\235\052\140\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\150\061\013\060\011\006\003\125\004\006\023\002\103
\132\061\052\060\050\006\003\125\004\003\014\041\111\056\103\101
\040\055\040\121\165\141\154\151\146\151\145\144\040\162\157\157
\164\040\143\145\162\164\151\146\151\143\141\164\145\061\055\060
\053\006\003\125\004\012\014\044\120\162\166\156\303\255\040\143
\145\162\164\151\146\151\153\141\304\215\156\303\255\040\141\165
\164\157\162\151\164\141\054\040\141\056\163\056\060\036\027\015
\060\070\060\064\060\061\060\060\060\060\060\060\132\027\015\061
\070\060\064\060\061\060\060\060\060\060\060\132\060\150\061\013
\060\011\006\003\125\004\006\023\002\103\132\061\052\060\050\006
\003\125\004\003\014\041\111\056\103\101\040\055\040\121\165\141
\154\151\146\151\145\144\040\162\157\157\164\040\143\145\162\164
\151\146\151\143\141\164\145\061\055\060\053\006\003\125\004\012
```

\014\044\120\162\166\156\303\255\040\143\145\162\164\151\146\151
\153\141\304\215\156\303\255\040\141\165\164\157\162\151\164\141
\054\040\141\056\163\056\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\253\010\210\244\360\164\362\237\370
\333\326\167\215\060\031\076\246\305\307\212\305\275\335\346\002
\256\216\075\120\165\270\257\175\066\253\376\365\355\010\147\264
\000\212\230\301\003\143\210\121\362\033\066\211\164\132\055\310
\304\202\304\077\271\210\375\154\375\072\035\025\005\104\225\200
\032\246\206\313\041\165\220\205\134\260\160\000\207\064\250\321
\037\111\375\154\070\155\152\254\270\105\237\274\024\327\146\324
\041\343\047\012\215\165\340\132\057\012\113\264\347\176\163\243
\052\275\160\361\221\206\010\217\277\220\204\034\207\251\365\231
\045\045\224\301\343\156\007\301\113\007\133\124\374\064\313\106
\067\234\305\241\040\316\246\254\207\251\203\074\070\117\300\100
\363\351\377\233\327\071\166\344\023\043\165\265\377\241\102\256
\134\206\117\305\116\103\266\231\013\122\123\040\250\263\302\114
\323\000\054\025\322\131\154\012\237\041\265\163\026\171\036\206
\045\356\032\373\223\236\255\143\361\114\342\166\061\136\067\357
\374\320\251\066\344\371\021\351\172\374\120\347\101\043\003\064
\270\175\272\016\317\335\123\002\003\001\000\001\243\201\352\060
\201\347\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\201\244\006\003\125\035\040\004\201\234\060\201
\231\060\201\226\006\014\053\006\001\004\001\201\270\110\001\004
\000\001\060\201\205\060\201\202\006\010\053\006\001\005\005\007
\002\002\060\166\032\164\124\145\156\164\157\040\143\145\162\164
\151\146\151\153\141\164\040\152\145\040\166\171\144\141\156\040
\152\141\153\157\040\153\166\141\154\151\146\151\153\157\166\141
\156\171\040\163\171\163\164\145\155\157\166\171\040\143\145\162
\164\151\146\151\153\141\164\040\166\040\163\157\165\154\141\144
\165\040\163\145\040\172\141\153\157\156\145\155\040\062\062\067
\057\062\060\060\060\040\123\142\056\040\166\040\160\154\141\164
\156\145\155\040\172\156\145\156\151\056\060\035\006\003\125\035
\016\004\026\004\024\150\235\176\326\304\045\071\373\073\240\067
\326\117\334\214\321\172\360\126\131\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\162\365\274
\006\215\322\054\226\362\202\333\130\173\107\360\100\144\345\056
\033\357\372\340\372\323\361\162\110\001\104\362\210\364\336\230
\201\123\204\347\175\116\107\347\061\067\126\256\263\301\060\157
\306\253\110\203\365\230\123\122\151\052\050\301\100\145\353\145
\347\264\060\013\360\253\016\245\022\045\277\364\120\135\277\243
\176\345\321\164\370\012\050\256\102\234\260\024\122\304\240\140
\135\367\105\027\102\272\102\055\233\222\373\156\224\263\160\107
\040\010\235\123\360\260\255\275\251\204\132\335\007\052\014\315
\053\155\141\050\337\073\222\050\354\121\201\177\121\174\216\056
\177\235\351\274\301\064\075\213\255\201\255\361\036\164\146\103
\074\101\115\270\056\063\117\261\072\036\333\022\337\066\216\161

\377\127\143\261\326\217\264\075\206\022\152\317\102\060\264\223
\026\352\231\352\002\133\376\010\356\262\117\160\277\063\000\347
\172\112\070\241\362\110\221\246\036\313\043\262\070\235\360\056
\111\242\311\210\126\145\145\216\072\147\105\214\214\013\342\252
\261\113\007\377\261\037\272\024\317\162\372\247\170
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "I.CA - Qualified root certificate"
Issuer: O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified root certificate,C=CZ
Serial Number:9d:2a:60
Subject: O=První certifikaní autorita\, a.s.,CN=I.CA - Qualified root certificate,C=CZ
Not Valid Before: Tue Apr 01 00:00:00 2008
Not Valid After: Sun Apr 01 00:00:00 2018
Fingerprint (MD5): 48:d1:1e:62:78:01:c2:6e:43:69:a4:2c:ee:13:0a:b5
Fingerprint (SHA1): 64:90:2a:d7:27:7a:f3:e3:2c:d8:cc:1d:c7:9d:e1:fd:7f:80:69:ea
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL
CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Qualified root certificate"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\144\220\052\327\047\172\363\343\054\330\314\035\307\235\341\375
\177\200\151\352
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\110\321\036\142\170\001\302\156\103\151\244\054\356\023\012\265
END
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\052\060\050\006\003\125\004\003\014\041\111\056\103\101\040\055
\040\121\165\141\154\151\146\151\145\144\040\162\157\157\164\040
\143\145\162\164\151\146\151\143\141\164\145\061\055\060\053\006
\003\125\004\012\014\044\120\162\166\156\303\255\040\143\145\162
\164\151\146\151\153\141\304\215\156\303\255\040\141\165\164\157
\162\151\164\141\054\040\141\056\163\056
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\235\052\140
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST

CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "I.CA - Standard root certificate"
Issuer: O=Prvni certifikacni autorita a.s.,CN=I.CA - Standard root certificate,C=CZ
Serial Number:13:d6:20
Subject: O=Prvni certifikacni autorita a.s.,CN=I.CA - Standard root certificate,C=CZ
Not Valid Before: Tue Apr 01 00:00:00 2008
Not Valid After: Sun Apr 01 00:00:00 2018
Fingerprint (MD5): 04:68:e9:24:7e:41:ce:d7:6c:44:16:30:70:3d:dd:b9
Fingerprint (SHA1): ab:16:dd:14:4e:cd:c0:fc:4b:aa:b6:2e:cf:04:08:89:6f:de:52:b7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "I.CA - Standard root certificate"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\051\060\047\006\003\125\004\003\023\040\111\056\103\101\040\055
\040\123\164\141\156\144\141\162\144\040\162\157\157\164\040\143
\145\162\164\151\146\151\143\141\164\145\061\051\060\047\006\003
\125\004\012\023\040\120\162\166\156\151\040\143\145\162\164\151
\146\151\153\141\143\156\151\040\141\165\164\157\162\151\164\141
\040\141\056\163\056
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\051\060\047\006\003\125\004\003\023\040\111\056\103\101\040\055
\040\123\164\141\156\144\141\162\144\040\162\157\157\164\040\143
\145\162\164\151\146\151\143\141\164\145\061\051\060\047\006\003
\125\004\012\023\040\120\162\166\156\151\040\143\145\162\164\151
\146\151\153\141\143\156\151\040\141\165\164\157\162\151\164\141
\040\141\056\163\056
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\023\326\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\056\060\202\003\026\240\003\002\001\002\002\003\023
\326\040\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\143\061\013\060\011\006\003\125\004\006\023\002\103\132
\061\051\060\047\006\003\125\004\003\023\040\111\056\103\101\040
\055\040\123\164\141\156\144\141\162\144\040\162\157\157\164\040
\143\145\162\164\151\146\151\143\141\164\145\061\051\060\047\006

\003\125\004\012\023\040\120\162\166\156\151\040\143\145\162\164
\151\146\151\153\141\143\156\151\040\141\165\164\157\162\151\164
\141\040\141\056\163\056\060\036\027\015\060\070\060\064\060\061
\060\060\060\060\060\060\132\027\015\061\070\060\064\060\061\060
\060\060\060\060\060\132\060\143\061\013\060\011\006\003\125\004
\006\023\002\103\132\061\051\060\047\006\003\125\004\003\023\040
\111\056\103\101\040\055\040\123\164\141\156\144\141\162\144\040
\162\157\157\164\040\143\145\162\164\151\146\151\143\141\164\145
\061\051\060\047\006\003\125\004\012\023\040\120\162\166\156\151
\040\143\145\162\164\151\146\151\153\141\143\156\151\040\141\165
\164\157\162\151\164\141\040\141\056\163\056\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\321\055\025\304
\071\114\152\241\304\345\363\053\264\375\251\026\351\270\121\217
\067\221\331\247\323\227\220\266\160\151\207\365\257\131\322\142
\101\130\325\363\225\215\002\025\372\146\234\301\041\024\330\037
\255\372\052\154\164\126\241\142\341\361\260\255\270\376\322\243
\340\221\241\265\256\123\255\215\244\015\017\131\140\227\052\374
\243\056\163\065\043\163\314\250\246\241\024\155\277\211\303\204
\070\363\144\131\314\061\363\340\371\047\140\012\074\101\005\157
\132\122\360\217\156\122\156\354\136\210\157\340\100\214\041\107
\127\042\351\070\156\346\372\363\044\264\256\257\057\163\077\200
\325\062\217\214\331\204\031\330\140\316\333\151\215\076\257\002
\257\256\336\257\120\365\317\346\263\141\030\304\340\335\360\116
\112\146\015\172\163\040\267\344\324\223\206\107\141\330\117\312
\072\216\253\302\077\306\042\027\243\135\235\040\306\305\016\044
\151\310\246\175\146\006\315\106\346\063\341\103\164\223\365\203
\142\322\260\105\042\001\244\166\275\353\121\223\130\154\372\032
\241\237\165\200\332\330\000\342\361\210\115\077\002\003\001\000
\001\243\201\352\060\201\347\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004
\026\004\024\353\067\244\276\271\157\140\027\373\323\377\055\140
\341\004\036\257\317\306\323\060\201\244\006\003\125\035\040\004
\201\234\060\201\231\060\201\226\006\014\053\006\001\004\001\201
\270\110\001\001\000\001\060\201\205\060\201\202\006\010\053\006
\001\005\005\007\002\002\060\166\032\164\124\145\156\164\157\040
\143\145\162\164\151\146\151\153\141\164\040\152\145\040\166\171
\144\141\156\040\152\141\153\157\040\153\166\141\154\151\146\151
\153\157\166\141\156\171\040\163\171\163\164\145\155\157\166\171
\040\143\145\162\164\151\146\151\153\141\164\040\166\040\163\157
\165\154\141\144\165\040\163\145\040\172\141\153\157\156\145\155
\040\062\062\067\057\062\060\060\060\040\123\142\056\040\166\040
\160\154\141\164\156\145\155\040\172\156\145\156\151\056\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001
\001\000\027\042\130\252\057\030\125\002\241\114\066\111\067\113
\233\163\272\256\143\066\016\213\053\204\105\067\314\372\340\147
\367\240\163\152\147\150\126\274\141\250\064\232\050\272\146\054

\141\233\213\034\370\004\160\214\206\343\101\357\224\171\015\335
\064\207\004\356\265\236\061\153\071\364\176\130\345\362\260\004
\115\251\127\045\111\340\013\325\344\354\175\016\076\073\001\340
\214\374\122\220\223\346\362\260\253\365\061\167\314\321\311\103
\202\253\017\056\264\371\230\256\076\343\104\364\244\003\151\125
\332\134\216\333\301\271\254\344\230\325\166\025\106\241\056\132
\014\042\140\240\302\353\160\177\161\003\260\150\323\061\144\315
\352\313\113\125\211\202\076\134\146\313\032\010\230\107\302\336
\331\056\070\114\005\375\055\214\372\343\042\045\271\222\375\326
\262\055\312\242\064\234\337\111\357\325\204\001\054\222\377\005
\101\012\147\306\102\153\236\313\330\237\220\274\015\017\020\175
\307\146\275\352\163\007\340\030\352\121\201\264\105\100\074\017
\241\042\067\025\001\205\251\056\174\016\137\135\316\152\223\276
\331\276
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "I.CA - Standard root certificate"
Issuer: O=Prvni certifikacni autorita a.s.,CN=I.CA - Standard root certificate,C=CZ
Serial Number:13:d6:20
Subject: O=Prvni certifikacni autorita a.s.,CN=I.CA - Standard root certificate,C=CZ
Not Valid Before: Tue Apr 01 00:00:00 2008
Not Valid After: Sun Apr 01 00:00:00 2018
Fingerprint (MD5): 04:68:e9:24:7e:41:ce:d7:6c:44:16:30:70:3d:dd:b9
Fingerprint (SHA1): ab:16:dd:14:4e:cd:c0:fc:4b:aa:b6:2e:cf:04:08:89:6f:de:52:b7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8
 "I.CA - Standard root certificate"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\253\026\335\024\116\315\300\374\113\252\266\056\317\004\010\211
\157\336\122\267
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\004\150\351\044\176\101\316\327\154\104\026\060\160\075\335\271
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\103\132\061
\051\060\047\006\003\125\004\003\023\040\111\056\103\101\040\055
\040\123\164\141\156\144\141\162\144\040\162\157\157\164\040\143
\145\162\164\151\146\151\143\141\164\145\061\051\060\047\006\003
\125\004\012\023\040\120\162\166\156\151\040\143\145\162\164\151

\146\151\153\141\143\156\151\040\141\165\164\157\162\151\164\141
\040\141\056\163\056
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\023\326\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code
 Signing Only Certificate
Certificate "e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi"
Issuer: CN=e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi,O=Elektronik Bilgi Guvenligi A.S.,C=TR
Serial Number:44:99:8d:3c:c0:03:27:bd:9c:76:95:b9:ea:db:ac:b5
Subject: CN=e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi,O=Elektronik Bilgi Guvenligi A.S.,C=TR
Not Valid Before: Thu Jan 04 11:32:48 2007
Not Valid After: Wed Jan 04 11:32:48 2017
Fingerprint (MD5): 3d:41:29:cb:1e:aa:11:74:cd:5d:b0:62:af:b0:43:5b
Fingerprint (SHA1): dd:e1:d2:a9:01:80:2e:1d:87:5e:84:b3:80:7e:4b:b1:fd:99:41:34
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\050\060\046\006\003\125\004\012\023\037\105\154\145\153\164\162
\157\156\151\153\040\102\151\154\147\151\040\107\165\166\145\156
\154\151\147\151\040\101\056\123\056\061\074\060\072\006\003\125
\004\003\023\063\145\055\107\165\166\145\156\040\113\157\153\040
\105\154\145\153\164\162\157\156\151\153\040\123\145\162\164\151
\146\151\153\141\040\110\151\172\155\145\164\040\123\141\147\154
\141\171\151\143\151\163\151
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\050\060\046\006\003\125\004\012\023\037\105\154\145\153\164\162
\157\156\151\153\040\102\151\154\147\151\040\107\165\166\145\156
\154\151\147\151\040\101\056\123\056\061\074\060\072\006\003\125
\004\003\023\063\145\055\107\165\166\145\156\040\113\157\153\040
\105\154\145\153\164\162\157\156\151\153\040\123\145\162\164\151
\146\151\153\141\040\110\151\172\155\145\164\040\123\141\147\154
\141\171\151\143\151\163\151

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\104\231\215\074\300\003\047\275\234\166\225\271\352\333
\254\265
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\003\266\060\202\002\236\240\003\002\001\002\002\020\104
\231\215\074\300\003\047\275\234\166\225\271\352\333\254\265\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\165
\061\013\060\011\006\003\125\004\006\023\002\124\122\061\050\060
\046\006\003\125\004\012\023\037\105\154\145\153\164\162\157\156
\151\153\040\102\151\154\147\151\040\107\165\166\145\156\154\151
\147\151\040\101\056\123\056\061\074\060\072\006\003\125\004\003
\023\063\145\055\107\165\166\145\156\040\113\157\153\040\105\154
\145\153\164\162\157\156\151\153\040\123\145\162\164\151\146\151
\153\141\040\110\151\172\155\145\164\040\123\141\147\154\141\171
\151\143\151\163\151\060\036\027\015\060\067\060\061\060\064\061
\061\063\062\064\070\132\027\015\061\067\060\061\060\064\061\061
\063\062\064\070\132\060\165\061\013\060\011\006\003\125\004\006
\023\002\124\122\061\050\060\046\006\003\125\004\012\023\037\105
\154\145\153\164\162\157\156\151\153\040\102\151\154\147\151\040
\107\165\166\145\156\154\151\147\151\040\101\056\123\056\061\074
\060\072\006\003\125\004\003\023\063\145\055\107\165\166\145\156
\040\113\157\153\040\105\154\145\153\164\162\157\156\151\153\040
\123\145\162\164\151\146\151\153\141\040\110\151\172\155\145\164
\040\123\141\147\154\141\171\151\143\151\163\151\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\303\022\040
\236\260\136\000\145\215\116\106\273\200\134\351\054\006\227\325
\363\162\311\160\271\347\113\145\200\301\113\276\176\074\327\124
\061\224\336\325\022\272\123\026\002\352\130\143\357\133\330\363
\355\052\032\252\161\110\243\334\020\055\137\137\353\134\113\234
\226\010\102\045\050\021\314\212\132\142\001\120\325\353\011\123
\057\370\303\217\376\263\374\375\235\242\343\137\175\276\355\013
\340\140\353\151\354\063\355\330\215\373\022\111\203\000\311\213
\227\214\073\163\052\062\263\022\367\271\115\362\364\115\155\307
\346\326\046\067\010\362\331\375\153\134\243\345\110\134\130\274
\102\276\003\132\201\272\034\065\014\000\323\365\043\176\161\060
\010\046\070\334\045\021\107\055\363\272\043\020\245\277\274\002
\367\103\136\307\376\260\067\120\231\173\017\223\316\346\103\054
\303\176\015\362\034\103\146\140\313\141\061\107\207\243\117\256
\275\126\154\114\274\274\370\005\312\144\364\351\064\241\054\265
\163\341\302\076\350\310\311\064\045\010\134\363\355\246\307\224
\237\255\210\103\045\327\341\071\140\376\254\071\131\002\003\001
\000\001\243\102\060\100\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026

\004\024\237\356\104\263\224\325\372\221\117\056\331\125\232\004
\126\333\055\304\333\245\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\177\137\271\123\133\143
\075\165\062\347\372\304\164\032\313\106\337\106\151\034\122\317
\252\117\302\150\353\377\200\251\121\350\075\142\167\211\075\012
\165\071\361\156\135\027\207\157\150\005\301\224\154\331\135\337
\332\262\131\313\245\020\212\312\314\071\315\237\353\116\336\122
\377\014\360\364\222\251\362\154\123\253\233\322\107\240\037\164
\367\233\232\361\057\025\237\172\144\060\030\007\074\052\017\147
\312\374\017\211\141\235\145\245\074\345\274\023\133\010\333\343
\377\355\273\006\273\152\006\261\172\117\145\306\202\375\036\234
\213\265\015\356\110\273\270\275\252\010\264\373\243\174\313\237
\315\220\166\134\206\226\170\127\012\146\371\130\032\235\375\227
\051\140\336\021\246\220\034\031\034\356\001\226\042\064\064\056
\221\371\267\304\047\321\173\346\277\373\200\104\132\026\345\353
\340\324\012\070\274\344\221\343\325\353\134\301\254\337\033\152
\174\236\345\165\322\266\227\207\333\314\207\053\103\072\204\010
\257\253\074\333\367\074\146\061\206\260\235\123\171\355\370\043
\336\102\343\055\202\361\017\345\372\227
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi"
Issuer: CN=e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi,O=Elektronik Bilgi Guvenligi A.S.,C=TR
Serial Number:44:99:8d:3c:c0:03:27:bd:9c:76:95:b9:ea:db:ac:b5
Subject: CN=e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi,O=Elektronik Bilgi Guvenligi A.S.,C=TR
Not Valid Before: Thu Jan 04 11:32:48 2007
Not Valid After: Wed Jan 04 11:32:48 2017
Fingerprint (MD5): 3d:41:29:cb:1e:aa:11:74:cd:5d:b0:62:af:b0:43:5b
Fingerprint (SHA1): dd:e1:d2:a9:01:80:2e:1d:87:5e:84:b3:80:7e:4b:b1:fd:99:41:34
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "e-Guven Kok Elektronik Sertifika Hizmet Saglayicisi"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\335\341\322\251\001\200\056\035\207\136\204\263\200\176\113\261
\375\231\101\064
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\075\101\051\313\036\252\021\164\315\135\260\142\257\260\103\133
END

CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\050\060\046\006\003\125\004\012\023\037\105\154\145\153\164\162
\157\156\151\153\040\102\151\154\147\151\040\107\165\166\145\156
\154\151\147\151\040\101\056\123\056\061\074\060\072\006\003\125
\004\003\023\063\145\055\107\165\166\145\156\040\113\157\153\040
\105\154\145\153\164\162\157\156\151\153\040\123\145\162\164\151
\146\151\153\141\040\110\151\172\155\145\164\040\123\141\147\154
\141\171\151\143\151\163\151
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\104\231\215\074\300\003\047\275\234\166\225\271\352\333
\254\265
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
 Certificate "Japanese Government"
Issuer: OU=ApplicationCA,O=Japanese Government,C=JP
Serial Number: 49 (0x31)
Subject: OU=ApplicationCA,O=Japanese Government,C=JP
Not Valid Before: Wed Dec 12 15:00:00 2007
Not Valid After: Tue Dec 12 15:00:00 2017
Fingerprint (MD5): 7e:23:4e:5b:a7:a5:b4:25:e9:00:07:74:11:62:ae:d6
Fingerprint (SHA1): 7f:8a:b0:cf:d0:51:87:6a:66:f3:36:0f:47:c8:8d:8c:d3:35:fc:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Japanese Government"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\026\060
\024\006\003\125\004\013\023\015\101\160\160\154\151\143\141\164
\151\157\156\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\026\060
\024\006\003\125\004\013\023\015\101\160\160\154\151\143\141\164

\151\157\156\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\061
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\240\060\202\002\210\240\003\002\001\002\002\001\061
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\103\061\013\060\011\006\003\125\004\006\023\002\112\120\061\034
\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145\163
\145\040\107\157\166\145\162\156\155\145\156\164\061\026\060\024
\006\003\125\004\013\023\015\101\160\160\154\151\143\141\164\151
\157\156\103\101\060\036\027\015\060\067\061\062\061\062\061\065
\060\060\060\060\132\027\015\061\067\061\062\061\062\061\065\060
\060\060\060\132\060\103\061\013\060\011\006\003\125\004\006\023
\002\112\120\061\034\060\032\006\003\125\004\012\023\023\112\141
\160\141\156\145\163\145\040\107\157\166\145\162\156\155\145\156
\164\061\026\060\024\006\003\125\004\013\023\015\101\160\160\154
\151\143\141\164\151\157\156\103\101\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\247\155\340\164\116\207
\217\245\006\336\150\242\333\206\231\113\144\015\161\360\012\005
\233\216\252\341\314\056\322\152\073\301\172\264\227\141\215\212
\276\306\232\234\006\264\206\121\344\067\016\164\170\176\137\212
\177\224\244\327\107\010\375\120\132\126\344\150\254\050\163\240
\173\351\177\030\222\100\117\055\235\365\256\104\110\163\066\006
\236\144\054\073\064\043\333\134\046\344\161\171\217\324\156\171
\042\271\223\301\312\315\301\126\355\210\152\327\240\071\041\004
\127\054\242\365\274\107\101\117\136\064\042\225\265\037\051\155
\136\112\363\115\162\276\101\126\040\207\374\351\120\107\327\060
\024\356\134\214\125\272\131\215\207\374\043\336\223\320\004\214
\375\357\155\275\320\172\311\245\072\152\162\063\306\112\015\005
\027\052\055\173\261\247\330\326\360\276\364\077\352\016\050\155
\101\141\043\166\170\303\270\145\244\363\132\256\314\302\252\331
\347\130\336\266\176\235\205\156\237\052\012\157\237\003\051\060
\227\050\035\274\267\317\124\051\116\121\061\371\047\266\050\046
\376\242\143\346\101\026\360\063\230\107\002\003\001\000\001\243
\201\236\060\201\233\060\035\006\003\125\035\016\004\026\004\024
\124\132\313\046\077\161\314\224\106\015\226\123\352\153\110\320
\223\376\102\165\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\131\006\003\125\035\021\004\122\060\120\244
\116\060\114\061\013\060\011\006\003\125\004\006\023\002\112\120
\061\030\060\026\006\003\125\004\012\014\017\346\227\245\346\234
\254\345\233\275\346\224\277\345\272\234\061\043\060\041\006\003
\125\004\013\014\032\343\202\242\343\203\227\343\203\252\343\202
\261\343\203\274\343\202\267\343\203\247\343\203\263\103\101\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377

\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\071\152\104\166\167\070\072\354\243\147\106\017
\371\213\006\250\373\152\220\061\316\176\354\332\321\211\174\172
\353\056\014\275\231\062\347\260\044\326\303\377\365\262\210\011
\207\054\343\124\341\243\246\262\010\013\300\205\250\310\322\234
\161\366\035\237\140\374\070\063\023\341\236\334\013\137\332\026
\120\051\173\057\160\221\017\231\272\064\064\215\225\164\305\176
\170\251\146\135\275\312\041\167\102\020\254\146\046\075\336\221
\253\375\025\360\157\355\154\137\020\370\363\026\366\003\212\217
\247\022\021\014\313\375\077\171\301\234\375\142\356\243\317\124
\014\321\053\137\027\076\343\076\277\300\053\076\011\233\376\210
\246\176\264\222\027\374\043\224\201\275\156\247\305\214\302\353
\021\105\333\370\101\311\226\166\352\160\137\171\022\153\344\243
\007\132\005\357\047\111\317\041\237\212\114\011\160\146\251\046
\301\053\021\116\063\322\016\374\326\154\322\016\062\144\150\377
\255\005\170\137\003\035\250\343\220\254\044\340\017\100\247\113
\256\213\050\267\202\312\030\007\346\267\133\164\351\040\031\177
\262\033\211\124
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Japanese Government"
Issuer: OU=ApplicationCA,O=Japanese Government,C=JP
Serial Number: 49 (0x31)
Subject: OU=ApplicationCA,O=Japanese Government,C=JP
Not Valid Before: Wed Dec 12 15:00:00 2007
Not Valid After: Tue Dec 12 15:00:00 2017
Fingerprint (MD5): 7e:23:4e:5b:a7:a5:b4:25:e9:00:07:74:11:62:ae:d6
Fingerprint (SHA1): 7f:8a:b0:cf:d0:51:87:6a:66:f3:36:0f:47:c8:8d:8c:d3:35:fc:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Japanese Government"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\177\212\260\317\320\121\207\152\146\363\066\017\107\310\215\214
\323\065\374\164
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\176\043\116\133\247\245\264\045\351\000\007\164\021\142\256\326
END
CKA_ISSUER MULTILINE_OCTAL
\060\103\061\013\060\011\006\003\125\004\006\023\002\112\120\061

\034\060\032\006\003\125\004\012\023\023\112\141\160\141\156\145
\163\145\040\107\157\166\145\162\156\155\145\156\164\061\026\060
\024\006\003\125\004\013\023\015\101\160\160\154\151\143\141\164
\151\157\156\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\061
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "AdminCA-CD-T01"
Issuer: CN=AdminCA-CD-T01,OU=Certification Authorities,OU=Services,O=admin,C=CH
Serial Number: 1 (0x1)
Subject: CN=AdminCA-CD-T01,OU=Certification Authorities,OU=Services,O=admin,C=CH
Not Valid Before: Wed Jan
 25 13:36:19 2006
Not Valid After: Mon Jan 25 12:36:19 2016
Fingerprint (MD5): 5b:9e:fd:3b:60:35:ea:68:8e:52:fe:13:19:14:4a:a3
Fingerprint (SHA1): 6b:81:44:6a:5c:dd:f4:74:a0:f8:00:ff:be:69:fd:0d:b6:28:75:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AdminCA-CD-T01"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\027\060\025\006\003\125\004\003\023
\016\101\144\155\151\156\103\101\055\103\104\055\124\060\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\027\060\025\006\003\125\004\003\023
\016\101\144\155\151\156\103\101\055\103\104\055\124\060\061
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\115\060\202\003\065\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061\016
\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061\021
\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145
\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\151\145\163\061\027\060\025\006\003\125\004\003\023\016
\101\144\155\151\156\103\101\055\103\104\055\124\060\061\060\036
\027\015\060\066\060\061\062\065\061\063\063\066\061\071\132\027
\015\061\066\060\061\062\065\061\062\063\066\061\071\132\060\155
\061\013\060\011\006\003\125\004\006\023\002\103\110\061\016\060
\014\006\003\125\004\012\023\005\141\144\155\151\156\061\021\060
\017\006\003\125\004\013\023\010\123\145\162\166\151\143\145\163
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\027\060\025\006\003\125\004\003\023\016\101
\144\155\151\156\103\101\055\103\104\055\124\060\061\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\322\064
\045\061\231\251\054\070\125\370\143\121\365\060\050\110\331\136
\046\004\001\343\020\027\044\102\320\177\237\362\110\307\350\024
\016\014\232\062\252\141\164\044\007\243\006\076\344\012\301\037
\127\105\024\217\177\255\157\251\277\030\076\307\143\106\150\051
\157\041\301\161\107\171\267\103\174\105\176\260\105\225\047\074
\305\276\154\040\250\331\132\200\123\205\305\156\171\134\332\001
\312\151\251\264\301\324\355\154\024\327\022\113\364\211\342\007
\177\020\237\027\025\352\112\304\253\353\102\044\027\375\277\305
\272\300\201\137\320\017\234\207\223\242\036\361\367\200\125\154
\042\345\113\132\026\253\156\340\270\205\022\035\220\063\054\154
\073\054\365\071\313\312\316\103\066\203\316\367\267\050\204\356
\074\314\201\223\376\133\015\355\211\271\066\027\337\236\351\227
\242\007\176\323\054\351\225\266\370\051\232\274\054\341\370\210
\254\123\127\021\204\226\005\132\324\115\271\374\325\116\073\311
\154\316\201\376\137\020\163\364\355\264\125\345\003\202\314\051
\275\366\243\142\232\306\313\350\041\273\235\076\374\011\002\003
\001\000\001\243\201\367\060\201\364\060\022\006\003\125\035\023
\001\001\377\004\010\060\006\001\001\377\002\001\000\060\201\256
\006\003\125\035\040\004\201\246\060\201\243\060\201\240\006\010
\140\205\164\001\021\003\025\001\060\201\223\060\110\006\010\053
\006\001\005\005\007\002\002\060\074\032\072\124\150\151\163\040
\151\163\040\164\150\145\040\101\144\155\151\156\103\101\055\103
\104\055\124\060\061\040\103\145\162\164\151\146\151\143\141\164

\145\040\120\162\141\143\164\151\143\145\040\123\164\141\164\145
\155\145\156\164\056\060\107\006\010\053\006\001\005\005\007\002
\001\026\073\150\164\164\160\072\057\057\167\167\167\056\160\153
\151\056\141\144\155\151\156\056\143\150\057\160\157\154\151\143
\171\057\103\120\123\137\062\137\061\066\137\067\065\066\137\061
\137\061\067\137\063\137\062\061\137\061\056\160\144\146\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035
\006\003\125\035\016\004\026\004\024\052\304\151\012\241\306\125
\306\003\156\160\316\206\201\263\244\017\252\031\333\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\237\176\172\155\273\254\214\216\140\224\145\321\103\120\321
\277\155\152\101\375\022\342\315\306\037\046\146\355\312\235\072
\101\145\170\316\364\002\260\123\372\103\217\344\331\273\256\124
\200\027\045\140\022\111\201\164\350\073\263\333\145\134\051\124
\311\346\105\236\236\224\021\204\124\162\050\317\067\300\365\125
\243\121\053\243\310\120\346\351\014\024\023\320\057\244\001\374
\106\367\076\057\333\324\364\113\024\370\262\000\035\013\374\120
\027\053\371\360\132\175\154\371\373\243\013\212\300\247\062\010
\175\127\113\050\277\006\236\027\024\102\345\054\346\242\200\026
\116\377\017\235\074\034\370\025\302\122\165\230\324\370\026\211
\320\115\347\050\010\307\225\050\116\346\213\201\111\231\332\047
\075\351\372\171\060\331\154\250\337\253\072\033\020\212\321\166
\344\110\376\071\212\170\210\033\201\146\303\006\144\242\166\005
\312\224\047\264\166\361\332\202\373\265\104\020\143\103\303\243
\306\306\004\307\017\313\361\266\217\347\134\212\246\121\226\311
\337\200\314\265\321\040\263\103\323\024\307\335\261\120\155\225
\172
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "AdminCA-CD-T01"
Issuer: CN=AdminCA-CD-T01,OU=Certification Authorities,OU=Services,O=admin,C=CH
Serial Number: 1 (0x1)
Subject: CN=AdminCA-CD-T01,OU=Certification Authorities,OU=Services,O=admin,C=CH
Not Valid Before: Wed Jan 25 13:36:19 2006
Not Valid After: Mon Jan 25 12:36:19 2016
Fingerprint (MD5): 5b:9e:fd:3b:60:35:ea:68:8e:52:fe:13:19:14:4a:a3
Fingerprint (SHA1): 6b:81:44:6a:5c:dd:f4:74:a0:f8:00:ff:be:69:fd:0d:b6:28:75:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AdminCA-CD-T01"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\153\201\104\152\134\335\364\164\240\370\000\377\276\151\375\015
\266\050\165\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\236\375\073\140\065\352\150\216\122\376\023\031\024\112\243
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\155\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\027\060\025\006\003\125\004\003\023
\016\101\144\155\151\156\103\101\055\103\104\055\124\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Admin-Root-CA"
Issuer: CN=Admin-Root-CA,OU=Certification Authorities,OU=Services,O=admin,C=ch
Serial Number:3b:f3:81:d0
Subject: CN=Admin-Root-CA,OU=Certification Authorities,OU=Services,O=admin,C=ch
#
 Not Valid Before: Thu Nov 15 08:51:07 2001
Not Valid After: Wed Nov 10 07:51:07 2021
Fingerprint (MD5): f3:7e:3a:13:dc:74:63:06:74:1a:3c:38:32:8c:fb:a9
Fingerprint (SHA1): 25:3f:77:5b:0e:77:97:ab:64:5f:15:91:55:97:c3:9e:26:36:31:d1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Admin-Root-CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\026\060\024\006\003\125\004\003\023
\015\101\144\155\151\156\055\122\157\157\164\055\103\101

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\026\060\024\006\003\125\004\003\023
\015\101\144\155\151\156\055\122\157\157\164\055\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\073\363\201\320
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\125\060\202\004\075\240\003\002\001\002\002\004\073
\363\201\320\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\154\061\013\060\011\006\003\125\004\006\023\002\143
\150\061\016\060\014\006\003\125\004\012\023\005\141\144\155\151
\156\061\021\060\017\006\003\125\004\013\023\010\123\145\162\166
\151\143\145\163\061\042\060\040\006\003\125\004\013\023\031\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\151\145\163\061\026\060\024\006\003\125\004
\003\023\015\101\144\155\151\156\055\122\157\157\164\055\103\101
\060\036\027\015\060\061\061\061\061\065\060\070\065\061\060\067
\132\027\015\062\061\061\061\061\060\060\067\065\061\060\067\132
\060\154\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\026\060\024\006\003\125\004\003\023
\015\101\144\155\151\156\055\122\157\157\164\055\103\101\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\313
\340\257\104\024\042\376\152\027\111\362\135\235\317\134\002\142
\013\200\271\132\277\250\125\063\173\243\022\044\136\114\157\073
\101\211\116\203\075\237\263\225\046\064\246\314\022\364\314\235
\207\136\075\014\015\027\057\205\046\076\052\046\131\163\241\250
\274\073\353\345\106\270\363\131\173\040\261\136\100\001\155\272
\147\263\153\353\357\305\342\371\065\335\014\152\006\266\232\050
\232\160\263\100\051\166\300\161\106\021\153\103\257\345\126\101
\373\346\034\071\203\115\267\366\242\261\146\311\250\015\262\360
\167\276\066\301\040\047\062\271\314\327\132\312\366\027\101\066
\115\373\273\125\201\143\234\223\136\203\153\177\270\025\167\162
\174\175\115\011\153\131\225\346\355\060\253\104\106\331\025\001
\245\133\211\145\266\340\050\331\050\010\225\176\010\043\262\042

\350\337\045\114\074\150\367\156\347\113\307\220\375\204\101\046
\276\134\203\072\327\043\171\267\032\370\007\031\202\132\151\130
\305\377\210\162\053\307\276\370\323\055\063\167\247\026\022\250
\213\041\306\102\256\172\144\257\362\263\300\355\167\344\151\002
\003\001\000\001\243\202\001\375\060\202\001\371\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\201\231
\006\003\125\035\040\004\201\221\060\201\216\060\201\213\006\010
\140\205\164\001\021\003\001\000\060\177\060\053\006\010\053\006
\001\005\005\007\002\002\060\037\032\035\124\150\151\163\040\151
\163\040\164\150\145\040\101\144\155\151\156\055\122\157\157\164
\055\103\101\040\103\120\123\060\120\006\010\053\006\001\005\005
\007\002\001\026\104\150\164\164\160\072\057\057\167\167\167\056
\151\156\146\157\162\155\141\164\151\153\056\141\144\155\151\156
\056\143\150\057\120\113\111\057\154\151\156\153\163\057\103\120
\123\137\062\137\061\066\137\067\065\066\137\061\137\061\067\137
\063\137\061\137\060\056\160\144\146\060\177\006\003\125\035\037
\004\170\060\166\060\164\240\162\240\160\244\156\060\154\061\026
\060\024\006\003\125\004\003\023\015\101\144\155\151\156\055\122
\157\157\164\055\103\101\061\042\060\040\006\003\125\004\013\023
\031\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\151\145\163\061\021\060\017\006\003
\125\004\013\023\010\123\145\162\166\151\143\145\163\061\016\060
\014\006\003\125\004\012\023\005\141\144\155\151\156\061\013\060
\011\006\003\125\004\006\023\002\143\150\060\035\006\003\125\035
\016\004\026\004\024\202\237\372\043\163\040\361\227\213\262\114
\115\276\102\305\177\146\315\144\350\060\201\231\006\003\125\035
\043\004\201\221\060\201\216\200\024\202\237\372\043\163\040\361
\227\213\262\114\115\276\102\305\177\146\315\144\350\241\160\244
\156\060\154\061\013\060\011\006\003\125\004\006\023\002\143\150
\061\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156
\061\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151
\143\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\151\145\163\061\026\060\024\006\003\125\004\003
\023\015\101\144\155\151\156\055\122\157\157\164\055\103\101\202
\004\073\363\201\320\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\170\117\172\134\046\021\247
\056\256\232\103\312\134\065\202\106\176\310\066\217\172\146\265
\251\062\010\034\014\344\156\241\361\310\301\324\344\200\347\214
\275\143\261\014\337\362\271\076\302\013\161\100\151\106\243\154
\364\133\017\015\041\104\307\052\053\075\032\013\300\240\301\314
\210\312\034\077\254\122\266\366\147\315\114\155\304\276\043\375
\101\053\004\156\167\245\026\170\351\233\134\043\317\201\032\006
\041\143\152\334\051\121\262\072\371\233\367\135\261\055\365\004
\027\006\177\234\350\067\205\055\356\061\274\056\001\370\304\353
\153\216\064\305\071\071\366\224\230\273\037\016\036\021\057\250
\214\007\012\110\242\214\152\231\205\064\267\052\141\205\170\032

\051\151\037\235\045\120\121\004\312\027\303\071\070\007\161\347
\321\230\233\325\321\030\025\226\274\342\363\311\147\053\361\011
\262\316\234\364\103\046\001\372\127\153\220\251\261\276\350\065
\325\151\377\360\071\025\116\274\137\360\317\073\364\276\043\077
\105\146\304\264\226\135\276\217\015\336\307\155\011\102\363\211
\371\361\077\365\164\117\337\270\145
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Admin-Root-CA"
Issuer: CN=Admin-Root-CA,OU=Certification Authorities,OU=Services,O=admin,C=ch
Serial Number:3b:f3:81:d0
Subject: CN=Admin-Root-CA,OU=Certification Authorities,OU=Services,O=admin,C=ch
Not Valid Before: Thu Nov 15 08:51:07 2001
Not Valid After: Wed Nov 10 07:51:07 2021
Fingerprint (MD5): f3:7e:3a:13:dc:74:63:06:74:1a:3c:38:32:8c:fb:a9
Fingerprint (SHA1): 25:3f:77:5b:0e:77:97:ab:64:5f:15:91:55:97:c3:9e:26:36:31:d1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Admin-Root-CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\045\077\167\133\016\167\227\253\144\137\025\221\125\227\303\236
\046\066\061\321
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\363\176\072\023\334\164\143\006\164\032\074\070\062\214\373\251
END
CKA_ISSUER MULTILINE_OCTAL
\060\154\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\016\060\014\006\003\125\004\012\023\005\141\144\155\151\156\061
\021\060\017\006\003\125\004\013\023\010\123\145\162\166\151\143
\145\163\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\026\060\024\006\003\125\004\003\023
\015\101\144\155\151\156\055\122\157\157\164\055\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\073\363\201\320
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs
- Sürüm 3"
Issuer: CN=TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3,OU=Kamu Sertifikasyon Merkezi,OU=Ulusal Elektronik ve Kriptoloji Aratrma Enstitüsü - UEKAE,O=Türkiye Bilimsel ve Teknolojik Aratrma Kurumu - TÜBTAK,L=Gebze - Kocaeli,C=TR
Serial Number: 17 (0x11)
Subject: CN=TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3,OU=Kamu Sertifikasyon Merkezi,OU=Ulusal Elektronik ve Kriptoloji Aratrma Enstitüsü - UEKAE,O=Türkiye Bilimsel ve Teknolojik Aratrma Kurumu - TÜBTAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Fri Aug 24 11:37:07 2007
Not Valid After: Mon Aug 21 11:37:07 2017
Fingerprint (MD5): ed:41:f5:8c:50:c5:2b:9c:73:e6:ee:6c:eb:c2:a8:26
Fingerprint (SHA1): 1b:4b:39:61:26:27:6b:64:91:a2:68:6d:d7:02:43:21:2d:1f:1d:96
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3"
CKA_CERTIFICATE_TYPE
CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\202\001\053\061\013\060\011\006\003\125\004\006\023\002\124
\122\061\030\060\026\006\003\125\004\007\014\017\107\145\142\172
\145\040\055\040\113\157\143\141\145\154\151\061\107\060\105\006
\003\125\004\012\014\076\124\303\274\162\153\151\171\145\040\102
\151\154\151\155\163\145\154\040\166\145\040\124\145\153\156\157
\154\157\152\151\153\040\101\162\141\305\237\164\304\261\162\155
\141\040\113\165\162\165\155\165\040\055\040\124\303\234\102\304
\260\124\101\113\061\110\060\106\006\003\125\004\013\014\077\125
\154\165\163\141\154\040\105\154\145\153\164\162\157\156\151\153
\040\166\145\040\113\162\151\160\164\157\154\157\152\151\040\101
\162\141\305\237\164\304\261\162\155\141\040\105\156\163\164\151
\164\303\274\163\303\274\040\055\040\125\105\113\101\105\061\043
\060\041\006\003\125\004\013\014\032\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\061\112\060\110\006\003\125\004\003\014\101\124\303
\234\102\304\260\124\101\113\040\125\105\113\101\105\040\113\303
\266\153\040\123\145\162\164\151\146\151\153\141\040\110\151\172
\155\145\164\040\123\141\304\237\154\141\171\304\261\143\304\261
\163\304\261\040\055\040\123\303\274\162\303\274\155\040\063
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\202\001\053\061\013\060\011\006\003\125\004\006\023\002\124
\122\061\030\060\026\006\003\125\004\007\014\017\107\145\142\172
\145\040\055\040\113\157\143\141\145\154\151\061\107\060\105\006
\003\125\004\012\014\076\124\303\274\162\153\151\171\145\040\102
\151\154\151\155\163\145\154\040\166\145\040\124\145\153\156\157
\154\157\152\151\153\040\101\162\141\305\237\164\304\261\162\155
\141\040\113\165\162\165\155\165\040\055\040\124\303\234\102\304
\260\124\101\113\061\110\060\106\006\003\125\004\013\014\077\125
\154\165\163\141\154\040\105\154\145\153\164\162\157\156\151\153
\040\166\145\040\113\162\151\160\164\157\154\157\152\151\040\101
\162\141\305\237\164\304\261\162\155\141\040\105\156\163\164\151
\164\303\274\163\303\274\040\055\040\125\105\113\101\105\061\043
\060\041\006\003\125\004\013\014\032\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\061\112\060\110\006\003\125\004\003\014\101\124\303
\234\102\304\260\124\101\113\040\125\105\113\101\105\040\113\303
\266\153\040\123\145\162\164\151\146\151\153\141\040\110\151\172
\155\145\164\040\123\141\304\237\154\141\171\304\261\143\304\261
\163\304\261\040\055\040\123\303\274\162\303\274\155\040\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\021
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\027\060\202\003\377\240\003\002\001\002\002\001\021
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\202\001\053\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\030\060\026\006\003\125\004\007\014\017\107\145\142\172\145
\040\055\040\113\157\143\141\145\154\151\061\107\060\105\006\003
\125\004\012\014\076\124\303\274\162\153\151\171\145\040\102\151
\154\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154
\157\152\151\153\040\101\162\141\305\237\164\304\261\162\155\141
\040\113\165\162\165\155\165\040\055\040\124\303\234\102\304\260
\124\101\113\061\110\060\106\006\003\125\004\013\014\077\125\154
\165\163\141\154\040\105\154\145\153\164\162\157\156\151\153\040
\166\145\040\113\162\151\160\164\157\154\157\152\151\040\101\162
\141\305\237\164\304\261\162\155\141\040\105\156\163\164\151\164
\303\274\163\303\274\040\055\040\125\105\113\101\105\061\043\060
\041\006\003\125\004\013\014\032\113\141\155\165\040\123\145\162
\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145
\172\151\061\112\060\110\006\003\125\004\003\014\101\124\303\234
\102\304\260\124\101\113\040\125\105\113\101\105\040\113\303\266
\153\040\123\145\162\164\151\146\151\153\141\040\110\151\172\155
\145\164\040\123\141\304\237\154\141\171\304\261\143\304\261\163
\304\261\040\055\040\123\303\274\162\303\274\155\040\063\060\036
\027\015\060\067\060\070\062\064\061\061\063\067\060\067\132\027
\015\061\067\060\070\062\061\061\061\063\067\060\067\132\060\202

\001\053\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\030\060\026\006\003\125\004\007\014\017\107\145\142\172\145\040
\055\040\113\157\143\141\145\154\151\061\107\060\105\006\003\125
\004\012\014\076\124\303\274\162\153\151\171\145\040\102\151\154
\151\155\163\145\154\040\166\145\040\124\145\153\156\157\154\157
\152\151\153\040\101\162\141\305\237\164\304\261\162\155\141\040
\113\165\162\165\155\165\040\055\040\124\303\234\102\304\260\124
\101\113\061\110\060\106\006\003\125\004\013\014\077\125\154\165
\163\141\154\040\105\154\145\153\164\162\157\156\151\153\040\166
\145\040\113\162\151\160\164\157\154\157\152\151\040\101\162\141
\305\237\164\304\261\162\155\141\040\105\156\163\164\151\164\303
\274\163\303\274\040\055\040\125\105\113\101\105\061\043\060\041
\006\003\125\004\013\014\032\113\141\155\165\040\123\145\162\164
\151\146\151\153\141\163\171\157\156\040\115\145\162\153\145\172
\151\061\112\060\110\006\003\125\004\003\014\101\124\303\234\102
\304\260\124\101\113\040\125\105\113\101\105\040\113\303\266\153
\040\123\145\162\164\151\146\151\153\141\040\110\151\172\155\145
\164\040\123\141\304\237\154\141\171\304\261\143\304\261\163\304
\261\040\055\040\123\303\274\162\303\274\155\040\063\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\212\155
\113\377\020\210\072\303\366\176\224\350\352\040\144\160\256\041
\201\276\072\173\074\333\361\035\122\177\131\372\363\042\114\225
\240\220\274\110\116\021\253\373\267\265\215\172\203\050\214\046
\106\330\116\225\100\207\141\237\305\236\155\201\207\127\154\212
\073\264\146\352\314\100\374\343\252\154\262\313\001\333\062\277
\322\353\205\317\241\015\125\303\133\070\127\160\270\165\306\171
\321\024\060\355\033\130\133\153\357\065\362\241\041\116\305\316
\174\231\137\154\271\270\042\223\120\247\315\114\160\152\276\152
\005\177\023\234\053\036\352\376\107\316\004\245\157\254\223\056
\174\053\237\236\171\023\221\350\352\236\312\070\165\216\142\260
\225\223\052\345\337\351\136\227\156\040\137\137\204\172\104\071
\031\100\034\272\125\053\373\060\262\201\357\204\343\334\354\230
\070\071\003\205\010\251\124\003\005\051\360\311\217\213\352\013
\206\145\031\021\323\351\011\043\336\150\223\003\311\066\034\041
\156\316\214\146\361\231\060\330\327\263\303\035\370\201\056\250
\275\202\013\146\376\202\313\341\340\032\202\303\100\201\002\003
\001\000\001\243\102\060\100\060\035\006\003\125\035\016\004\026
\004\024\275\210\207\311\217\366\244\012\013\252\353\305\376\221
\043\235\253\112\212\062\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\035\174\372\111\217
\064\351\267\046\222\026\232\005\164\347\113\320\155\071\154\303
\046\366\316\270\061\274\304\337\274\052\370\067\221\030\334\004
\310\144\231\053\030\155\200\003\131\311\256\370\130\320\076\355
\303\043\237\151\074\206\070\034\236\357\332\047\170\321\204\067
\161\212\074\113\071\317\176\105\006\326\055\330\212\115\170\022

\326\255\302\323\313\322\320\101\363\046\066\112\233\225\154\014
\356\345\321\103\047\146\301\210\367\172\263\040\154\352\260\151
\053\307\040\350\014\003\304\101\005\231\342\077\344\153\370\240
\206\201\307\204\306\037\325\113\201\022\262\026\041\054\023\241
\200\262\136\014\112\023\236\040\330\142\100\253\220\352\144\112
\057\254\015\001\022\171\105\250\057\207\031\150\310\342\205\307
\060\262\165\371\070\077\262\300\223\264\153\342\003\104\316\147
\240\337\211\326\255\214\166\243\023\303\224\141\053\153\331\154
\301\007\012\042\007\205\154\205\044\106\251\276\077\213\170\204
\202\176\044\014\235\375\201\067\343\045\250\355\066\116\225\054
\311\234\220\332\354\251\102\074\255\266\002
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3"
Issuer: CN=TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3,OU=Kamu Sertifikasyon Merkezi,OU=Ulusal Elektronik ve Kriptoloji Aratrma Enstitüsü - UEKAE,O=Türkiye Bilimsel ve Teknolojik Aratrma Kurumu - TÜBTAK,L=Gebze - Kocaeli,C=TR
Serial Number: 17 (0x11)
Subject: CN=TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3,OU=Kamu Sertifikasyon Merkezi,OU=Ulusal Elektronik ve Kriptoloji Aratrma Enstitüsü - UEKAE,O=Türkiye Bilimsel ve Teknolojik Aratrma Kurumu - TÜBTAK,L=Gebze - Kocaeli,C=TR
Not Valid Before: Fri Aug 24 11:37:07 2007
Not Valid After: Mon Aug 21 11:37:07 2017
Fingerprint (MD5): ed:41:f5:8c:50:c5:2b:9c:73:e6:ee:6c:eb:c2:a8:26
Fingerprint (SHA1): 1b:4b:39:61:26:27:6b:64:91:a2:68:6d:d7:02:43:21:2d:1f:1d:96
CKA_CLASS CK_OBJECT_CLASS
CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "TÜBTAK UEKAE Kök Sertifika Hizmet Salaycs - Sürüm 3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\033\113\071\141\046\047\153\144\221\242\150\155\327\002\103\041
\055\037\035\226
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\355\101\365\214\120\305\053\234\163\346\356\154\353\302\250\046
END
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\053\061\013\060\011\006\003\125\004\006\023\002\124
\122\061\030\060\026\006\003\125\004\007\014\017\107\145\142\172
\145\040\055\040\113\157\143\141\145\154\151\061\107\060\105\006

\003\125\004\012\014\076\124\303\274\162\153\151\171\145\040\102
\151\154\151\155\163\145\154\040\166\145\040\124\145\153\156\157
\154\157\152\151\153\040\101\162\141\305\237\164\304\261\162\155
\141\040\113\165\162\165\155\165\040\055\040\124\303\234\102\304
\260\124\101\113\061\110\060\106\006\003\125\004\013\014\077\125
\154\165\163\141\154\040\105\154\145\153\164\162\157\156\151\153
\040\166\145\040\113\162\151\160\164\157\154\157\152\151\040\101
\162\141\305\237\164\304\261\162\155\141\040\105\156\163\164\151
\164\303\274\163\303\274\040\055\040\125\105\113\101\105\061\043
\060\041\006\003\125\004\013\014\032\113\141\155\165\040\123\145
\162\164\151\146\151\153\141\163\171\157\156\040\115\145\162\153
\145\172\151\061\112\060\110\006\003\125\004\003\014\101\124\303
\234\102\304\260\124\101\113\040\125\105\113\101\105\040\113\303
\266\153\040\123\145\162\164\151\146\151\153\141\040\110\151\172
\155\145\164\040\123\141\304\237\154\141\171\304\261\143\304\261
\163\304\261\040\055\040\123\303\274\162\303\274\155\040\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\021
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Halcom
CA FO"
Issuer: CN=Halcom CA FO,O=Halcom,C=SI
Serial Number: 113253 (0x1ba65)
Subject: CN=Halcom CA FO,O=Halcom,C=SI
Not Valid Before: Sun Jun 05 10:33:31 2005
Not Valid After: Fri Jun 05 10:33:31 2020
Fingerprint (MD5): 0b:09:2c:1c:d7:21:86:6f:94:37:6f:e6:a7:f3:22:4d
Fingerprint (SHA1): 04:09:56:5b:77:da:58:2e:64:95:ac:00:60:a7:23:54:e6:4b:01:92
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Halcom CA FO"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\065\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\025\060\023\006\003\125\004\003\023\014\110\141\154\143\157
\155\040\103\101\040\106\117
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\065\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\025\060\023\006\003\125\004\003\023\014\110\141\154\143\157
\155\040\103\101\040\106\117
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\001\272\145
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\032\060\202\002\002\240\003\002\001\002\002\003\001
\272\145\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\065\061\013\060\011\006\003\125\004\006\023\002\123\111
\061\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157
\155\061\025\060\023\006\003\125\004\003\023\014\110\141\154\143
\157\155\040\103\101\040\106\117\060\036\027\015\060\065\060\066
\060\065\061\060\063\063\063\061\132\027\015\062\060\060\066\060
\065\061\060\063\063\063\061\132\060\065\061\013\060\011\006\003
\125\004\006\023\002\123\111\061\017\060\015\006\003\125\004\012
\023\006\110\141\154\143\157\155\061\025\060\023\006\003\125\004
\003\023\014\110\141\154\143\157\155\040\103\101\040\106\117\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\274\243\046\001\226\345\235\254\032\002\002\071\174\254\334\006
\114\067\112\256\007\110\165\350\047\034\244\061\375\012\247\043
\135\174\077\016\372\360\214\221\157\125\064\204\003\164\314\003
\065\170\315\161\301\107\033\273\352\041\156\270\007\336\041\222
\252\254\271\336\067\242\037\364\232\034\033\310\356\020\203\326
\123\103\310\335\351\363\220\106\071\162\012\116\374\022\051\111
\201\130\046\072\161\023\014\173\123\217\337\146\162\074\027\334
\336\341\171\112\237\351\140\076\155\065\344\115\121\321\034\300
\032\060\134\006\077\163\103\310\315\066\364\036\302\207\214\117
\110\237\332\165\127\052\114\257\215\124\074\104\137\230\074\120
\332\320\030\006\174\140\156\322\204\377\147\205\220\075\136\306
\353\330\172\243\265\155\014\276\165\270\251\332\126\161\066\132
\356\353\111\123\076\342\031\166\174\102\253\241\220\361\367\057
\270\272\112\101\264\053\244\056\141\066\347\326\332\177\365\237
\215\270\113\133\204\065\120\305\275\005\252\252\302\014\164\101
\143\127\031\216\377\341\106\346\173\005\044\376\231\335\061\275
\002\003\001\000\001\243\063\060\061\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\021\006\003\125\035
\016\004\012\004\010\110\040\034\142\015\130\122\045\060\013\006
\003\125\035\017\004\004\003\002\001\006\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\133\165
\365\346\060\106\130\212\367\017\321\117\013\001\130\004\271\144
\344\060\015\076\166\331\153\023\255\034\156\311\114\360\154\346

\102\021\375\353\203\357\120\330\273\124\235\264\221\212\132\265
\204\017\214\106\315\074\202\250\245\036\040\234\320\365\101\006
\312\001\053\230\260\352\051\120\037\342\164\173\131\202\312\012
\345\156\116\256\260\067\355\076\314\272\062\331\077\013\150\054
\262\323\074\334\070\305\021\326\033\063\356\271\242\152\104\223
\033\120\352\141\033\171\127\121\126\236\062\320\063\170\264\317
\107\052\373\367\315\361\347\155\340\272\144\373\025\233\276\312
\261\362\107\001\177\340\114\267\245\101\254\036\331\032\154\221
\341\320\250\112\303\136\170\053\172\200\300\117\315\045\137\120
\047\306\274\130\165\234\035\265\232\135\225\163\363\204\146\323
\315\155\035\315\340\132\316\040\070\357\222\163\170\136\002\326
\215\371\164\324\267\211\330\214\373\173\325\213\161\325\031\027
\046\330\044\111\074\125\274\202\207\332\143\273\071\327\216\221
\317\064\160\134\163\117\320\120\107\132\373\345\132\121
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Halcom CA FO"
Issuer: CN=Halcom CA FO,O=Halcom,C=SI
Serial Number: 113253 (0x1ba65)
Subject: CN=Halcom CA FO,O=Halcom,C=SI
Not Valid Before: Sun Jun 05 10:33:31 2005
Not Valid After: Fri Jun 05 10:33:31 2020
Fingerprint (MD5): 0b:09:2c:1c:d7:21:86:6f:94:37:6f:e6:a7:f3:22:4d
Fingerprint (SHA1): 04:09:56:5b:77:da:58:2e:64:95:ac:00:60:a7:23:54:e6:4b:01:92
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Halcom CA FO"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\004\011\126\133\167\332\130\056\144\225\254\000\140\247\043\124
\346\113\001\222
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\013\011\054\034\327\041\206\157\224\067\157\346\247\363\042\115
END
CKA_ISSUER MULTILINE_OCTAL
\060\065\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\025\060\023\006\003\125\004\003\023\014\110\141\154\143\157
\155\040\103\101\040\106\117
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\272\145
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Halcom CA PO 2"
Issuer:
 CN=Halcom CA PO 2,O=Halcom,C=SI
Serial Number: 79074 (0x134e2)
Subject: CN=Halcom CA PO 2,O=Halcom,C=SI
Not Valid Before: Sat Feb 07 18:33:31 2004
Not Valid After: Thu Feb 07 18:33:31 2019
Fingerprint (MD5): 1d:64:96:af:2d:82:1a:30:0b:a0:62:0d:76:bc:53:aa
Fingerprint (SHA1): 7f:bb:6a:cd:7e:0a:b4:38:da:af:6f:d5:02:10:d0:07:c6:c0:82:9c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Halcom CA PO 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\103\101\040\120\117\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\103\101\040\120\117\040\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\001\064\342
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\031\060\202\001\202\240\003\002\001\002\002\003\001
\064\342\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111
\061\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157
\155\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143
\157\155\040\103\101\040\120\117\040\062\060\036\027\015\060\064

\060\062\060\067\061\070\063\063\063\061\132\027\015\061\071\060
\062\060\067\061\070\063\063\063\061\132\060\067\061\013\060\011
\006\003\125\004\006\023\002\123\111\061\017\060\015\006\003\125
\004\012\023\006\110\141\154\143\157\155\061\027\060\025\006\003
\125\004\003\023\016\110\141\154\143\157\155\040\103\101\040\120
\117\040\062\060\201\237\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\201\215\000\060\201\211\002\201\201\000
\224\027\362\111\067\060\062\011\010\074\276\365\067\267\164\154
\020\073\313\042\161\007\006\271\306\354\332\110\363\237\047\155
\144\215\125\336\171\107\120\373\150\316\171\001\276\247\033\366
\141\255\175\061\013\123\040\255\061\361\133\316\043\372\377\314
\022\002\132\000\234\374\315\153\022\122\350\254\324\063\073\163
\046\020\161\220\100\277\003\210\337\274\137\041\015\214\326\212
\223\037\347\256\025\124\306\114\344\231\141\222\340\367\215\162
\307\334\142\023\063\243\076\111\051\373\204\277\160\072\221\041
\002\003\001\000\001\243\063\060\061\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\021\006\003\125\035
\016\004\012\004\010\110\257\127\146\277\322\300\002\060\013\006
\003\125\035\017\004\004\003\002\001\006\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\201\201\000\220\026\127
\166\270\171\316\374\304\321\067\000\242\315\377\070\007\021\163
\023\005\111\355\337\301\305\316\306\100\330\367\002\226\015\267
\157\021\204\070\146\373\161\367\020\001\147\174\135\175\044\332
\366\144\073\010\200\110\246\116\275\104\342\260\007\062\217\174
\206\067\106\157\300\203\003\223\265\364\363\022\174\243\350\313
\342\072\043\170\372\150\157\376\130\312\014\247\127\121\055\142
\220\371\344\250\334\365\312\337\016\207\121\156\067\165\046\016
\327\176\170\212\003\242\225\031\266\136\221\001\126
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Halcom CA PO 2"
Issuer: CN=Halcom CA PO 2,O=Halcom,C=SI
Serial Number: 79074 (0x134e2)
Subject: CN=Halcom CA PO 2,O=Halcom,C=SI
Not Valid Before: Sat Feb 07 18:33:31 2004
Not Valid After: Thu Feb 07 18:33:31 2019
Fingerprint (MD5): 1d:64:96:af:2d:82:1a:30:0b:a0:62:0d:76:bc:53:aa
Fingerprint (SHA1): 7f:bb:6a:cd:7e:0a:b4:38:da:af:6f:d5:02:10:d0:07:c6:c0:82:9c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Halcom CA PO 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\177\273\152\315\176\012\264\070\332\257\157\325\002\020\320\007
\306\300\202\234
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\035\144\226\257\055\202\032\060\013\240\142\015\166\274\123\252
END
CKA_ISSUER MULTILINE_OCTAL
\060\067\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\017\060\015\006\003\125\004\012\023\006\110\141\154\143\157\155
\061\027\060\025\006\003\125\004\003\023\016\110\141\154\143\157
\155\040\103\101\040\120\117\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\001\064\342
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ACNLB"
Issuer: O=ACNLB,C=SI
Serial Number:3e:c3:86:8e
#
 Subject: O=ACNLB,C=SI
Not Valid Before: Thu May 15 11:52:45 2003
Not Valid After: Mon May 15 12:22:45 2023
Fingerprint (MD5): ba:92:64:42:16:1f:cb:a1:16:48:1a:f6:40:5c:59:87
Fingerprint (SHA1): 04:56:f2:3d:1e:9c:43:ae:cb:0d:80:7f:1c:06:47:55:1a:05:f4:56
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACNLB"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\035\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\016\060\014\006\003\125\004\012\023\005\101\103\116\114\102
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\035\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\016\060\014\006\003\125\004\012\023\005\101\103\116\114\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\004\076\303\206\216
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\267\060\202\002\237\240\003\002\001\002\002\004\076
\303\206\216\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\035\061\013\060\011\006\003\125\004\006\023\002\123
\111\061\016\060\014\006\003\125\004\012\023\005\101\103\116\114
\102\060\036\027\015\060\063\060\065\061\065\061\061\065\062\064
\065\132\027\015\062\063\060\065\061\065\061\062\062\062\064\065
\132\060\035\061\013\060\011\006\003\125\004\006\023\002\123\111
\061\016\060\014\006\003\125\004\012\023\005\101\103\116\114\102
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\277\166\165\075\014\174\100\072\146\137\115\214\373\335\074
\056\376\175\224\144\355\112\324\111\110\241\356\221\161\262\171
\310\216\053\037\252\360\062\264\050\262\243\302\165\117\244\351
\246\032\366\242\146\141\043\047\141\054\156\027\220\013\372\336
\036\161\122\002\051\004\231\171\254\300\260\300\146\230\230\021
\067\144\020\317\234\274\073\102\034\051\134\125\220\366\172\042
\116\126\257\067\150\277\164\072\154\074\306\230\314\140\041\277
\342\010\047\344\331\053\274\343\204\225\327\324\044\140\374\176
\055\057\235\041\353\235\221\306\273\244\321\353\311\022\255\243
\350\310\265\177\125\113\353\231\002\124\304\201\034\014\256\071
\344\152\172\005\330\116\160\240\372\003\167\263\256\330\270\024
\222\373\101\167\023\065\152\267\242\312\210\113\255\055\121\274
\166\232\154\273\100\275\347\044\114\042\246\346\375\116\010\173
\235\013\020\326\022\322\246\306\241\144\062\364\001\163\226\201
\342\110\260\301\050\143\075\073\347\147\254\156\305\024\365\027
\023\242\234\037\053\127\360\025\047\165\135\335\261\064\326\223
\021\002\003\001\000\001\243\201\376\060\201\373\060\021\006\011
\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007\060
\077\006\003\125\035\037\004\070\060\066\060\064\240\062\240\060
\244\056\060\054\061\013\060\011\006\003\125\004\006\023\002\123
\111\061\016\060\014\006\003\125\004\012\023\005\101\103\116\114
\102\061\015\060\013\006\003\125\004\003\023\004\103\122\114\061
\060\053\006\003\125\035\020\004\044\060\042\200\017\062\060\060
\063\060\065\061\065\061\061\065\062\064\065\132\201\017\062\060
\062\063\060\065\061\065\061\062\062\062\064\065\132\060\013\006
\003\125\035\017\004\004\003\002\001\006\060\037\006\003\125\035
\043\004\030\060\026\200\024\314\273\273\206\326\157\370\276\264
\107\042\167\263\266\255\327\001\131\226\115\060\035\006\003\125
\035\016\004\026\004\024\314\273\273\206\326\157\370\276\264\107
\042\167\263\266\255\327\001\131\226\115\060\014\006\003\125\035
\023\004\005\060\003\001\001\377\060\035\006\011\052\206\110\206
\366\175\007\101\000\004\020\060\016\033\010\126\066\056\060\072
\064\056\060\003\002\004\220\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\001\001\000\021\147\313\313\232
\153\040\041\335\157\151\203\325\077\015\272\223\025\227\116\160

\166\046\134\350\236\044\347\067\376\074\120\364\324\371\052\057
\014\023\241\135\004\274\320\260\351\302\003\027\205\005\141\075
\300\247\252\166\114\303\270\072\203\251\206\317\003\371\167\016
\053\262\075\166\033\145\321\152\161\140\161\333\273\270\172\216
\362\371\041\203\370\127\114\250\307\335\145\306\356\357\157\263
\266\231\273\264\303\320\253\137\262\240\176\335\164\041\054\303
\132\353\215\241\312\330\360\310\027\355\166\272\204\143\156\133
\271\265\312\155\327\374\064\071\200\057\272\117\337\215\330\374
\030\304\074\212\065\057\167\202\226\255\040\222\030\262\347\066
\364\256\062\164\270\107\321\330\017\330\054\313\152\302\000\165
\371\054\370\102\016\313\376\163\223\251\217\341\307\256\041\067
\363\312\271\014\264\347\211\176\161\034\126\064\040\303\361\064
\271\125\113\323\123\122\361\007\055\053\076\133\031\100\237\020
\355\323\051\063\305\257\017\020\126\207\332\073\310\261\355\070
\331\031\373\113\360\120\055\244\315\324\130
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ACNLB"
Issuer: O=ACNLB,C=SI
#
 Serial Number:3e:c3:86:8e
Subject: O=ACNLB,C=SI
Not Valid Before: Thu May 15 11:52:45 2003
Not Valid After: Mon May 15 12:22:45 2023
Fingerprint (MD5): ba:92:64:42:16:1f:cb:a1:16:48:1a:f6:40:5c:59:87
Fingerprint (SHA1): 04:56:f2:3d:1e:9c:43:ae:cb:0d:80:7f:1c:06:47:55:1a:05:f4:56
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACNLB"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\004\126\362\075\036\234\103\256\313\015\200\177\034\006\107\125
\032\005\364\126
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\272\222\144\102\026\037\313\241\026\110\032\366\100\134\131\207
END
CKA_ISSUER MULTILINE_OCTAL
\060\035\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\016\060\014\006\003\125\004\012\023\005\101\103\116\114\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\004\076\303\206\216
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "state-institutions"
Issuer: OU=sigen-ca,O=state-institutions,C=si
Serial Number:3b:3c:f9:c9
Subject: OU=sigen-ca,O=state-institutions,C=si
Not Valid Before: Fri Jun 29 21:27:46 2001
Not Valid After: Tue Jun 29 21:57:46 2021
Fingerprint (MD5): 49:ef:a6:a1:f0:de:8e:a7:6a:ee:5b:7d:1e:5f:c4:46
Fingerprint (SHA1): 3e:42:a1:87:06:bd:0c:9c:cf:59:47:50:d2:e4:d6:ab:00:48:fd:c4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "state-institutions"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\163\151\061
\033\060\031\006\003\125\004\012\023\022\163\164\141\164\145\055
\151\156\163\164\151\164\165\164\151\157\156\163\061\021\060\017
\006\003\125\004\013\023\010\163\151\147\145\156\055\143\141
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\163\151\061
\033\060\031\006\003\125\004\012\023\022\163\164\141\164\145\055
\151\156\163\164\151\164\165\164\151\157\156\163\061\021\060\017
\006\003\125\004\013\023\010\163\151\147\145\156\055\143\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\073\074\371\311
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\031\060\202\003\001\240\003\002\001\002\002\004\073
\074\371\311\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\075\061\013\060\011\006\003\125\004\006\023\002\163
\151\061\033\060\031\006\003\125\004\012\023\022\163\164\141\164
\145\055\151\156\163\164\151\164\165\164\151\157\156\163\061\021
\060\017\006\003\125\004\013\023\010\163\151\147\145\156\055\143
\141\060\036\027\015\060\061\060\066\062\071\062\061\062\067\064

\066\132\027\015\062\061\060\066\062\071\062\061\065\067\064\066
\132\060\075\061\013\060\011\006\003\125\004\006\023\002\163\151
\061\033\060\031\006\003\125\004\012\023\022\163\164\141\164\145
\055\151\156\163\164\151\164\165\164\151\157\156\163\061\021\060
\017\006\003\125\004\013\023\010\163\151\147\145\156\055\143\141
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\260\345\145\262\300\254\144\226\362\210\033\263\355\236\344
\002\306\117\053\210\316\056\212\121\200\165\257\020\133\362\313
\070\146\233\242\016\155\064\107\226\245\222\021\257\366\065\107
\242\167\042\014\316\026\210\142\252\323\111\156\030\274\056\104
\330\276\306\236\302\032\031\254\101\216\374\060\007\002\362\306
\152\324\133\043\000\357\101\064\330\244\163\143\337\042\222\063
\204\001\245\215\363\203\134\372\270\324\172\065\337\354\370\155
\017\340\114\355\255\234\072\175\206\326\245\010\224\276\175\172
\021\037\376\205\077\124\132\210\143\207\234\245\261\247\116\315
\267\104\163\257\317\212\111\153\037\343\315\327\111\115\132\053
\027\346\134\166\263\273\162\271\157\047\322\233\211\025\210\337
\020\137\166\041\001\152\307\025\061\012\321\234\130\370\050\026
\005\155\331\116\331\241\327\007\040\313\113\046\211\115\222\262
\247\272\226\350\343\130\217\042\234\001\226\132\304\367\061\115
\013\111\265\341\170\141\342\124\030\006\273\236\124\064\176\014
\076\353\356\265\200\037\335\026\204\035\150\070\146\147\163\370
\221\002\003\001\000\001\243\202\001\037\060\202\001\033\060\021
\006\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000
\007\060\137\006\003\125\035\037\004\130\060\126\060\124\240\122
\240\120\244\116\060\114\061\013\060\011\006\003\125\004\006\023
\002\163\151\061\033\060\031\006\003\125\004\012\023\022\163\164
\141\164\145\055\151\156\163\164\151\164\165\164\151\157\156\163
\061\021\060\017\006\003\125\004\013\023\010\163\151\147\145\156
\055\143\141\061\015\060\013\006\003\125\004\003\023\004\103\122
\114\061\060\053\006\003\125\035\020\004\044\060\042\200\017\062
\060\060\061\060\066\062\071\062\061\062\067\064\066\132\201\017
\062\060\062\061\060\066\062\071\062\061\065\067\064\066\132\060
\013\006\003\125\035\017\004\004\003\002\001\006\060\037\006\003
\125\035\043\004\030\060\026\200\024\161\173\212\006\037\061\005
\125\253\140\022\167\107\040\036\003\210\030\354\211\060\035\006
\003\125\035\016\004\026\004\024\161\173\212\006\037\061\005\125
\253\140\022\167\107\040\036\003\210\030\354\211\060\014\006\003
\125\035\023\004\005\060\003\001\001\377\060\035\006\011\052\206
\110\206\366\175\007\101\000\004\020\060\016\033\010\126\065\056
\060\072\064\056\060\003\002\004\220\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\000\272\143
\064\363\030\030\356\256\176\215\222\307\065\365\302\023\324\326
\000\252\041\062\026\326\320\133\372\051\260\215\372\027\167\222
\371\245\266\366\371\207\077\006\017\040\356\142\075\064\367\251
\057\307\251\073\320\047\210\114\254\335\311\251\345\132\130\205
\327\022\065\075\334\260\202\133\162\364\273\163\267\373\376\070

\041\230\004\200\262\210\142\017\036\254\072\026\251\346\263\012
\366\025\020\105\003\243\227\342\315\254\020\334\371\000\036\277
\163\154\103\354\167\042\026\006\057\226\203\211\173\260\270\123
\104\101\010\334\200\037\005\333\031\011\166\207\276\065\235\116
\041\113\264\223\301\150\072\235\137\066\376\241\256\060\054\113
\336\170\044\072\130\326\026\103\357\235\231\070\213\052\230\376
\060\321\302\352\326\257\045\325\245\166\013\271\357\100\071\056
\366\353\337\062\136\035\175\207\265\104\314\002\071\322\046\225
\162\330\157\205\103\250\217\016\243\106\316\327\316\350\271\126
\251\370\211\027\022\037\103\111\006\172\062\347\077\276\157\171
\276\326\063\327\114\074\050\374\022\361\166\166\030
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "state-institutions"
Issuer: OU=sigen-ca,O=state-institutions,C=si
#
 Serial Number:3b:3c:f9:c9
Subject: OU=sigen-ca,O=state-institutions,C=si
Not Valid Before: Fri Jun 29 21:27:46 2001
Not Valid After: Tue Jun 29 21:57:46 2021
Fingerprint (MD5): 49:ef:a6:a1:f0:de:8e:a7:6a:ee:5b:7d:1e:5f:c4:46
Fingerprint (SHA1): 3e:42:a1:87:06:bd:0c:9c:cf:59:47:50:d2:e4:d6:ab:00:48:fd:c4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "state-institutions"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\076\102\241\207\006\275\014\234\317\131\107\120\322\344\326\253
\000\110\375\304
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\111\357\246\241\360\336\216\247\152\356\133\175\036\137\304\106
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\163\151\061
\033\060\031\006\003\125\004\012\023\022\163\164\141\164\145\055
\151\156\163\164\151\164\165\164\151\157\156\163\061\021\060\017
\006\003\125\004\013\023\010\163\151\147\145\156\055\143\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\073\074\371\311

END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SECOM Trust Systems CO.,LTD."
Issuer: OU=Security Communication EV RootCA1,O=SECOM Trust Systems CO.\,LTD.,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication EV RootCA1,O=SECOM Trust Systems CO.\,LTD.,C=JP
Not Valid Before: Wed Jun 06 02:12:32 2007
Not Valid After: Sat Jun 06 02:12:32 2037
Fingerprint (MD5): 22:2d:a6:01:ea:7c:0a:f7:f0:6c:56:43:3f:77:76:d3
Fingerprint (SHA1): fe:b8:c4:32:dc:f9:76:9a:ce:ae:3d:d8:90:8f:fd:28:86:65:64:7d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SECOM Trust Systems CO.,LTD."
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\140\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\052\060\050\006\003\125\004\013\023
\041\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\126\040\122\157\157\164\103
\101\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\140\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\052\060\050\006\003\125\004\013\023
\041\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\126\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\175\060\202\002\145\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\140\061\013\060\011\006\003\125\004\006\023\002\112\120\061\045

\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040\124
\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117\056
\054\114\124\104\056\061\052\060\050\006\003\125\004\013\023\041
\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156\151
\143\141\164\151\157\156\040\105\126\040\122\157\157\164\103\101
\061\060\036\027\015\060\067\060\066\060\066\060\062\061\062\063
\062\132\027\015\063\067\060\066\060\066\060\062\061\062\063\062
\132\060\140\061\013\060\011\006\003\125\004\006\023\002\112\120
\061\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115
\040\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103
\117\056\054\114\124\104\056\061\052\060\050\006\003\125\004\013
\023\041\123\145\143\165\162\151\164\171\040\103\157\155\155\165
\156\151\143\141\164\151\157\156\040\105\126\040\122\157\157\164
\103\101\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\274\177\354\127\233\044\340\376\234\272\102\171
\251\210\212\372\200\340\365\007\051\103\352\216\012\064\066\215
\034\372\247\265\071\170\377\227\165\367\057\344\252\153\004\204
\104\312\246\342\150\216\375\125\120\142\017\244\161\016\316\007
\070\055\102\205\120\255\074\226\157\213\325\242\016\317\336\111
\211\075\326\144\056\070\345\036\154\265\127\212\236\357\110\016
\315\172\151\026\207\104\265\220\344\006\235\256\241\004\227\130
\171\357\040\112\202\153\214\042\277\354\037\017\351\204\161\355
\361\016\344\270\030\023\314\126\066\135\321\232\036\121\153\071
\156\140\166\210\064\013\363\263\321\260\235\312\141\342\144\035
\301\106\007\270\143\335\036\063\145\263\216\011\125\122\075\265
\275\377\007\353\255\141\125\030\054\251\151\230\112\252\100\305
\063\024\145\164\000\371\221\336\257\003\110\305\100\124\334\017
\204\220\150\040\305\222\226\334\056\345\002\105\252\300\137\124
\370\155\352\111\317\135\154\113\257\357\232\302\126\134\306\065
\126\102\152\060\137\302\253\366\342\075\077\263\311\021\217\061
\114\327\237\111\002\003\001\000\001\243\102\060\100\060\035\006
\003\125\035\016\004\026\004\024\065\112\365\115\257\077\327\202
\070\254\253\161\145\027\165\214\235\125\223\346\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\250\207\351\354\370\100\147\135\303\301\146\307\100\113\227
\374\207\023\220\132\304\357\240\312\137\213\267\247\267\361\326
\265\144\267\212\263\270\033\314\332\373\254\146\210\101\316\350
\374\344\333\036\210\246\355\047\120\033\002\060\044\106\171\376
\004\207\160\227\100\163\321\300\301\127\031\232\151\245\047\231
\253\235\142\204\366\121\301\054\311\043\025\330\050\267\253\045
\023\265\106\341\206\002\377\046\214\304\210\222\035\126\376\031
\147\362\125\344\200\243\153\234\253\167\341\121\161\015\040\333
\020\232\333\275\166\171\007\167\231\050\255\232\136\332\261\117
\104\054\065\216\245\226\307\375\203\360\130\306\171\326\230\174
\250\215\376\206\076\007\026\222\341\173\347\035\354\063\166\176

\102\056\112\205\371\221\211\150\204\003\201\245\233\232\276\343
\067\305\124\253\126\073\030\055\101\244\014\370\102\333\231\240
\340\162\157\273\135\341\026\117\123\012\144\371\116\364\277\116
\124\275\170\154\210\352\277\234\023\044\302\160\151\242\177\017
\310\074\255\010\311\260\230\100\243\052\347\210\203\355\167\217
\164
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SECOM Trust Systems CO.,LTD."
Issuer: OU=Security Communication EV RootCA1,O=SECOM Trust Systems CO.\,LTD.,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication
 EV RootCA1,O=SECOM Trust Systems CO.\,LTD.,C=JP
Not Valid Before: Wed Jun 06 02:12:32 2007
Not Valid After: Sat Jun 06 02:12:32 2037
Fingerprint (MD5): 22:2d:a6:01:ea:7c:0a:f7:f0:6c:56:43:3f:77:76:d3
Fingerprint (SHA1): fe:b8:c4:32:dc:f9:76:9a:ce:ae:3d:d8:90:8f:fd:28:86:65:64:7d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SECOM Trust Systems CO.,LTD."
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\376\270\304\062\334\371\166\232\316\256\075\330\220\217\375\050
\206\145\144\175
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\042\055\246\001\352\174\012\367\360\154\126\103\077\167\166\323
END
CKA_ISSUER MULTILINE_OCTAL
\060\140\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\045\060\043\006\003\125\004\012\023\034\123\105\103\117\115\040
\124\162\165\163\164\040\123\171\163\164\145\155\163\040\103\117
\056\054\114\124\104\056\061\052\060\050\006\003\125\004\013\023
\041\123\145\143\165\162\151\164\171\040\103\157\155\155\165\156
\151\143\141\164\151\157\156\040\105\126\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "D-TRUST Root Class 2 CA 2007"
Issuer: CN=D-TRUST Root Class 2 CA 2007,O=D-Trust GmbH,C=DE
Serial Number: 200341 (0x30e95)
Subject: CN=D-TRUST Root Class 2 CA 2007,O=D-Trust GmbH,C=DE
Not Valid Before: Wed May 16 05:20:47 2007
Not Valid After: Mon May 16 05:20:47 2022
Fingerprint (MD5): 2c:c2:b0:d5:d6:22:c5:2e:90:1e:f4:63:3f:0f:bb:32
Fingerprint (SHA1): 4a:05:8f:df:d7:61:db:21:b0:c2:ee:48:57:9b:e2:7f:42:a4:da:1c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 2 CA 2007"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\062\040\103\101\040\062\060\060\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\062\040\103\101\040\062\060\060\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\003\016\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\225\060\202\003\175\240\003\002\001\002\002\003\003
\016\225\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003
\014\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\062\040\103\101\040\062\060\060\067\060\036
\027\015\060\067\060\065\061\066\060\065\062\060\064\067\132\027
\015\062\062\060\065\061\066\060\065\062\060\064\067\132\060\113

\061\013\060\011\006\003\125\004\006\023\002\104\105\061\025\060
\023\006\003\125\004\012\014\014\104\055\124\162\165\163\164\040
\107\155\142\110\061\045\060\043\006\003\125\004\003\014\034\104
\055\124\122\125\123\124\040\122\157\157\164\040\103\154\141\163
\163\040\062\040\103\101\040\062\060\060\067\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\263\315\344\204
\025\111\370\344\326\316\204\263\232\255\366\060\165\220\015\204
\353\356\332\263\172\165\052\342\073\244\352\060\054\353\075\167
\215\201\204\150\112\246\244\150\334\220\163\141\064\145\007\035
\043\245\014\346\277\323\335\063\135\332\062\355\246\015\123\246
\164\152\134\031\131\246\114\265\057\171\001\136\236\177\112\372
\272\311\047\176\324\377\315\000\131\040\353\006\314\263\104\317
\326\205\351\355\073\014\154\301\352\214\134\340\271\251\002\360
\023\000\047\223\234\120\376\315\023\117\155\033\152\252\335\017
\377\106\045\031\334\341\136\120\254\032\177\016\313\332\356\040
\374\303\364\234\112\170\065\156\356\061\307\105\026\162\205\322
\202\040\333\122\105\174\074\277\131\127\371\207\164\126\230\133
\035\120\216\314\057\263\263\077\213\356\354\067\111\001\210\357
\330\041\014\223\323\366\156\211\117\272\027\313\104\201\267\173
\247\043\273\164\012\323\330\352\067\105\047\377\334\360\236\103
\343\272\173\212\033\232\175\351\206\240\376\057\321\326\366\207
\127\252\362\051\224\207\163\025\372\152\116\255\002\003\001\000
\001\243\202\001\200\060\202\001\174\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\221\060\253\366\363\306\104\267\353\335\050
\274\017\024\237\122\135\142\177\002\060\071\006\010\053\006\001
\005\005\007\001\001\004\055\060\053\060\051\006\010\053\006\001
\005\005\007\060\001\206\035\150\164\164\160\072\057\057\165\163
\145\162\163\056\157\143\163\160\056\144\055\164\162\165\163\164
\056\156\145\164\060\063\006\003\125\035\021\004\054\060\052\201
\020\151\156\146\157\100\144\055\164\162\165\163\164\056\156\145
\164\206\026\150\164\164\160\072\057\057\167\167\167\056\144\055
\164\162\165\163\164\056\156\145\164\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\201\311\006\003\125\035
\037\004\201\301\060\201\276\060\201\273\240\201\270\240\201\265
\206\166\154\144\141\160\072\057\057\144\151\162\145\143\164\157
\162\171\056\144\055\164\162\165\163\164\056\156\145\164\057\103
\116\075\104\055\124\122\125\123\124\045\062\060\122\157\157\164
\045\062\060\103\154\141\163\163\045\062\060\062\045\062\060\103
\101\045\062\060\062\060\060\067\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\206\073\150\164\164\160\072\057
\057\167\167\167\056\144\055\164\162\165\163\164\056\156\145\164
\057\143\162\154\057\144\055\164\162\165\163\164\137\162\157\157
\164\137\143\154\141\163\163\137\062\137\143\141\137\062\060\060
\067\056\143\162\154\060\015\006\011\052\206\110\206\367\015\001

\001\005\005\000\003\202\001\001\000\133\213\362\103\343\005\056
\144\037\325\222\251\121\153\144\374\016\106\314\007\231\342\267
\374\223\051\040\334\374\057\140\344\254\175\045\062\355\020\341
\017\157\333\362\274\116\356\101\311\263\324\007\110\172\012\257
\244\266\377\121\060\355\313\322\234\353\177\120\356\113\342\142
\247\064\302\040\366\363\366\365\066\300\313\221\020\353\355\056
\215\364\007\032\041\014\065\167\364\174\055\215\111\245\327\013
\104\150\325\322\342\345\014\170\070\023\312\261\114\122\252\052
\345\325\257\134\005\071\235\055\255\276\043\126\325\057\125\363
\336\235\253\202\066\240\115\267\131\221\107\356\336\203\245\352
\073\136\047\005\200\013\155\054\120\364\001\067\325\243\167\027
\354\376\335\204\364\305\370\120\222\320\113\306\056\243\213\100
\344\303\067\243\167\275\316\054\125\342\254\337\135\144\000\272
\276\247\152\061\006\374\231\153\120\025\045\235\251\166\232\247
\115\052\232\002\143\353\160\347\376\021\046\320\030\305\246\037
\012\103\223\362\030\331\365\071\171\270\007\135\214\037\346\077
\363\305\313\041\146\061\173\173\317
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "D-TRUST Root Class 2 CA 2007"
Issuer: CN=D-TRUST Root Class 2 CA 2007,O=D-Trust GmbH,C=DE
Serial Number:
200341 (0x30e95)
Subject: CN=D-TRUST Root Class 2 CA 2007,O=D-Trust GmbH,C=DE
Not Valid Before: Wed May 16 05:20:47 2007
Not Valid After: Mon May 16 05:20:47 2022
Fingerprint (MD5): 2c:c2:b0:d5:d6:22:c5:2e:90:1e:f4:63:3f:0f:bb:32
Fingerprint (SHA1): 4a:05:8f:df:d7:61:db:21:b0:c2:ee:48:57:9b:e2:7f:42:a4:da:1c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 2 CA 2007"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\112\005\217\337\327\141\333\041\260\302\356\110\127\233\342\177
\102\244\332\034
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\054\302\260\325\326\042\305\056\220\036\364\143\077\017\273\062
END
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163

\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\062\040\103\101\040\062\060\060\067
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\003\016\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "D-TRUST Root Class 3 CA 2007"
Issuer: CN=D-TRUST Root Class 3 CA 2007,O=D-Trust GmbH,C=DE
Serial Number: 200342 (0x30e96)
Subject: CN=D-TRUST Root Class 3 CA 2007,O=D-Trust GmbH,C=DE
Not Valid Before: Wed May 16 05:20:47 2007
Not Valid After: Mon May 16 05:20:47 2022
Fingerprint (MD5): 1e:24:0e:a0:f8:76:d7:85:a3:f5:f8:a1:49:3d:2e:ba
Fingerprint (SHA1): fd:1e:d1:e2:02:1b:0b:9f:73:e8:eb:75:ce:23:43:6b:bc:c7:46:eb
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3
 CA 2007"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\060\060\067
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\060\060\067
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\003\016\226
END
CKA_VALUE MULTILINE_OCTAL

\060\202\004\225\060\202\003\175\240\003\002\001\002\002\003\003
\016\226\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165
\163\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003
\014\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103
\154\141\163\163\040\063\040\103\101\040\062\060\060\067\060\036
\027\015\060\067\060\065\061\066\060\065\062\060\064\067\132\027
\015\062\062\060\065\061\066\060\065\062\060\064\067\132\060\113
\061\013\060\011\006\003\125\004\006\023\002\104\105\061\025\060
\023\006\003\125\004\012\014\014\104\055\124\162\165\163\164\040
\107\155\142\110\061\045\060\043\006\003\125\004\003\014\034\104
\055\124\122\125\123\124\040\122\157\157\164\040\103\154\141\163
\163\040\063\040\103\101\040\062\060\060\067\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\272\215\315\065
\123\062\356\246\275\110\220\232\362\352\350\130\017\107\146\250
\314\156\011\022\344\241\313\133\337\223\270\366\351\071\071\370
\306\330\351\317\032\206\274\246\256\017\214\257\010\105\343\362
\216\053\302\134\131\053\372\214\066\263\160\035\310\120\074\245
\126\276\352\256\351\107\366\347\111\017\257\177\224\046\324\002
\032\007\270\272\071\125\316\237\273\042\071\051\330\065\305\231
\003\041\330\247\070\143\361\344\064\337\107\256\237\067\361\154
\240\231\302\042\260\155\162\334\042\311\061\071\350\126\327\240
\217\072\041\133\206\232\117\050\371\034\166\367\314\117\077\371
\116\167\213\052\234\212\252\171\101\212\325\034\331\071\157\230
\311\136\105\227\035\011\224\031\331\120\121\205\162\163\277\254
\113\235\164\064\161\207\041\026\017\176\356\322\111\176\312\111
\323\371\222\052\107\110\117\017\135\132\241\313\325\050\354\360
\222\305\162\103\106\353\263\003\246\363\127\045\112\012\141\204
\012\046\326\357\246\270\330\024\215\170\271\323\267\045\321\116
\343\132\026\252\354\237\007\356\043\020\175\265\002\003\001\000
\001\243\202\001\200\060\202\001\174\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\202\057\066\043\111\170\040\102\327\260\122
\130\240\326\164\124\025\170\277\252\060\071\006\010\053\006\001
\005\005\007\001\001\004\055\060\053\060\051\006\010\053\006\001
\005\005\007\060\001\206\035\150\164\164\160\072\057\057\165\163
\145\162\163\056\157\143\163\160\056\144\055\164\162\165\163\164
\056\156\145\164\060\063\006\003\125\035\021\004\054\060\052\201
\020\151\156\146\157\100\144\055\164\162\165\163\164\056\156\145
\164\206\026\150\164\164\160\072\057\057\167\167\167\056\144\055
\164\162\165\163\164\056\156\145\164\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\201\311\006\003\125\035
\037\004\201\301\060\201\276\060\201\273\240\201\270\240\201\265
\206\166\154\144\141\160\072\057\057\144\151\162\145\143\164\157
\162\171\056\144\055\164\162\165\163\164\056\156\145\164\057\103
\116\075\104\055\124\122\125\123\124\045\062\060\122\157\157\164

\045\062\060\103\154\141\163\163\045\062\060\063\045\062\060\103
\101\045\062\060\062\060\060\067\054\117\075\104\055\124\162\165
\163\164\045\062\060\107\155\142\110\054\103\075\104\105\077\143
\145\162\164\151\146\151\143\141\164\145\162\145\166\157\143\141
\164\151\157\156\154\151\163\164\206\073\150\164\164\160\072\057
\057\167\167\167\056\144\055\164\162\165\163\164\056\156\145\164
\057\143\162\154\057\144\055\164\162\165\163\164\137\162\157\157
\164\137\143\154\141\163\163\137\063\137\143\141\137\062\060\060
\067\056\143\162\154\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\125\016\150\012\215\334\331
\250\206\140\002\151\171\215\175\351\220\302\331\035\035\265\016
\273\163\222\144\143\024\106\114\320\152\273\243\165\135\206\031
\070\141\206\035\270\212\042\064\243\264\065\025\263\251\140\114
\124\027\237\261\336\133\062\342\176\153\336\117\042\360\055\035
\042\004\236\266\112\117\253\054\126\235\343\335\354\261\046\116
\052\327\125\302\076\275\202\327\276\125\273\105\310\051\133\206
\074\235\077\150\104\104\104\066\015\150\277\256\001\242\031\265
\114\227\377\362\226\074\147\262\102\336\017\341\240\227\116\312
\347\064\145\256\225\202\141\147\046\163\055\335\173\347\225\113
\016\041\252\222\256\114\374\306\263\251\345\231\203\062\071\360
\140\302\114\121\250\301\107\024\065\211\245\115\066\017\237\033
\002\161\101\215\102\112\044\370\257\156\235\015\160\206\215\252
\142\023\036\003\213\044\371\303\124\223\111\205\033\165\166\142
\177\042\377\111\275\166\163\014\077\230\255\052\262\372\347\305
\337\164\365\377\151\061\125\012\072\300\031\142\065\304\111\271
\053\031\035\364\160\231\356\330\334
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "D-TRUST Root Class 3 CA 2007"
Issuer: CN=D-TRUST Root Class 3 CA 2007,O=D-Trust GmbH,C=DE
Serial Number: 200342 (0x30e96)
Subject: CN=D-TRUST Root Class 3 CA 2007,O=D-Trust
 GmbH,C=DE
Not Valid Before: Wed May 16 05:20:47 2007
Not Valid After: Mon May 16 05:20:47 2022
Fingerprint (MD5): 1e:24:0e:a0:f8:76:d7:85:a3:f5:f8:a1:49:3d:2e:ba
Fingerprint (SHA1): fd:1e:d1:e2:02:1b:0b:9f:73:e8:eb:75:ce:23:43:6b:bc:c7:46:eb
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "D-TRUST Root Class 3 CA 2007"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\375\036\321\342\002\033\013\237\163\350\353\165\316\043\103\153
\274\307\106\353
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\036\044\016\240\370\166\327\205\243\365\370\241\111\075\056\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\113\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\025\060\023\006\003\125\004\012\014\014\104\055\124\162\165\163
\164\040\107\155\142\110\061\045\060\043\006\003\125\004\003\014
\034\104\055\124\122\125\123\124\040\122\157\157\164\040\103\154
\141\163\163\040\063\040\103\101\040\062\060\060\067
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\003\016\226
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSC Root CA A"
Issuer: CN=SSC Root CA A,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:66:07:a3:d2:9d:29:56:18:0e:e1:5e:59:98:b1:84:55
Subject: CN=SSC Root CA A,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:18:52 2006
Not Valid After: Mon Dec 28 12:05:04 2026
Fingerprint (MD5): 46:8c:21:0e:ab:92:21:46:59:db:a6:db:00:61:de:26
Fingerprint (SHA1): 5a:5a:4d:af:78:61:26:7c:4b:1f:1e:67:58:6b:ae:6e:d4:fe:b9:3f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8
 "SSC Root CA A"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\101
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\146\007\243\322\235\051\126\030\016\341\136\131\230\261
\204\125
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\052\060\202\004\022\240\003\002\001\002\002\020\146
\007\243\322\235\051\126\030\016\341\136\131\230\261\204\125\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\164
\061\013\060\011\006\003\125\004\006\023\002\114\124\061\053\060
\051\006\003\125\004\012\023\042\123\153\141\151\164\155\145\156
\151\156\151\157\040\163\145\162\164\151\146\151\153\141\166\151
\155\157\040\143\145\156\164\162\141\163\061\040\060\036\006\003
\125\004\013\023\027\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\026\060\024
\006\003\125\004\003\023\015\123\123\103\040\122\157\157\164\040
\103\101\040\101\060\036\027\015\060\066\061\062\062\067\061\062
\061\070\065\062\132\027\015\062\066\061\062\062\070\061\062\060
\065\060\064\132\060\164\061\013\060\011\006\003\125\004\006\023
\002\114\124\061\053\060\051\006\003\125\004\012\023\042\123\153
\141\151\164\155\145\156\151\156\151\157\040\163\145\162\164\151
\146\151\153\141\166\151\155\157\040\143\145\156\164\162\141\163
\061\040\060\036\006\003\125\004\013\023\027\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\061\026\060\024\006\003\125\004\003\023\015\123\123\103
\040\122\157\157\164\040\103\101\040\101\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\272\352\117\276\204
\300\031\044\212\041\251\114\231\175\367\014\325\245\121\222\250
\145\343\211\243\013\146\347\102\370\171\322\017\203\043\173\267
\246\301\044\326\065\326\330\345\001\312\160\261\026\326\107\156
\276\020\154\176\351\120\156\166\367\345\344\203\017\170\325\240
\163\365\215\321\231\037\224\104\043\226\306\356\162\132\371\332
\135\074\221\257\154\350\227\350\206\135\367\236\213\372\304\254
\146\117\344\162\077\073\335\236\116\065\322\023\037\175\273\104
\113\364\123\254\326\024\327\100\071\272\300\077\374\205\040\323
\304\000\320\347\330\107\231\004\171\207\206\100\262\254\136\311

\165\040\303\011\024\257\004\216\246\242\255\052\127\210\145\241
\314\050\276\066\311\037\045\017\303\153\042\204\071\167\116\072
\003\300\152\333\076\272\266\211\236\344\327\056\232\267\103\001
\077\371\332\254\251\254\344\167\063\207\355\013\071\335\307\301
\255\015\131\203\060\321\066\004\130\264\144\116\346\377\010\350
\102\261\200\253\370\230\377\363\051\206\026\021\044\116\011\241
\317\060\177\274\136\260\012\152\241\161\153\365\232\022\153\045
\155\167\002\242\106\136\371\151\057\373\073\030\225\137\216\134
\227\224\140\136\035\161\250\101\264\135\317\132\172\147\343\324
\112\065\037\067\340\166\026\003\073\364\121\234\230\024\051\111
\210\014\102\320\055\155\251\247\100\046\072\171\000\060\073\300
\273\104\230\255\044\316\321\226\334\211\170\201\366\132\133\102
\274\164\341\207\323\145\310\107\346\066\262\314\301\157\300\307
\334\200\045\122\074\061\220\335\311\310\120\250\172\273\166\340
\357\023\224\316\004\176\152\266\116\167\371\203\320\157\370\072
\320\012\103\312\272\020\266\377\074\035\224\140\224\204\155\365
\245\311\175\114\012\176\057\217\157\375\335\055\173\112\351\357
\064\333\273\176\377\014\157\067\372\371\303\314\311\057\321\351
\054\075\052\254\154\046\073\320\011\136\304\200\047\213\335\141
\360\347\225\121\103\304\015\346\061\320\170\326\301\306\302\146
\001\321\343\314\307\323\036\025\005\066\333\224\232\354\122\303
\221\307\057\261\364\003\367\007\254\323\113\221\253\126\074\320
\256\375\137\155\055\323\000\021\317\223\275\002\003\001\000\001
\243\201\267\060\201\264\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\075\006\003\125\035\040\004\066
\060\064\060\062\006\013\053\006\001\004\001\201\257\145\001\002
\000\060\043\060\041\006\010\053\006\001\005\005\007\002\001\026
\025\150\164\164\160\072\057\057\167\167\167\056\163\163\143\056
\154\164\057\143\160\163\060\063\006\003\125\035\037\004\054\060
\052\060\050\240\046\240\044\206\042\150\164\164\160\072\057\057
\143\162\154\056\163\163\143\056\154\164\057\162\157\157\164\055
\141\057\143\141\143\162\154\056\143\162\154\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\314\277\336\247\220\167\142\152\035\170
\151\056\012\070\233\167\121\123\003\360\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\076\257
\310\250\307\063\117\360\156\232\103\341\362\260\127\122\341\234
\236\006\137\102\326\361\375\312\213\121\077\341\307\145\151\117
\164\031\120\212\317\030\223\111\215\240\034\260\073\075\216\110
\223\331\350\005\176\304\011\261\017\122\212\153\227\157\327\216
\074\200\000\320\101\163\255\075\303\104\007\161\152\217\142\176
\005\330\123\140\162\261\001\351\000\142\252\015\330\330\111\302
\264\175\015\133\263\227\051\066\231\271\247\321\113\230\153\104
\274\262\022\216\166\144\165\114\015\315\302\056\263\130\374\172
\117\125\263\131\177\135\340\057\060\063\317\210\033\151\351\115
\212\220\236\220\271\061\072\363\242\005\274\376\371\335\120\215
\016\224\031\235\176\215\252\025\176\017\122\223\045\344\201\016
\226\055\034\003\034\060\203\021\226\102\251\230\244\235\137\311

\251\134\073\111\150\302\204\155\231\332\366\376\242\362\334\067
\136\215\172\345\245\127\312\043\113\223\135\222\052\125\204\263
\226\263\036\230\224\111\174\154\074\334\236\035\266\253\303\254
\011\305\235\336\067\327\124\304\234\255\077\260\326\151\001\345
\020\206\175\271\201\203\156\234\146\116\225\005\222\220\061\207
\046\262\332\221\164\275\204\344\161\150\344\166\000\340\166\163
\064\107\206\225\145\272\133\220\242\155\005\051\170\140\353\206
\371\022\115\350\010\126\244\314\214\242\126\112\316\200\364\024
\141\042\345\253\035\072\101\073\204\327\202\170\005\057\254\035
\043\150\253\162\171\205\315\106\346\172\247\202\132\050\320\025
\075\035\333\214\230\120\316\373\257\130\073\323\251\256\200\073
\026\000\166\047\325\160\351\011\215\066\224\011\177\343\357\140
\020\121\312\306\125\160\146\253\121\157\363\121\117\022\126\256
\373\327\331\015\340\372\253\020\336\152\201\254\205\167\055\254
\172\143\173\106\341\067\332\127\156\255\145\374\041\004\231\205
\001\317\043\072\062\305\355\132\233\325\241\202\004\167\021\105
\216\244\104\175\302\313\313\247\017\350\022\272\362\156\272\217
\063\060\033\335\051\370\360\102\243\156\102\245\156\372\126\245
\251\120\203\321\005\146\026\213\055\373\346\222\321\346\154\013
\325\132\051\155\053\317\171\327\331\332\117\360\150\266
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSC Root CA A"
Issuer: CN=SSC Root CA A,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:66:07:a3:d2:9d:29:56:18:0e:e1:5e:59:98:b1:84:55
#
 Subject: CN=SSC Root CA A,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:18:52 2006
Not Valid After: Mon Dec 28 12:05:04 2026
Fingerprint (MD5): 46:8c:21:0e:ab:92:21:46:59:db:a6:db:00:61:de:26
Fingerprint (SHA1): 5a:5a:4d:af:78:61:26:7c:4b:1f:1e:67:58:6b:ae:6e:d4:fe:b9:3f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC Root CA A"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\132\132\115\257\170\141\046\174\113\037\036\147\130\153\256\156
\324\376\271\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\214\041\016\253\222\041\106\131\333\246\333\000\141\336\046
END

CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\146\007\243\322\235\051\126\030\016\341\136\131\230\261
\204\125
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSC Root CA B"
Issuer: CN=SSC Root CA B,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:be:92:83:18:f3:55:8a:78:a3:67:59:1c:69:24:09:3f
Subject: CN=SSC Root CA B,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:22:50 2006
Not Valid
After: Fri Dec 25 12:08:26 2026
Fingerprint (MD5): da:26:b6:e6:c7:c2:f7:b7:9e:46:59:b3:57:77:18:65
Fingerprint (SHA1): 3e:84:d3:bc:c5:44:c0:f6:fa:19:43:5c:85:1f:3f:2f:cb:a8:e8:14
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC Root CA B"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\102
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\102
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\276\222\203\030\363\125\212\170\243\147\131\034\151
\044\011\077
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\053\060\202\004\023\240\003\002\001\002\002\021\000
\276\222\203\030\363\125\212\170\243\147\131\034\151\044\011\077
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061\053
\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155\145
\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141\166
\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036\006
\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026\060
\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157\164
\040\103\101\040\102\060\036\027\015\060\066\061\062\062\067\061
\062\062\062\065\060\132\027\015\062\066\061\062\062\065\061\062
\060\070\062\066\132\060\164\061\013\060\011\006\003\125\004\006
\023\002\114\124\061\053\060\051\006\003\125\004\012\023\042\123
\153\141\151\164\155\145\156\151\156\151\157\040\163\145\162\164
\151\146\151\153\141\166\151\155\157\040\143\145\156\164\162\141
\163\061\040\060\036\006\003\125\004\013\023\027\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\061\026\060\024\006\003\125\004\003\023\015\123\123
\103\040\122\157\157\164\040\103\101\040\102\060\202\002\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\002\017\000\060\202\002\012\002\202\002\001\000\301\363\125\365
\107\121\116\125\027\145\215\260\262\101\050\241\112\321\237\113
\366\163\377\076\322\311\115\131\077\344\267\307\237\006\135\330
\074\243\210\204\340\163\135\375\005\352\307\216\327\244\004\152
\353\237\275\103\375\024\222\106\270\305\272\252\355\140\354\354
\312\220\215\012\162\251\101\233\324\235\274\260\154\242\021\037
\144\313\347\035\324\105\147\016\011\153\345\170\354\361\077\004
\124\363\232\231\307\131\321\322\171\247\244\032\260\174\111\374
\034\207\124\136\170\006\325\335\035\314\205\240\102\170\325\320
\260\212\352\350\361\241\236\126\357\323\301\175\207\254\347\332
\150\117\031\326\157\340\223\255\111\134\163\024\301\106\152\235
\367\130\100\331\127\130\116\154\067\364\162\043\004\370\333\112

\260\336\361\101\226\022\100\241\025\213\147\270\136\170\126\313
\177\344\276\300\111\150\221\270\107\010\223\201\301\265\033\061
\006\323\200\173\321\105\241\317\014\075\141\363\222\370\361\260
\025\016\370\056\060\133\000\243\111\367\155\376\356\334\277\210
\317\360\175\127\076\257\300\321\212\353\174\322\155\061\125\372
\204\215\163\152\332\160\200\304\364\302\317\220\216\060\232\341
\306\065\162\001\010\346\077\346\146\000\243\362\370\222\035\274
\122\354\217\366\334\367\012\357\274\020\207\371\204\030\214\136
\037\003\270\377\065\057\001\152\345\360\133\142\174\343\263\177
\063\252\224\327\116\121\201\265\350\127\170\217\042\226\251\014
\211\124\076\266\356\331\163\137\144\364\104\341\361\152\030\377
\122\226\304\034\277\211\227\244\303\247\312\176\030\156\026\334
\023\214\273\325\265\045\011\206\257\366\057\105\224\052\060\301
\024\224\065\366\135\312\045\225\234\261\130\211\270\265\140\205
\311\306\276\024\031\243\076\371\126\205\253\312\154\326\231\171
\242\112\024\157\303\072\330\347\146\121\012\351\034\376\314\151
\346\064\154\364\201\333\175\242\021\370\114\304\207\005\026\075
\353\227\164\077\156\354\234\271\266\047\214\044\337\055\263\257
\335\023\141\166\217\377\362\114\340\010\031\060\062\044\062\134
\066\200\027\356\206\311\337\057\121\342\126\256\203\222\360\263
\275\330\207\072\054\236\304\334\151\231\371\313\002\003\001\000
\001\243\201\267\060\201\264\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\075\006\003\125\035\040\004
\066\060\064\060\062\006\013\053\006\001\004\001\201\257\145\001
\002\000\060\043\060\041\006\010\053\006\001\005\005\007\002\001
\026\025\150\164\164\160\072\057\057\167\167\167\056\163\163\143
\056\154\164\057\143\160\163\060\063\006\003\125\035\037\004\054
\060\052\060\050\240\046\240\044\206\042\150\164\164\160\072\057
\057\143\162\154\056\163\163\143\056\154\164\057\162\157\157\164
\055\142\057\143\141\143\162\154\056\143\162\154\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\234\003\360\250\322\230\162\150\256
\362\355\340\117\342\205\016\262\045\116\317\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\002\001\000\254
\134\274\057\374\256\001\044\246\020\076\254\250\341\247\047\231
\215\312\210\301\035\075\221\366\242\176\245\361\230\101\377\252
\141\370\011\276\315\032\045\141\164\264\303\257\102\132\011\017
\221\001\276\110\225\364\312\167\136\013\203\316\204\235\317\100
\375\200\054\275\343\146\065\012\270\261\372\140\332\345\330\124
\265\113\227\272\242\032\303\040\151\215\264\106\163\134\252\277
\275\173\377\032\060\064\130\100\371\053\140\013\171\104\371\367
\242\226\013\153\122\173\360\053\113\073\322\213\240\153\223\075
\311\127\143\212\153\314\120\023\217\167\250\121\276\032\114\055
\114\135\014\220\133\216\363\357\120\040\155\201\346\121\111\253
\304\347\327\135\010\053\121\374\075\106\022\347\321\245\166\305
\123\044\005\311\252\323\216\130\305\363\212\164\222\062\355\360
\057\335\253\255\351\322\065\217\164\043\343\231\000\342\213\060
\344\303\102\256\360\273\351\342\010\033\112\160\055\175\370\322

\232\047\221\102\160\165\172\010\176\276\057\034\177\067\075\250
\213\334\106\162\365\350\157\066\150\372\156\215\040\235\324\365
\007\161\277\275\047\102\271\163\050\326\354\111\264\005\205\117
\150\110\366\253\224\337\016\243\106\024\140\302\061\040\073\353
\056\133\336\325\241\054\155\345\122\372\201\137\227\210\311\143
\275\001\354\343\315\153\012\065\302\311\070\343\016\363\130\033
\175\332\220\155\267\365\310\130\126\235\256\001\337\221\235\255
\125\202\003\014\021\164\004\221\206\307\174\223\214\363\047\373
\305\044\127\156\213\331\033\230\235\210\061\360\257\167\270\015
\264\314\317\366\012\157\022\233\354\011\053\123\211\354\104\340
\241\151\213\250\164\206\164\030\122\340\322\277\240\241\145\041
\271\010\203\172\363\244\365\370\136\067\045\107\231\246\135\327
\042\132\333\223\147\027\333\020\343\214\321\022\221\107\212\225
\245\107\241\003\370\113\056\041\305\220\142\260\177\047\243\333
\025\177\070\177\154\177\116\005\305\003\264\055\337\105\137\165
\054\035\361\137\246\265\366\027\071\101\351\370\145\302\036\130
\021\312\174\216\342\265\272\222\017\147\267\217\353\231\324\061
\373\162\173\132\230\137\222\224\307\004\352\060\366\273\032
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSC Root CA B"
Issuer: CN=SSC Root CA B,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:be:92:83:18:f3:55:8a:78:a3:67:59:1c:69:24:09:3f
Subject: CN=SSC Root CA B,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:22:50 2006
Not Valid After: Fri Dec 25 12:08:26 2026
Fingerprint (MD5): da:26:b6:e6:c7:c2:f7:b7:9e:46:59:b3:57:77:18:65
Fingerprint (SHA1): 3e:84:d3:bc:c5:44:c0:f6:fa:19:43:5c:85:1f:3f:2f:cb:a8:e8:14
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC Root CA B"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\076\204\323\274\305\104\300\366\372\031\103\134\205\037\077\057
\313\250\350\024
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\332\046\266\346\307\302\367\267\236\106\131\263\127\167\030\145
END
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061

\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\102
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\276\222\203\030\363\125\212\170\243\147\131\034\151
\044\011\077
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
 Certificate "SSC Root CA C"
Issuer: CN=SSC Root CA C,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:34:b9:12:9f:ac:c7:92:55:42:5c:de:57:ff:e3:c0:05
Subject: CN=SSC Root CA C,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:26:30 2006
Not Valid After: Tue Dec 22 12:11:30 2026
Fingerprint (MD5): 3c:4c:25:cc:0a:19:ca:ee:6a:eb:55:16:00:86:72:5f
Fingerprint (SHA1): 23:e8:33:23:3e:7d:0c:c9:2b:7c:42:79:ac:19:c2:f4:74:d6:04:ca
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC Root CA C"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\103
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155

\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036
\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\064\271\022\237\254\307\222\125\102\134\336\127\377\343
\300\005
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\052\060\202\004\022\240\003\002\001\002\002\020\064
\271\022\237\254\307\222\125\102\134\336\127\377\343\300\005\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\164
\061\013\060\011\006\003\125\004\006\023\002\114\124\061\053\060
\051\006\003\125\004\012\023\042\123\153\141\151\164\155\145\156
\151\156\151\157\040\163\145\162\164\151\146\151\153\141\166\151
\155\157\040\143\145\156\164\162\141\163\061\040\060\036\006\003
\125\004\013\023\027\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\101\165\164\150\157\162\151\164\171\061\026\060\024
\006\003\125\004\003\023\015\123\123\103\040\122\157\157\164\040
\103\101\040\103\060\036\027\015\060\066\061\062\062\067\061\062
\062\066\063\060\132\027\015\062\066\061\062\062\062\061\062\061
\061\063\060\132\060\164\061\013\060\011\006\003\125\004\006\023
\002\114\124\061\053\060\051\006\003\125\004\012\023\042\123\153
\141\151\164\155\145\156\151\156\151\157\040\163\145\162\164\151
\146\151\153\141\166\151\155\157\040\143\145\156\164\162\141\163
\061\040\060\036\006\003\125\004\013\023\027\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\061\026\060\024\006\003\125\004\003\023\015\123\123\103
\040\122\157\157\164\040\103\101\040\103\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\241\105\042\372\214
\314\251\157\004\263\364\150\062\026\151\021\117\171\337\103\275
\121\140\160\032\230\335\170\170\226\230\142\367\160\113\201\250
\340\035\004\211\364\217\353\156\351\360\377\201\330\056\175\257
\027\040\361\042\357\360\077\105\107\100\264\313\262\270\040\077
\076\112\150\120\377\232\006\327\227\305\267\212\026\056\161\322
\107\163\135\030\145\057\357\071\063\350\266\125\257\046\255\002
\200\351\143\327\041\160\007\076\314\276\137\211\300\370\316\035
\045\156\303\374\177\126\071\141\321\216\302\046\172\347\170\002
\012\131\335\125\043\260\370\065\247\342\253\363\253\057\327\265
\213\012\052\162\124\053\155\171\274\362\331\351\103\371\317\361
\216\146\022\367\227\131\052\331\327\224\334\370\224\263\105\243
\257\026\055\263\200\312\075\316\350\246\307\012\224\164\374\067
\232\351\077\014\067\026\040\103\311\107\160\273\214\205\374\230
\211\051\313\207\031\176\031\123\020\211\200\165\256\023\361\277

\244\135\060\005\051\174\250\367\266\136\007\060\025\210\256\115
\025\240\312\315\327\377\253\243\006\127\017\247\343\211\151\034
\326\032\321\324\047\337\226\306\070\134\257\167\376\025\253\104
\101\175\323\230\273\250\040\030\257\213\155\324\132\302\330\226
\215\110\365\007\061\176\141\364\141\233\122\201\100\216\112\047
\004\262\007\323\002\020\224\363\373\335\261\173\160\270\264\310
\201\365\000\007\246\215\210\005\115\304\217\226\316\324\266\300
\301\146\214\052\254\150\112\311\106\334\015\346\056\250\171\050
\175\167\103\160\026\176\034\032\072\246\171\117\023\100\211\261
\062\273\011\106\021\015\164\274\047\345\330\355\055\372\120\051
\334\045\312\227\020\347\251\242\141\056\072\211\246\104\141\276
\117\136\222\011\355\334\056\246\357\123\273\141\045\330\047\245
\024\106\051\205\046\000\330\371\371\005\325\173\026\061\102\103
\005\027\221\234\112\140\100\044\155\265\155\172\171\373\234\232
\143\303\230\151\345\167\142\043\052\121\211\017\154\262\375\303
\312\330\364\032\103\224\320\175\013\341\130\076\032\310\164\204
\233\367\254\202\256\121\105\222\322\006\131\341\263\301\336\245
\037\223\042\171\330\315\304\171\140\043\225\002\003\001\000\001
\243\201\267\060\201\264\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\075\006\003\125\035\040\004\066
\060\064\060\062\006\013\053\006\001\004\001\201\257\145\001\002
\000\060\043\060\041\006\010\053\006\001\005\005\007\002\001\026
\025\150\164\164\160\072\057\057\167\167\167\056\163\163\143\056
\154\164\057\143\160\163\060\063\006\003\125\035\037\004\054\060
\052\060\050\240\046\240\044\206\042\150\164\164\160\072\057\057
\143\162\154\056\163\163\143\056\154\164\057\162\157\157\164\055
\143\057\143\141\143\162\154\056\143\162\154\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\210\007\163\366\361\274\122\032\132\035
\075\221\142\355\135\254\235\013\345\267\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\002\001\000\037\220
\161\120\230\325\331\064\322\226\204\030\302\254\106\002\040\034
\313\071\261\267\257\005\244\327\130\363\221\121\175\216\201\047
\234\350\222\261\347\034\237\072\213\020\122\163\114\302\307\102
\035\320\353\336\052\312\042\121\175\214\164\172\032\374\274\244
\363\163\310\146\043\304\056\103\020\107\340\212\151\127\356\057
\362\000\122\260\060\222\252\326\324\025\305\127\313\140\172\364
\016\215\376\036\011\143\164\217\340\376\276\120\331\001\071\126
\272\120\114\366\343\105\232\273\122\166\336\176\235\373\215\302
\124\061\076\307\261\074\076\337\343\117\375\335\233\044\151\174
\355\350\161\266\102\006\307\037\305\137\373\040\165\333\301\375
\351\154\242\052\220\324\206\375\315\015\377\340\005\212\130\141
\075\237\304\231\057\355\333\174\304\015\230\230\125\234\164\242
\027\136\333\252\021\344\067\014\044\377\040\147\321\045\333\232
\211\240\145\210\061\221\004\161\137\040\224\130\063\066\035\062
\336\157\327\147\010\251\240\073\375\333\244\120\045\226\036\251
\137\211\027\245\227\231\121\225\151\333\304\361\217\364\157\060
\053\131\363\254\165\207\063\175\006\335\341\301\153\326\304\311

\136\160\104\172\152\307\234\167\073\026\376\376\165\276\237\054
\321\300\003\356\021\171\165\354\251\133\034\172\205\265\050\120
\040\251\032\035\346\173\214\063\030\377\301\355\310\166\145\037
\035\360\114\073\247\333\352\315\126\330\224\127\077\340\110\251
\177\214\063\113\275\364\014\145\024\200\202\364\065\167\330\004
\020\160\316\017\154\301\131\313\231\255\201\356\336\075\110\320
\172\210\057\100\223\327\234\272\171\204\030\200\165\337\320\132
\337\121\167\076\130\211\151\165\107\061\344\152\026\160\124\004
\354\275\134\171\123\143\322\342\136\275\115\045\332\021\266\017
\252\351\054\256\365\321\251\215\002\126\313\374\260\044\352\214
\272\160\377\062\320\267\306\004\052\143\325\312\106\221\325\231
\162\011\007\136\050\003\253\022\034\045\263\154\072\131\145\264
\164\155\055\055\031\162\157\375\347\230\021\207\036\163\043\277
\065\361\233\266\303\331\314\073\120\174\162\350\317\136\300\230
\314\056\003\375\037\057\312\164\134\261\034\321\354\151
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSC Root CA C"
Issuer: CN=SSC Root CA C,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:34:b9:12:9f:ac:c7:92:55:42:5c:de:57:ff:e3:c0:05
Subject: CN=SSC Root CA C,OU=Certification Authority,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Wed Dec 27 12:26:30 2006
Not Valid After: Tue Dec 22 12:11:30 2026
Fingerprint (MD5): 3c:4c:25:cc:0a:19:ca:ee:6a:eb:55:16:00:86:72:5f
Fingerprint (SHA1): 23:e8:33:23:3e:7d:0c:c9:2b:7c:42:79:ac:19:c2:f4:74:d6:04:ca
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC Root CA C"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\043\350\063\043\076\175\014\311\053\174\102\171\254\031\302\364
\164\326\004\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\074\114\045\314\012\031\312\356\152\353\125\026\000\206\162\137
END
CKA_ISSUER MULTILINE_OCTAL
\060\164\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\040\060\036

\006\003\125\004\013\023\027\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\061\026
\060\024\006\003\125\004\003\023\015\123\123\103\040\122\157\157
\164\040\103\101\040\103
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\064\271\022\237\254\307\222\125\102\134\336\127\377\343
\300\005
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Autoridad de Certificacion de la Abogacia"
Issuer: CN=Autoridad de Certificacion de la Abogacia,O=Consejo General de la Abogacia NIF:Q-2863006I,C=ES
Serial Number:90:8b:32:4f:c1:90:1a:ce:b4:c3:38:09:cd:cf:e4
Subject: CN=Autoridad de Certificacion de la Abogacia,O=Consejo General de la Abogacia NIF:Q-2863006I,C=ES
Not Valid Before: Mon Jun 13 22:00:00 2005
Not Valid After: Thu Jun 13 22:00:00 2030
Fingerprint (MD5): 15:ee:9f:5a:a0:85:28:df:6b:dd:34:a3:a0:56:d8:30
Fingerprint (SHA1): 7f:8a:77:83:6b:dc:6d:06:8f:8b:07:37:fc:c5:72:54:13:06:8c:a4
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion de la Abogacia"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\171\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\066\060\064\006\003\125\004\012\023\055\103\157\156\163\145\152
\157\040\107\145\156\145\162\141\154\040\144\145\040\154\141\040
\101\142\157\147\141\143\151\141\040\116\111\106\072\121\055\062
\070\066\063\060\060\066\111\061\062\060\060\006\003\125\004\003
\023\051\101\165\164\157\162\151\144\141\144\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\144\145\040
\154\141\040\101\142\157\147\141\143\151\141
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\171\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\066\060\064\006\003\125\004\012\023\055\103\157\156\163\145\152
\157\040\107\145\156\145\162\141\154\040\144\145\040\154\141\040
\101\142\157\147\141\143\151\141\040\116\111\106\072\121\055\062

\070\066\063\060\060\066\111\061\062\060\060\006\003\125\004\003
\023\051\101\165\164\157\162\151\144\141\144\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\144\145\040
\154\141\040\101\142\157\147\141\143\151\141
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\000\220\213\062\117\301\220\032\316\264\303\070\011\315
\317\344
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\274\060\202\003\244\240\003\002\001\002\002\020\000
\220\213\062\117\301\220\032\316\264\303\070\011\315\317\344\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\171
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\066\060
\064\006\003\125\004\012\023\055\103\157\156\163\145\152\157\040
\107\145\156\145\162\141\154\040\144\145\040\154\141\040\101\142
\157\147\141\143\151\141\040\116\111\106\072\121\055\062\070\066
\063\060\060\066\111\061\062\060\060\006\003\125\004\003\023\051
\101\165\164\157\162\151\144\141\144\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\144\145\040\154\141
\040\101\142\157\147\141\143\151\141\060\036\027\015\060\065\060
\066\061\063\062\062\060\060\060\060\132\027\015\063\060\060\066
\061\063\062\062\060\060\060\060\132\060\171\061\013\060\011\006
\003\125\004\006\023\002\105\123\061\066\060\064\006\003\125\004
\012\023\055\103\157\156\163\145\152\157\040\107\145\156\145\162
\141\154\040\144\145\040\154\141\040\101\142\157\147\141\143\151
\141\040\116\111\106\072\121\055\062\070\066\063\060\060\066\111
\061\062\060\060\006\003\125\004\003\023\051\101\165\164\157\162
\151\144\141\144\040\144\145\040\103\145\162\164\151\146\151\143
\141\143\151\157\156\040\144\145\040\154\141\040\101\142\157\147
\141\143\151\141\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\264\262\127\356\205\360\043\350\015\373\262
\200\204\361\020\147\253\262\371\111\337\134\336\133\344\217\051
\031\123\311\325\350\034\120\153\141\002\214\207\360\217\074\301
\105\222\013\254\231\241\306\032\205\326\075\255\176\046\246\035
\270\075\262\263\076\212\305\012\062\323\113\221\357\111\165\176
\126\367\376\240\010\142\106\053\316\352\362\121\237\140\336\062
\310\355\032\247\317\165\134\353\075\300\275\232\110\245\206\224
\316\130\120\024\352\152\341\232\364\214\145\225\341\140\025\045
\225\022\366\272\170\213\262\300\355\346\154\227\044\132\035\344
\164\103\312\070\304\065\224\130\216\365\212\260\150\074\050\054
\104\226\011\277\011\133\162\012\347\147\074\220\271\124\070\164
\124\273\155\055\152\103\310\274\357\011\254\037\043\350\122\126
\136\065\027\137\053\273\136\315\145\122\245\024\174\073\262\252
\351\335\047\265\067\043\073\006\015\054\173\215\272\332\157\146
\027\206\247\266\327\036\007\135\036\154\031\227\310\345\043\163

\170\321\256\371\036\272\241\256\111\042\355\145\161\037\177\367
\132\164\104\215\103\002\003\001\000\001\243\202\001\076\060\202
\001\072\060\067\006\003\125\035\021\004\060\060\056\201\021\141
\143\100\141\143\141\142\157\147\141\143\151\141\056\157\162\147
\206\031\150\164\164\160\072\057\057\167\167\167\056\141\143\141
\142\157\147\141\143\151\141\056\157\162\147\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\021\006\011
\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007\060
\035\006\003\125\035\016\004\026\004\024\374\210\114\216\155\004
\241\040\220\323\370\034\232\263\147\004\137\171\200\306\060\201
\253\006\003\125\035\040\004\201\243\060\201\240\060\201\235\006
\013\053\006\001\004\001\201\201\025\012\001\001\060\201\215\060
\051\006\010\053\006\001\005\005\007\002\001\026\035\150\164\164
\160\072\057\057\167\167\167\056\141\143\141\142\157\147\141\143
\151\141\056\157\162\147\057\144\157\143\060\140\006\010\053\006
\001\005\005\007\002\002\060\124\032\122\103\157\156\163\165\154
\164\145\040\154\141\040\144\145\143\154\141\162\141\143\151\157
\156\040\144\145\040\160\162\141\143\164\151\143\141\163\040\144
\145\040\143\145\162\164\151\146\151\143\141\143\151\157\156\040
\145\156\040\150\164\164\160\072\057\057\167\167\167\056\141\143
\141\142\157\147\141\143\151\141\056\157\162\147\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\230\247\372\071\265\163\021\046\177\274\211\077\264\153\045\063
\061\012\206\070\153\311\036\025\227\024\340\322\114\055\205\364
\074\164\233\215\050\021\373\314\016\046\271\200\203\026\321\371
\106\230\266\106\007\216\146\205\155\160\300\272\114\200\363\244
\360\325\067\124\053\257\146\204\162\163\371\110\057\011\316\341
\205\001\312\217\340\207\336\240\227\320\224\264\015\265\115\016
\147\054\310\140\304\062\224\300\101\201\007\215\272\277\251\350
\014\100\232\102\170\005\135\201\353\142\034\344\117\024\012\075
\013\076\037\351\364\315\175\356\105\273\274\336\135\363\230\227
\046\173\306\023\051\370\053\177\032\324\352\372\262\156\040\236
\332\027\352\241\222\275\067\351\016\273\273\221\325\045\366\140
\135\205\041\120\133\377\124\135\365\113\073\264\303\051\021\130
\002\366\045\344\341\202\202\273\242\215\347\221\044\136\100\221
\236\107\007\214\063\127\324\142\061\121\166\165\205\103\157\011
\253\021\245\045\051\271\330\377\137\245\367\077\353\145\073\035
\357\206\345\026\042\325\036\312\062\151\175\176\005\327\060\047
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Autoridad de Certificacion de la Abogacia"
Issuer: CN=Autoridad de Certificacion de la Abogacia,O=Consejo General de la Abogacia NIF:Q-2863006I,C=ES

Serial Number:90:8b:32:4f:c1:90:1a:ce:b4:c3:38:09:cd:cf:e4
Subject: CN=Autoridad de Certificacion de la Abogacia,O=Consejo General de la Abogacia NIF:Q-2863006I,C=ES
Not Valid Before: Mon Jun 13 22:00:00 2005
Not Valid After: Thu Jun 13 22:00:00 2030
Fingerprint (MD5): 15:ee:9f:5a:a0:85:28:df:6b:dd:34:a3:a0:56:d8:30
Fingerprint (SHA1):
7f:8a:77:83:6b:dc:6d:06:8f:8b:07:37:fc:c5:72:54:13:06:8c:a4
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Autoridad de Certificacion de la Abogacia"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\177\212\167\203\153\334\155\006\217\213\007\067\374\305\162\124
\023\006\214\244
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\025\356\237\132\240\205\050\337\153\335\064\243\240\126\330\060
END
CKA_ISSUER MULTILINE_OCTAL
\060\171\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\066\060\064\006\003\125\004\012\023\055\103\157\156\163\145\152
\157\040\107\145\156\145\162\141\154\040\144\145\040\154\141\040
\101\142\157\147\141\143\151\141\040\116\111\106\072\121\055\062
\070\066\063\060\060\066\111\061\062\060\060\006\003\125\004\003
\023\051\101\165\164\157\162\151\144\141\144\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\144\145\040
\154\141\040\101\142\157\147\141\143\151\141
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\000\220\213\062\117\301\220\032\316\264\303\070\011\315
\317\344
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Root CA Generalitat Valenciana"
Issuer: CN=Root CA Generalitat Valenciana,OU=PKIGVA,O=Generalitat Valenciana,C=ES
Serial Number:3b:45:e5:68
Subject: CN=Root CA Generalitat Valenciana,OU=PKIGVA,O=Generalitat Valenciana,C=ES
Not Valid Before: Fri Jul 06 16:22:47 2001
Not Valid After: Thu Jul 01 15:22:47 2021
Fingerprint (MD5): 2c:8c:17:5e:b1:54:ab:93:17:b5:36:5a:db:d1:c6:f2

Fingerprint (SHA1): a0:73:e5:c5:bd:43:61:0d:86:4c:21:13:0a:85:58:57:cc:9c:ea:46
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "Root CA Generalitat Valenciana"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\037\060\035\006\003\125\004\012\023\026\107\145\156\145\162\141
\154\151\164\141\164\040\126\141\154\145\156\143\151\141\156\141
\061\017\060\015\006\003\125\004\013\023\006\120\113\111\107\126
\101\061\047\060\045\006\003\125\004\003\023\036\122\157\157\164
\040\103\101\040\107\145\156\145\162\141\154\151\164\141\164\040
\126\141\154\145\156\143\151\141\156\141
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\037\060\035\006\003\125\004\012\023\026\107\145\156\145\162\141
\154\151\164\141\164\040\126\141\154\145\156\143\151\141\156\141
\061\017\060\015\006\003\125\004\013\023\006\120\113\111\107\126
\101\061\047\060\045\006\003\125\004\003\023\036\122\157\157\164
\040\103\101\040\107\145\156\145\162\141\154\151\164\141\164\040
\126\141\154\145\156\143\151\141\156\141
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\073\105\345\150
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\213\060\202\005\163\240\003\002\001\002\002\004\073
\105\345\150\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\150\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\037\060\035\006\003\125\004\012\023\026\107\145\156\145
\162\141\154\151\164\141\164\040\126\141\154\145\156\143\151\141
\156\141\061\017\060\015\006\003\125\004\013\023\006\120\113\111
\107\126\101\061\047\060\045\006\003\125\004\003\023\036\122\157
\157\164\040\103\101\040\107\145\156\145\162\141\154\151\164\141
\164\040\126\141\154\145\156\143\151\141\156\141\060\036\027\015
\060\061\060\067\060\066\061\066\062\062\064\067\132\027\015\062
\061\060\067\060\061\061\065\062\062\064\067\132\060\150\061\013
\060\011\006\003\125\004\006\023\002\105\123\061\037\060\035\006
\003\125\004\012\023\026\107\145\156\145\162\141\154\151\164\141
\164\040\126\141\154\145\156\143\151\141\156\141\061\017\060\015
\006\003\125\004\013\023\006\120\113\111\107\126\101\061\047\060
\045\006\003\125\004\003\023\036\122\157\157\164\040\103\101\040

\107\145\156\145\162\141\154\151\164\141\164\040\126\141\154\145
\156\143\151\141\156\141\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\306\052\253\127\021\067\057\042\212
\312\003\164\035\312\355\055\242\013\274\063\122\100\046\107\276
\132\151\246\073\162\066\027\114\350\337\270\273\057\166\341\100
\106\164\145\002\220\122\010\264\377\250\214\301\340\307\211\126
\020\071\063\357\150\264\137\137\332\155\043\241\211\136\042\243
\112\006\360\047\360\127\271\370\351\116\062\167\012\077\101\144
\363\353\145\356\166\376\124\252\175\035\040\256\363\327\164\302
\012\137\365\010\050\122\010\314\125\135\322\017\333\232\201\245
\273\241\263\301\224\315\124\340\062\165\061\221\032\142\262\336
\165\342\317\117\211\331\221\220\017\101\033\264\132\112\167\275
\147\203\340\223\347\136\247\014\347\201\323\364\122\254\123\262
\003\307\104\046\373\171\345\313\064\140\120\020\173\033\333\153
\327\107\253\137\174\150\312\156\235\101\003\020\356\153\231\173
\136\045\250\302\253\344\300\363\134\234\343\276\316\061\114\144
\036\136\200\242\365\203\176\014\326\312\214\125\216\276\340\276
\111\007\017\243\044\101\172\130\035\204\352\130\022\310\341\267
\355\357\223\336\224\010\061\002\003\001\000\001\243\202\003\073
\060\202\003\067\060\062\006\010\053\006\001\005\005\007\001\001
\004\046\060\044\060\042\006\010\053\006\001\005\005\007\060\001
\206\026\150\164\164\160\072\057\057\157\143\163\160\056\160\153
\151\056\147\166\141\056\145\163\060\022\006\003\125\035\023\001
\001\377\004\010\060\006\001\001\377\002\001\002\060\202\002\064
\006\003\125\035\040\004\202\002\053\060\202\002\047\060\202\002
\043\006\012\053\006\001\004\001\277\125\002\001\000\060\202\002
\023\060\202\001\350\006\010\053\006\001\005\005\007\002\002\060
\202\001\332\036\202\001\326\000\101\000\165\000\164\000\157\000
\162\000\151\000\144\000\141\000\144\000\040\000\144\000\145\000
\040\000\103\000\145\000\162\000\164\000\151\000\146\000\151\000
\143\000\141\000\143\000\151\000\363\000\156\000\040\000\122\000
\141\000\355\000\172\000\040\000\144\000\145\000\040\000\154\000
\141\000\040\000\107\000\145\000\156\000\145\000\162\000\141\000
\154\000\151\000\164\000\141\000\164\000\040\000\126\000\141\000
\154\000\145\000\156\000\143\000\151\000\141\000\156\000\141\000
\056\000\015\000\012\000\114\000\141\000\040\000\104\000\145\000
\143\000\154\000\141\000\162\000\141\000\143\000\151\000\363\000
\156\000\040\000\144\000\145\000\040\000\120\000\162\000\341\000
\143\000\164\000\151\000\143\000\141\000\163\000\040\000\144\000
\145\000\040\000\103\000\145\000\162\000\164\000\151\000\146\000
\151\000\143\000\141\000\143\000\151\000\363\000\156\000\040\000
\161\000\165\000\145\000\040\000\162\000\151\000\147\000\145\000
\040\000\145\000\154\000\040\000\146\000\165\000\156\000\143\000
\151\000\157\000\156\000\141\000\155\000\151\000\145\000\156\000
\164\000\157\000\040\000\144\000\145\000\040\000\154\000\141\000
\040\000\160\000\162\000\145\000\163\000\145\000\156\000\164\000
\145\000\040\000\101\000\165\000\164\000\157\000\162\000\151\000

\144\000\141\000\144\000\040\000\144\000\145\000\040\000\103\000
\145\000\162\000\164\000\151\000\146\000\151\000\143\000\141\000
\143\000\151\000\363\000\156\000\040\000\163\000\145\000\040\000
\145\000\156\000\143\000\165\000\145\000\156\000\164\000\162\000
\141\000\040\000\145\000\156\000\040\000\154\000\141\000\040\000
\144\000\151\000\162\000\145\000\143\000\143\000\151\000\363\000
\156\000\040\000\167\000\145\000\142\000\040\000\150\000\164\000
\164\000\160\000\072\000\057\000\057\000\167\000\167\000\167\000
\056\000\160\000\153\000\151\000\056\000\147\000\166\000\141\000
\056\000\145\000\163\000\057\000\143\000\160\000\163\060\045\006
\010\053\006\001\005\005\007\002\001\026\031\150\164\164\160\072
\057\057\167\167\167\056\160\153\151\056\147\166\141\056\145\163
\057\143\160\163\060\035\006\003\125\035\016\004\026\004\024\173
\065\323\100\322\034\170\031\146\357\164\020\050\334\076\117\262
\170\004\374\060\201\225\006\003\125\035\043\004\201\215\060\201
\212\200\024\173\065\323\100\322\034\170\031\146\357\164\020\050
\334\076\117\262\170\004\374\241\154\244\152\060\150\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\037\060\035\006\003
\125\004\012\023\026\107\145\156\145\162\141\154\151\164\141\164
\040\126\141\154\145\156\143\151\141\156\141\061\017\060\015\006
\003\125\004\013\023\006\120\113\111\107\126\101\061\047\060\045
\006\003\125\004\003\023\036\122\157\157\164\040\103\101\040\107
\145\156\145\162\141\154\151\164\141\164\040\126\141\154\145\156
\143\151\141\156\141\202\004\073\105\345\150\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\044
\141\116\365\265\310\102\002\052\263\134\165\255\305\155\312\347
\224\077\245\150\225\210\301\124\300\020\151\242\022\057\030\077
\045\120\250\174\112\352\306\011\331\364\165\306\100\332\257\120
\235\075\245\026\273\155\061\306\307\163\012\110\376\040\162\355
\157\314\350\203\141\026\106\220\001\225\113\175\216\232\122\011
\057\366\157\034\344\241\161\317\214\052\132\027\163\203\107\115
\017\066\373\004\115\111\121\342\024\311\144\141\373\324\024\340
\364\236\267\064\217\012\046\275\227\134\364\171\072\112\060\031
\314\255\117\240\230\212\264\061\227\052\342\163\155\176\170\270
\370\210\211\117\261\042\221\144\113\365\120\336\003\333\345\305
\166\347\023\146\165\176\145\373\001\237\223\207\210\235\371\106
\127\174\115\140\257\230\163\023\043\244\040\221\201\372\320\141
\146\270\175\321\257\326\157\036\154\075\351\021\375\251\371\202
\042\206\231\063\161\132\352\031\127\075\221\315\251\300\243\156
\007\023\246\311\355\370\150\243\236\303\132\162\011\207\050\321
\304\163\304\163\030\137\120\165\026\061\237\267\350\174\303
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Root CA Generalitat Valenciana"
Issuer: CN=Root CA Generalitat Valenciana,OU=PKIGVA,O=Generalitat Valenciana,C=ES
Serial Number:3b:45:e5:68
Subject: CN=Root CA Generalitat Valenciana,OU=PKIGVA,O=Generalitat Valenciana,C=ES
Not Valid Before: Fri Jul 06 16:22:47 2001
Not Valid After: Thu Jul 01 15:22:47 2021
Fingerprint (MD5): 2c:8c:17:5e:b1:54:ab:93:17:b5:36:5a:db:d1:c6:f2
Fingerprint (SHA1): a0:73:e5:c5:bd:43:61:0d:86:4c:21:13:0a:85:58:57:cc:9c:ea:46
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Root CA Generalitat Valenciana"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\240\163\345\305\275\103\141\015\206\114\041\023\012\205\130\127
\314\234\352\106
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\054\214\027\136\261\124\253\223\027\265\066\132\333\321\306\362
END
CKA_ISSUER
MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\037\060\035\006\003\125\004\012\023\026\107\145\156\145\162\141
\154\151\164\141\164\040\126\141\154\145\156\143\151\141\156\141
\061\017\060\015\006\003\125\004\013\023\006\120\113\111\107\126
\101\061\047\060\045\006\003\125\004\003\023\036\122\157\157\164
\040\103\101\040\107\145\156\145\162\141\154\151\164\141\164\040
\126\141\154\145\156\143\151\141\156\141
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\073\105\345\150
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "EBG Elektronik Sertifika Hizmet Salaycs"
Issuer: C=TR,O=EBG Biliim Teknolojileri ve Hizmetleri A..,CN=EBG Elektronik Sertifika Hizmet Salaycs
Serial Number:4c:af:73:42:1c:8e:74:02
#
Subject: C=TR,O=EBG Biliim Teknolojileri ve Hizmetleri A..,CN=EBG Elektronik Sertifika Hizmet Salaycs
Not Valid Before: Thu Aug 17 00:21:09 2006
Not Valid After: Sun Aug 14 00:31:09 2016
Fingerprint (MD5): 2c:20:26:9d:cb:1a:4a:00:85:b5:b7:5a:ae:c2:01:37

Fingerprint (SHA1): 8c:96:ba:eb:dd:2b:07:07:48:ee:30:32:66:a0:f3:98:6e:7c:ae:58
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EBG Elektronik Sertifika Hizmet Salaycs"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\070\060\066\006\003\125\004\003\014\057\105\102
\107\040\105\154\145\153\164\162\157\156\151\153\040\123\145\162
\164\151\146\151\153\141\040\110\151\172\155\145\164\040\123\141
\304\237\154\141\171\304\261\143\304\261\163\304\261\061\067\060
\065\006\003\125\004\012\014\056\105\102\107\040\102\151\154\151
\305\237\151\155\040\124\145\153\156\157\154\157\152\151\154\145
\162\151\040\166\145\040\110\151\172\155\145\164\154\145\162\151
\040\101\056\305\236\056\061\013\060\011\006\003\125\004\006\023
\002\124\122
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\070\060\066\006\003\125\004\003\014\057\105\102
\107\040\105\154\145\153\164\162\157\156\151\153\040\123\145\162
\164\151\146\151\153\141\040\110\151\172\155\145\164\040\123\141
\304\237\154\141\171\304\261\143\304\261\163\304\261\061\067\060
\065\006\003\125\004\012\014\056\105\102\107\040\102\151\154\151
\305\237\151\155\040\124\145\153\156\157\154\157\152\151\154\145
\162\151\040\166\145\040\110\151\172\155\145\164\154\145\162\151
\040\101\056\305\236\056\061\013\060\011\006\003\125\004\006\023
\002\124\122
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\114\257\163\102\034\216\164\002
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\347\060\202\003\317\240\003\002\001\002\002\010\114
\257\163\102\034\216\164\002\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\201\200\061\070\060\066\006\003\125
\004\003\014\057\105\102\107\040\105\154\145\153\164\162\157\156
\151\153\040\123\145\162\164\151\146\151\153\141\040\110\151\172
\155\145\164\040\123\141\304\237\154\141\171\304\261\143\304\261
\163\304\261\061\067\060\065\006\003\125\004\012\014\056\105\102
\107\040\102\151\154\151\305\237\151\155\040\124\145\153\156\157
\154\157\152\151\154\145\162\151\040\166\145\040\110\151\172\155
\145\164\154\145\162\151\040\101\056\305\236\056\061\013\060\011
\006\003\125\004\006\023\002\124\122\060\036\027\015\060\066\060
\070\061\067\060\060\062\061\060\071\132\027\015\061\066\060\070
\061\064\060\060\063\061\060\071\132\060\201\200\061\070\060\066

\006\003\125\004\003\014\057\105\102\107\040\105\154\145\153\164
\162\157\156\151\153\040\123\145\162\164\151\146\151\153\141\040
\110\151\172\155\145\164\040\123\141\304\237\154\141\171\304\261
\143\304\261\163\304\261\061\067\060\065\006\003\125\004\012\014
\056\105\102\107\040\102\151\154\151\305\237\151\155\040\124\145
\153\156\157\154\157\152\151\154\145\162\151\040\166\145\040\110
\151\172\155\145\164\154\145\162\151\040\101\056\305\236\056\061
\013\060\011\006\003\125\004\006\023\002\124\122\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\356\240\204
\141\320\072\152\146\020\062\330\061\070\177\247\247\345\375\241
\341\373\227\167\270\161\226\350\023\226\106\203\117\266\362\137
\162\126\156\023\140\245\001\221\342\133\305\315\127\037\167\143
\121\377\057\075\333\271\077\252\251\065\347\171\320\365\320\044
\266\041\352\353\043\224\376\051\277\373\211\221\014\144\232\005
\112\053\314\014\356\361\075\233\202\151\244\114\370\232\157\347
\042\332\020\272\137\222\374\030\047\012\250\252\104\372\056\054
\264\373\106\232\010\003\203\162\253\210\344\152\162\311\345\145
\037\156\052\017\235\263\350\073\344\014\156\172\332\127\375\327
\353\171\213\136\040\006\323\166\013\154\002\225\243\226\344\313
\166\121\321\050\235\241\032\374\104\242\115\314\172\166\250\015
\075\277\027\117\042\210\120\375\256\266\354\220\120\112\133\237
\225\101\252\312\017\262\112\376\200\231\116\243\106\025\253\370
\163\102\152\302\146\166\261\012\046\025\335\223\222\354\333\251
\137\124\042\122\221\160\135\023\352\110\354\156\003\154\331\335
\154\374\353\015\003\377\246\203\022\233\361\251\223\017\305\046
\114\061\262\143\231\141\162\347\052\144\231\322\270\351\165\342
\174\251\251\232\032\252\303\126\333\020\232\074\203\122\266\173
\226\267\254\207\167\250\271\362\147\013\224\103\263\257\076\163
\372\102\066\261\045\305\012\061\046\067\126\147\272\243\013\175
\326\367\211\315\147\241\267\072\036\146\117\366\240\125\024\045
\114\054\063\015\246\101\214\275\004\061\152\020\162\012\235\016
\056\166\275\136\363\121\211\213\250\077\125\163\277\333\072\306
\044\005\226\222\110\252\113\215\052\003\345\127\221\020\364\152
\050\025\156\107\167\204\134\121\164\237\031\351\346\036\143\026
\071\343\021\025\343\130\032\104\275\313\304\154\146\327\204\006
\337\060\364\067\242\103\042\171\322\020\154\337\273\346\023\021
\374\235\204\012\023\173\360\073\320\374\243\012\327\211\352\226
\176\215\110\205\036\144\137\333\124\242\254\325\172\002\171\153
\322\212\360\147\332\145\162\015\024\160\344\351\216\170\217\062
\164\174\127\362\326\326\364\066\211\033\370\051\154\213\271\366
\227\321\244\056\252\276\013\031\302\105\351\160\135\002\003\000
\235\331\243\143\060\141\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026
\004\024\347\316\306\117\374\026\147\226\372\112\243\007\301\004
\247\313\152\336\332\107\060\037\006\003\125\035\043\004\030\060
\026\200\024\347\316\306\117\374\026\147\226\372\112\243\007\301

\004\247\313\152\336\332\107\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\003\202\002\001\000\233\230\232\135\276
\363\050\043\166\306\154\367\177\346\100\236\300\066\334\225\015
\035\255\025\305\066\330\325\071\357\362\036\042\136\263\202\264
\135\273\114\032\312\222\015\337\107\044\036\263\044\332\221\210
\351\203\160\335\223\327\351\272\263\337\026\132\076\336\340\310
\373\323\375\154\051\370\025\106\240\150\046\314\223\122\256\202
\001\223\220\312\167\312\115\111\357\342\132\331\052\275\060\316
\114\262\201\266\060\316\131\117\332\131\035\152\172\244\105\260
\202\046\201\206\166\365\365\020\000\270\356\263\011\350\117\207
\002\007\256\044\134\360\137\254\012\060\314\212\100\240\163\004
\301\373\211\044\366\232\034\134\267\074\012\147\066\005\010\061
\263\257\330\001\150\052\340\170\217\164\336\270\121\244\214\154
\040\075\242\373\263\324\011\375\173\302\200\252\223\154\051\230
\041\250\273\026\363\251\022\137\164\265\207\230\362\225\046\337
\064\357\212\123\221\210\135\032\224\243\077\174\042\370\327\210
\272\246\214\226\250\075\122\064\142\237\000\036\124\125\102\147
\306\115\106\217\273\024\105\075\012\226\026\216\020\241\227\231
\325\323\060\205\314\336\264\162\267\274\212\074\030\051\150\375
\334\161\007\356\044\071\152\372\355\245\254\070\057\371\036\020
\016\006\161\032\020\114\376\165\176\377\036\127\071\102\312\327
\341\025\241\126\125\131\033\321\243\257\021\330\116\303\245\053
\357\220\277\300\354\202\023\133\215\326\162\054\223\116\217\152
\051\337\205\074\323\015\340\242\030\022\314\125\057\107\267\247
\233\002\376\101\366\210\114\155\332\251\001\107\203\144\047\142
\020\202\326\022\173\136\003\037\064\251\311\221\376\257\135\155
\206\047\267\043\252\165\030\312\040\347\260\017\327\211\016\246
\147\042\143\364\203\101\053\006\113\273\130\325\321\327\267\271
\020\143\330\211\112\264\252\335\026\143\365\156\276\140\241\370
\355\350\326\220\117\032\306\305\240\051\323\247\041\250\365\132
\074\367\307\111\242\041\232\112\225\122\040\226\162\232\146\313
\367\322\206\103\174\042\276\226\371\275\001\250\107\335\345\073
\100\371\165\053\233\053\106\144\206\215\036\364\217\373\007\167
\320\352\111\242\034\215\122\024\246\012\223
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "EBG Elektronik Sertifika Hizmet Salaycs"
Issuer: C=TR,O=EBG Biliim Teknolojileri ve Hizmetleri A..,CN=EBG Elektronik Sertifika Hizmet Salaycs
Serial Number:4c:af:73:42:1c:8e:74:02
Subject: C=TR,O=EBG Biliim Teknolojileri ve Hizmetleri A..,CN=EBG Elektronik Sertifika Hizmet Salaycs
Not Valid Before: Thu Aug 17 00:21:09 2006
Not Valid After: Sun Aug 14 00:31:09 2016
Fingerprint (MD5): 2c:20:26:9d:cb:1a:4a:00:85:b5:b7:5a:ae:c2:01:37

```
# Fingerprint (SHA1): 8c:96:ba:eb:dd:2b:07:07:48:ee:30:32:66:a0:f3:98:6e:7c:ae:58
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EBG Elektronik Sertifika Hizmet Salaycs"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\214\226\272\353\335\053\007\007\110\356\060\062\146\240\363\230
\156\174\256\130
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\054\040\046\235\313\032\112\000\205\265\267\132\256\302\001\067
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\070\060\066\006\003\125\004\003\014\057\105\102
\107\040\105\154\145\153\164\162\157\156\151\153\040\123\145\162
\164\151\146\151\153\141\040\110\151\172\155\145\164\040\123\141
\304\237\154\141\171\304\261\143\304\261\163\304\261\061\067\060
\065\006\003\125\004\012\014\056\105\102\107\040\102\151\154\151
\305\237\151\155\040\124\145\153\156\157\154\157\152\151\154\145
\162\151\040\166\145\040\110\151\172\155\145\164\154\145\162\151
\040\101\056\305\236\056\061\013\060\011\006\003\125\004\006\023
\002\124\122
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\114\257\163\102\034\216\164\002
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "VAS Latvijas Pasts SSI(RCA)"
# Issuer: CN=VAS Latvijas Pasts SSI(RCA),OU=Sertifikacijas pakalpojumi,O=VAS Latvijas Pasts -
Vien.reg.Nr.40003052790,C=LV
# Serial Number:63:06:86:a7:c5:37:65:a5:43:90:a8:6a:58:cc:d4:32
# Subject: CN=VAS Latvijas Pasts SSI(RCA),OU=Sertifikacijas pakalpojumi,O=VAS Latvijas Pasts -
Vien.reg.Nr.40003052790,C=LV
# Not Valid Before: Wed Sep 13 09:22:10 2006
# Not Valid After: Fri Sep 13 09:27:57 2024
# Fingerprint (MD5): fd:49:be:5b:18:5a:25:ec:f9:c3:54:85:10:40:e8:d4
# Fingerprint (SHA1): 08:64:18:e9:06:ce:e8:9c:23:53:b6:e2:7f:bd:9e:74:39:f7:63:16
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
```

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VAS Latvijas Pasts SSI(RCA)"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\114\126
\061\065\060\063\006\003\125\004\012\023\054\126\101\123\040\114
\141\164\166\151\152\141\163\040\120\141\163\164\163\040\055\040
\126\151\145\156\056\162\145\147\056\116\162\056\064\060\060\060
\063\060\065\062\067\071\060\061\043\060\041\006\003\125\004\013
\023\032\123\145\162\164\151\146\151\153\141\143\151\152\141\163
\040\160\141\153\141\154\160\157\152\165\155\151\061\044\060\042
\006\003\125\004\003\023\033\126\101\123\040\114\141\164\166\151
\152\141\163\040\120\141\163\164\163\040\123\123\111\050\122\103
\101\051
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\114\126
\061\065\060\063\006\003\125\004\012\023\054\126\101\123\040\114
\141\164\166\151\152\141\163\040\120\141\163\164\163\040\055\040
\126\151\145\156\056\162\145\147\056\116\162\056\064\060\060\060
\063\060\065\062\067\071\060\061\043\060\041\006\003\125\004\013
\023\032\123\145\162\164\151\146\151\153\141\143\151\152\141\163
\040\160\141\153\141\154\160\157\152\165\155\151\061\044\060\042
\006\003\125\004\003\023\033\126\101\123\040\114\141\164\166\151
\152\141\163\040\120\141\163\164\163\040\123\123\111\050\122\103
\101\051
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\143\006\206\247\305\067\145\245\103\220\250\152\130\314
\324\062
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\251\060\202\005\221\240\003\002\001\002\002\020\143
\006\206\247\305\067\145\245\103\220\250\152\130\314\324\062\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\217\061\013\060\011\006\003\125\004\006\023\002\114\126\061\065
\060\063\006\003\125\004\012\023\054\126\101\123\040\114\141\164
\166\151\152\141\163\040\120\141\163\164\163\040\055\040\126\151
\145\156\056\162\145\147\056\116\162\056\064\060\060\060\063\060
\065\062\067\071\060\061\043\060\041\006\003\125\004\013\023\032
\123\145\162\164\151\146\151\153\141\143\151\152\141\163\040\160
\141\153\141\154\160\157\152\165\155\151\061\044\060\042\006\003
\125\004\003\023\033\126\101\123\040\114\141\164\166\151\152\141
\163\040\120\141\163\164\163\040\123\123\111\050\122\103\101\051
\060\036\027\015\060\066\060\071\061\063\060\071\062\062\061\060

\132\027\015\062\064\060\071\061\063\060\071\062\067\065\067\132
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\114\126
\061\065\060\063\006\003\125\004\012\023\054\126\101\123\040\114
\141\164\166\151\152\141\163\040\120\141\163\164\163\040\055\040
\126\151\145\156\056\162\145\147\056\116\162\056\064\060\060\060
\063\060\065\062\067\071\060\061\043\060\041\006\003\125\004\013
\023\032\123\145\162\164\151\146\151\153\141\143\151\152\141\163
\040\160\141\153\141\154\160\157\152\165\155\151\061\044\060\042
\006\003\125\004\003\023\033\126\101\123\040\114\141\164\166\151
\152\141\163\040\120\141\163\164\163\040\123\123\111\050\122\103
\101\051\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\233\270\371\375\141\125\057\117\244\245\024\265\056
\216\271\044\217\254\373\261\124\077\100\377\117\305\345\206\150
\173\123\223\373\065\202\065\250\120\056\224\122\240\333\203\076
\165\332\025\160\254\011\317\356\202\111\255\066\111\271\264\161
\213\264\000\241\102\006\312\010\012\143\227\266\010\374\356\264
\334\230\170\031\202\311\370\177\144\076\252\311\376\261\215\353
\260\144\365\274\363\304\076\072\220\352\116\216\077\033\031\274
\152\203\303\221\074\154\125\373\012\122\300\350\341\135\167\205
\063\305\111\337\354\152\277\277\154\067\376\216\111\242\025\030
\316\213\216\153\036\070\243\060\157\210\201\176\162\126\104\032
\304\172\071\017\366\304\217\226\324\262\353\000\116\134\336\273
\347\073\267\346\044\005\223\153\115\346\221\104\277\356\230\033
\307\205\033\021\101\173\042\066\247\276\076\350\172\067\334\030
\336\220\235\217\315\262\327\232\077\342\027\177\133\014\341\357
\077\146\075\156\044\344\260\316\303\014\210\154\224\332\070\045
\174\122\071\343\163\024\263\000\105\143\232\014\102\100\136\004
\306\367\162\144\316\311\156\063\263\344\323\155\044\225\067\223
\176\362\000\135\031\213\037\363\103\163\250\237\105\322\006\251
\354\264\102\273\372\356\014\307\117\077\121\037\321\257\320\254
\030\177\207\201\042\376\251\335\007\226\155\174\370\116\331\115
\072\120\151\325\101\176\305\332\164\330\216\163\345\176\203\341
\303\031\201\267\275\277\100\216\276\056\232\242\014\252\116\002
\056\273\052\341\010\135\061\003\311\254\047\260\257\334\325\310
\024\175\100\235\125\211\041\371\220\314\324\311\140\101\163\253
\350\315\330\072\125\071\012\202\231\376\233\365\365\074\034\221
\313\300\372\106\124\256\041\374\052\254\134\173\336\172\227\161
\375\154\153\315\110\232\244\333\201\174\030\067\057\220\175\141
\224\275\027\311\134\266\124\026\167\312\011\112\252\351\274\117
\224\165\001\132\126\274\222\322\217\271\327\227\336\126\164\001
\367\026\161\111\261\365\030\106\231\101\356\142\341\263\054\145
\165\151\051\162\103\003\370\233\037\372\070\364\236\354\100\020
\216\254\227\325\260\063\276\237\030\334\055\367\101\170\124\112
\142\104\347\002\003\001\000\001\243\202\001\375\060\202\001\371
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\030\006\010\053\006\001\005\005\007\001\003\004\014\060\012
\060\010\006\006\004\000\216\106\001\001\060\017\006\003\125\035

\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\314\303\365\146\377\163\254\070\132\226
\033\041\211\270\201\114\037\313\136\045\060\020\006\011\053\006
\001\004\001\202\067\025\001\004\003\002\001\000\060\202\001\211
\006\003\125\035\040\004\202\001\200\060\202\001\174\060\202\001
\170\006\013\053\006\001\004\001\201\304\131\001\001\002\060\202
\001\147\060\202\001\070\006\010\053\006\001\005\005\007\002\002
\060\202\001\052\036\202\001\046\000\123\000\151\000\163\000\040
\000\151\000\162\000\040\000\163\000\145\000\162\000\164\000\151
\000\146\000\151\000\153\000\141\000\164\000\163\000\054\000\040
\000\153\000\157\000\040\000\151\000\172\000\144\000\145\000\166
\000\151\000\163\000\040\000\126\000\101\000\123\000\040\000\114
\000\141\000\164\000\166\000\151\000\152\000\141\000\163\000\040
\000\120\000\141\000\163\000\164\000\163\000\054\000\040\000\156
\000\157\000\144\000\162\000\157\000\163\000\151\000\156\000\157
\000\164\000\040\000\141\000\164\000\142\000\151\000\154\000\163
\000\164\000\151\000\142\000\165\000\040\000\105\000\154\000\145
\000\153\000\164\000\162\000\157\000\156\000\151\000\163\000\153
\000\157\000\040\000\144\000\157\000\153\000\165\000\155\000\145
\000\156\000\164\000\165\000\040\000\154\000\151\000\153\000\165
\000\155\000\141\000\155\000\040\000\165\000\156\000\040\000\105
\000\151\000\162\000\157\000\160\000\141\000\163\000\040\000\120
\000\141\000\162\000\154\000\141\000\155\000\145\000\156\000\164
\000\141\000\040\000\144\000\151\000\162\000\145\000\153\000\164
\000\151\000\166\000\141\000\151\000\040\000\061\000\071\000\071
\000\071\000\057\000\071\000\063\000\057\000\105\000\113\060\051
\006\010\053\006\001\005\005\007\002\001\026\035\150\164\164\160
\072\057\057\167\167\167\056\145\055\155\145\056\154\166\057\162
\145\160\157\163\151\164\157\162\171\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\037\050\112
\065\220\041\143\150\012\057\170\257\243\036\202\046\227\243\077
\047\031\322\113\243\102\172\006\023\145\133\301\004\313\353\175
\174\357\224\362\361\211\365\267\337\122\002\041\151\322\352\226
\064\345\240\317\227\270\234\125\016\020\205\243\024\136\054\005
\370\265\072\166\363\371\172\270\336\266\014\047\151\362\313\224
\221\013\035\271\325\216\157\231\057\315\362\031\126\071\072\110
\126\360\001\377\202\165\266\262\375\321\324\365\362\143\127\114
\115\241\176\314\020\272\004\151\357\364\024\374\263\227\037\105
\356\157\112\050\177\321\306\047\274\307\243\251\153\173\355\202
\023\157\253\336\017\373\161\353\134\021\032\251\054\320\060\237
\374\066\067\126\357\225\351\272\267\023\266\256\237\002\141\255
\236\354\153\004\157\066\237\017\231\367\302\311\310\114\050\271
\050\324\041\327\236\124\325\300\316\364\216\344\125\224\173\217
\044\306\070\374\253\172\244\126\167\075\250\105\357\144\222\244
\320\112\176\273\163\213\364\015\122\163\270\072\110\136\103\200
\323\251\160\167\142\377\307\050\034\163\036\103\346\047\044\133
\111\271\346\066\244\216\375\305\055\057\172\245\171\022\172\327
\041\262\045\155\310\017\242\303\141\113\345\110\342\127\272\237

\362\212\041\335\333\144\360\332\031\337\316\300\233\200\071\302
\167\167\143\025\123\162\204\372\244\217\007\067\206\041\175\120
\372\075\152\067\333\221\016\067\263\375\316\013\312\173\141\320
\234\164\234\175\070\150\155\351\173\035\326\361\052\264\357\073
\140\122\167\005\346\002\302\137\214\133\274\360\175\267\163\307
\221\153\262\052\263\143\243\064\325\253\255\045\161\107\377\032
\076\172\266\215\225\166\303\356\246\315\003\011\154\356\105\147
\230\317\231\110\166\301\316\212\164\232\150\122\001\064\042\310
\355\342\024\013\204\275\156\020\214\261\162\233\276\350\010\327
\127\325\177\352\264\001\075\116\344\342\350\147\347\214\176\351
\347\102\021\357\225\106\310\221\326\276\047\027\200\031\064\230
\347\306\337\036\374\041\137\236\206\075\274\176\360\234\275\162
\236\364\107\202\133\161\147\363\372\334\124\114\250\134\330\131
\307\320\007\016\023\063\047\274\364\151\360\153\041
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VAS Latvijas Pasts SSI(RCA)"
Issuer: CN=VAS Latvijas Pasts SSI(RCA),OU=Sertifikacijas pakalpojumi,O=VAS Latvijas Pasts - Vien.reg.Nr.40003052790,C=LV
Serial Number:63:06:86:a7:c5:37:65:a5:43:90:a8:6a:58:cc:d4:32
Subject: CN=VAS Latvijas Pasts SSI(RCA),OU=Sertifikacijas pakalpojumi,O=VAS Latvijas Pasts - Vien.reg.Nr.40003052790,C=LV
Not Valid Before: Wed Sep 13 09:22:10 2006
Not Valid After: Fri Sep 13 09:27:57 2024
Fingerprint (MD5): fd:49:be:5b:18:5a:25:ec:f9:c3:54:85:10:40:e8:d4
Fingerprint
(SHA1): 08:64:18:e9:06:ce:e8:9c:23:53:b6:e2:7f:bd:9e:74:39:f7:63:16
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VAS Latvijas Pasts SSI(RCA)"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\010\144\030\351\006\316\350\234\043\123\266\342\177\275\236\164
\071\367\143\026
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\375\111\276\133\030\132\045\354\371\303\124\205\020\100\350\324
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\114\126
\061\065\060\063\006\003\125\004\012\023\054\126\101\123\040\114
\141\164\166\151\152\141\163\040\120\141\163\164\163\040\055\040

\126\151\145\156\056\162\145\147\056\116\162\056\064\060\060\060
\063\060\065\062\067\071\060\061\043\060\041\006\003\125\004\013
\023\032\123\145\162\164\151\146\151\153\141\143\151\152\141\163
\040\160\141\153\141\154\160\157\152\165\155\151\061\044\060\042
\006\003\125\004\003\023\033\126\101\123\040\114\141\164\166\151
\152\141\163\040\120\141\163\164\163\040\123\123\111\050\122\103
\101\051
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\143\006\206\247\305\067\145\245\103\220\250\152\130\314
\324\062
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ANCERT Certificados CGN"
Issuer: CN=ANCERT Certificados CGN,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Serial Number:44:74:ec:c8:6c:72:1e:58:dd:b8:2c:7e:f4:fc:95
Subject: CN=ANCERT Certificados CGN,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Not Valid Before: Wed Feb 11 17:27:12 2004
Not Valid After: Sun Feb 11 17:27:12 2024
Fingerprint (MD5): 1c:4b:e2:c6:2d:b9:ac:31:14:f4:40:07:69:cb:1f:40
Fingerprint (SHA1): 11:c5:b5:f7:55:52:b0:11:66:9c:2e:97:17:de:6d:9b:ff:5f:a8:10
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados CGN"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040\103
\111\106\040\102\070\063\063\071\065\071\070\070\061\040\060\036
\006\003\125\004\003\023\027\101\116\103\105\122\124\040\103\145
\162\164\151\146\151\143\141\144\157\163\040\103\107\116
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040\103
\111\106\040\102\070\063\063\071\065\071\070\070\061\040\060\036
\006\003\125\004\003\023\027\101\116\103\105\122\124\040\103\145
\162\164\151\146\151\143\141\144\157\163\040\103\107\116
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\017\104\164\354\310\154\162\036\130\335\270\054\176\364\374
\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\052\060\202\004\022\240\003\002\001\002\002\017\104
\164\354\310\154\162\036\130\335\270\054\176\364\374\225\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\060\174\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\113\060\111
\006\003\125\004\012\023\102\101\147\145\156\143\151\141\040\116
\157\164\141\162\151\141\154\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\156\040\123\056\114\056\040\125\156
\151\160\145\162\163\157\156\141\154\040\055\040\103\111\106\040
\102\070\063\063\071\065\071\070\070\061\040\060\036\006\003\125
\004\003\023\027\101\116\103\105\122\124\040\103\145\162\164\151
\146\151\143\141\144\157\163\040\103\107\116\060\036\027\015\060
\064\060\062\061\061\061\067\062\067\061\062\132\027\015\062\064
\060\062\061\061\061\067\062\067\061\062\132\060\174\061\013\060
\011\006\003\125\004\006\023\002\105\123\061\113\060\111\006\003
\125\004\012\023\102\101\147\145\156\143\151\141\040\116\157\164
\141\162\151\141\154\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\157\156\040\123\056\114\056\040\125\156\151\160
\145\162\163\157\156\141\154\040\055\040\103\111\106\040\102\070
\063\063\071\065\071\070\070\061\040\060\036\006\003\125\004\003
\023\027\101\116\103\105\122\124\040\103\145\162\164\151\146\151
\143\141\144\157\163\040\103\107\116\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\220\165\077\077\014\254
\312\324\174\304\110\247\030\273\072\273\241\273\325\173\337\213
\031\344\202\104\373\145\354\266\022\141\076\151\042\031\142\065
\044\266\325\020\006\251\105\152\044\052\365\047\214\170\074\310
\271\363\005\154\305\002\003\322\116\200\144\354\206\253\170\224
\042\002\000\265\150\233\324\345\125\137\340\310\200\060\347\013
\277\153\327\004\216\116\171\230\160\114\034\046\271\263\250\352
\360\021\242\271\212\123\002\046\165\022\211\341\373\210\116\131
\172\000\321\202\330\026\256\345\266\274\225\045\140\100\167\045
\033\236\357\215\344\375\360\117\063\061\045\277\356\172\012\124
\360\220\070\147\022\173\245\140\332\014\001\211\232\166\207\056

\365\033\103\173\345\347\046\112\373\025\142\253\105\033\173\325
\012\245\115\154\115\253\237\050\110\204\341\203\165\270\030\160
\125\123\333\320\337\051\220\257\071\306\027\225\301\224\305\136
\331\145\137\135\377\156\026\225\230\041\237\136\115\360\315\061
\071\041\003\027\015\221\037\241\125\231\101\354\125\311\273\075
\231\134\233\305\177\321\034\136\352\123\002\003\001\000\001\243
\202\001\247\060\202\001\243\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\202\001\040\006\003\125\035
\040\004\202\001\027\060\202\001\023\060\202\001\017\006\011\053
\006\001\004\001\201\223\150\004\060\202\001\000\060\045\006\010
\053\006\001\005\005\007\002\001\026\031\150\164\164\160\072\057
\057\167\167\167\056\141\156\143\145\162\164\056\143\157\155\057
\143\160\163\060\201\326\006\010\053\006\001\005\005\007\002\002
\060\201\311\060\015\026\006\101\116\103\105\122\124\060\003\002
\001\001\032\201\267\101\147\145\156\143\151\141\040\116\157\164
\141\162\151\141\154\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\157\156\056\040\114\141\040\144\145\143\154\141
\162\141\143\151\157\156\040\144\145\040\160\162\141\143\164\151
\143\141\163\040\144\145\040\143\145\162\164\151\146\151\141\143
\151\157\156\040\161\165\145\040\162\151\147\145\040\145\154\040
\146\165\156\143\151\157\156\141\155\151\145\156\164\157\040\144
\145\040\154\141\040\160\162\145\163\145\156\164\145\040\141\165
\164\157\162\151\144\141\144\040\163\145\040\145\156\143\165\145
\156\164\162\141\040\144\151\163\160\157\156\151\142\154\145\040
\145\156\040\150\164\164\160\072\057\057\167\167\167\056\141\156
\143\145\162\164\056\143\157\155\057\143\160\163\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\206\060\034\006\003
\125\035\021\004\025\060\023\201\021\141\156\143\145\162\164\100
\141\156\143\145\162\164\056\143\157\155\060\037\006\003\125\035
\043\004\030\060\026\200\024\354\127\237\310\166\042\157\314\072
\256\133\360\055\241\142\130\321\215\002\314\060\035\006\003\125
\035\016\004\026\004\024\354\127\237\310\166\042\157\314\072\256
\133\360\055\241\142\130\321\215\002\314\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\213\075
\337\334\066\054\177\047\234\374\265\130\123\161\012\022\135\020
\144\121\161\265\112\126\364\136\104\147\036\357\035\262\361\244
\121\074\147\154\054\145\226\172\241\022\243\257\013\010\067\016
\231\326\156\050\207\013\142\253\116\170\116\162\201\233\337\021
\117\211\140\310\121\246\033\006\011\161\163\174\067\267\034\070
\067\232\371\207\341\357\241\356\177\327\300\352\071\024\372\174
\157\013\371\206\312\346\305\167\151\240\237\215\051\243\167\156
\305\314\332\366\335\006\172\323\151\146\076\140\073\343\062\337
\256\360\033\236\052\235\314\204\337\032\020\107\355\245\126\226
\102\067\265\055\162\015\101\022\223\272\062\210\104\310\256\011
\304\275\200\355\375\140\017\162\262\266\144\366\143\040\062\160
\167\207\056\063\056\237\065\310\137\250\222\126\267\377\044\072
\054\135\362\046\005\150\031\362\121\147\317\337\122\011\351\202
\004\172\153\202\247\177\345\322\251\164\153\030\046\310\272\324

\325\036\245\113\073\046\301\235\042\341\373\022\275\325\142\106
\325\327\135\322\335\303\374\141\015\060\005\117\005\213
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANCERT Certificados CGN"
Issuer: CN=ANCERT Certificados CGN,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Serial Number:44:74:ec:c8:6c:72:1e:58:dd:b8:2c:7e:f4:fc:95
Subject: CN=ANCERT Certificados CGN,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Not Valid Before: Wed Feb 11 17:27:12 2004
Not Valid After: Sun Feb 11 17:27:12 2024
Fingerprint (MD5): 1c:4b:e2:c6:2d:b9:ac:31:14:f4:40:07:69:cb:1f:40
Fingerprint (SHA1): 11:c5:b5:f7:55:52:b0:11:66:9c:2e:97:17:de:6d:9b:ff:5f:a8:10
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados CGN"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\021\305\265\367\125\122\260\021\146\234\056\227\027\336\155\233
\377\137\250\020
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\034\113\342\306\055\271\254\061\024\364\100\007\151\313\037\100
END
CKA_ISSUER
MULTILINE_OCTAL
\060\174\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040\103
\111\106\040\102\070\063\063\071\065\071\070\070\061\040\060\036
\006\003\125\004\003\023\027\101\116\103\105\122\124\040\103\145
\162\164\151\146\151\143\141\144\157\163\040\103\107\116
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\017\104\164\354\310\154\162\036\130\335\270\054\176\364\374
\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ANCERT Certificados Notariales"
Issuer:
CN=ANCERT Certificados Notariales,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Serial Number:f4:cf:89:ea:dd:a4:c6:3e:91:ad:48:0e:2d:22:36:84
Subject: CN=ANCERT Certificados Notariales,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Not Valid Before: Wed Feb 11 15:58:30 2004
Not Valid After: Sun Feb 11 15:58:26 2024
Fingerprint (MD5): 45:f7:50:11:4e:c5:ad:bd:53:68:86:63:ec:7b:6a:e1
Fingerprint (SHA1): c0:9a:b0:c8:ad:71:14:71:4e:d5:e2:1a:5a:27:6a:dc:d5:e7:ef:cb
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados Notariales"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\047\060
\045\006\003\125\004\003\023\036\101\116\103\105\122\124\040\103
\145\162\164\151\146\151\143\141\144\157\163\040\116\157\164\141
\162\151\141\154\145\163
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\047\060
\045\006\003\125\004\003\023\036\101\116\103\105\122\124\040\103
\145\162\164\151\146\151\143\141\144\157\163\040\116\157\164\141
\162\151\141\154\145\163
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\364\317\211\352\335\244\306\076\221\255\110\016\055

\042\066\204
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\074\060\202\004\044\240\003\002\001\002\002\021\000
\364\317\211\352\335\244\306\076\221\255\110\016\055\042\066\204
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\203\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143\151
\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145
\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056
\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040\103
\111\106\040\102\070\063\063\071\065\071\070\070\061\047\060\045
\006\003\125\004\003\023\036\101\116\103\105\122\124\040\103\145
\162\164\151\146\151\143\141\144\157\163\040\116\157\164\141\162
\151\141\154\145\163\060\036\027\015\060\064\060\062\061\061\061
\065\065\070\063\060\132\027\015\062\064\060\062\061\061\061\065
\065\070\062\066\132\060\201\203\061\013\060\011\006\003\125\004
\006\023\002\105\123\061\113\060\111\006\003\125\004\012\023\102
\101\147\145\156\143\151\141\040\116\157\164\141\162\151\141\154
\040\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157
\156\040\123\056\114\056\040\125\156\151\160\145\162\163\157\156
\141\154\040\055\040\103\111\106\040\102\070\063\063\071\065\071
\070\070\061\047\060\045\006\003\125\004\003\023\036\101\116\103
\105\122\124\040\103\145\162\164\151\146\151\143\141\144\157\163
\040\116\157\164\141\162\151\141\154\145\163\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\360\221\017\320
\147\055\051\262\143\115\037\065\171\366\145\153\271\363\363\265
\130\223\047\144\117\247\325\133\202\005\162\233\177\035\256\010
\322\214\320\321\311\140\260\231\031\065\326\031\306\000\071\151
\175\042\357\164\042\203\264\176\352\020\213\076\063\034\341\335
\144\066\051\363\122\112\156\101\303\276\121\014\037\143\270\277
\215\251\077\061\061\073\273\361\066\104\074\047\145\024\171\165
\346\020\244\074\130\033\313\123\142\022\365\207\132\106\242\171
\243\140\343\026\250\336\204\246\372\345\314\304\020\062\366\102
\332\107\115\030\075\346\172\017\053\016\143\377\147\175\103\325
\164\026\220\064\264\017\316\046\163\041\301\112\332\144\344\117
\343\043\265\331\366\253\267\112\177\226\341\313\107\375\006\103
\321\224\064\151\012\376\075\350\146\252\046\014\325\143\071\006
\160\223\255\174\263\344\107\301\073\107\216\151\227\014\221\240
\114\007\217\311\200\114\256\160\223\150\217\241\303\042\302\361
\165\233\050\175\222\222\125\072\250\131\031\354\022\061\034\357
\235\027\334\271\100\011\133\364\055\023\046\163\002\003\001\000
\001\243\202\001\247\060\202\001\243\060\034\006\003\125\035\021
\004\025\060\023\201\021\141\156\143\145\162\164\100\141\156\143
\145\162\164\056\143\157\155\060\037\006\003\125\035\043\004\030
\060\026\200\024\204\367\372\162\136\210\144\146\035\050\214\260

\167\275\014\152\237\114\115\142\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\202\001\040\006\003\125
\035\040\004\202\001\027\060\202\001\023\060\202\001\017\006\011
\053\006\001\004\001\201\223\150\001\060\202\001\000\060\045\006
\010\053\006\001\005\005\007\002\001\026\031\150\164\164\160\072
\057\057\167\167\167\056\141\156\143\145\162\164\056\143\157\155
\057\143\160\163\060\201\326\006\010\053\006\001\005\005\007\002
\002\060\201\311\060\015\026\006\101\116\103\105\122\124\060\003
\002\001\001\032\201\267\101\147\145\156\143\151\141\040\116\157
\164\141\162\151\141\154\040\144\145\040\103\145\162\164\151\146
\151\143\141\143\151\157\156\056\040\114\141\040\144\145\143\154
\141\162\141\143\151\157\156\040\144\145\040\160\162\141\143\164
\151\143\141\163\040\144\145\040\143\145\162\164\151\146\151\141
\143\151\157\156\040\161\165\145\040\162\151\147\145\040\145\154
\040\146\165\156\143\151\157\156\141\155\151\145\156\164\157\040
\144\145\040\154\141\040\160\162\145\163\145\156\164\145\040\141
\165\164\157\162\151\144\141\144\040\163\145\040\145\156\143\165
\145\156\164\162\141\040\144\151\163\160\157\156\151\142\154\145
\040\145\156\040\150\164\164\160\072\057\057\167\167\167\056\141
\156\143\145\162\164\056\143\157\155\057\143\160\163\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\035\006
\003\125\035\016\004\026\004\024\204\367\372\162\136\210\144\146
\035\050\214\260\167\275\014\152\237\114\115\142\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\057\370\345\330\063\245\302\224\156\136\300\361\356\241\114\012
\255\206\017\300\063\335\236\322\331\233\356\305\053\205\051\166
\254\245\022\123\223\035\252\007\354\351\071\144\013\150\360\165
\044\351\321\206\214\234\123\152\353\025\241\011\267\031\007\271
\235\217\002\262\033\111\160\302\143\164\335\013\252\376\007\306
\067\126\306\203\376\300\117\034\314\070\252\375\356\125\230\211
\134\302\123\255\040\207\272\026\144\122\141\354\301\237\273\324
\142\321\052\310\135\360\053\370\332\022\316\043\313\261\314\301
\322\012\275\374\300\200\116\125\111\372\211\330\144\243\112\312
\356\213\327\345\355\222\373\140\342\342\052\317\055\050\076\246
\377\200\234\145\314\022\236\245\034\164\131\220\245\207\177\147
\025\200\020\300\241\321\250\060\354\241\002\221\212\132\323\043
\027\223\132\107\041\171\352\063\172\017\177\070\065\232\312\126
\270\277\144\272\247\260\265\121\035\026\236\216\211\175\070\072
\313\204\115\007\230\330\345\341\214\005\152\245\067\014\326\171
\051\076\361\102\304\266\367\352\031\240\141\340\002\116\277\022
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANCERT Certificados Notariales"

```
# Issuer: CN=ANCERT Certificados Notariales,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF
B83395988,C=ES
# Serial Number:f4:cf:89:ea:dd:a4:c6:3e:91:ad:48:0e:2d:22:36:84
# Subject: CN=ANCERT Certificados Notariales,O=Agencia
 Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
# Not Valid Before: Wed Feb 11 15:58:30 2004
# Not Valid After: Sun Feb 11 15:58:26 2024
# Fingerprint (MD5): 45:f7:50:11:4e:c5:ad:bd:53:68:86:63:ec:7b:6a:e1
# Fingerprint (SHA1): c0:9a:b0:c8:ad:71:14:71:4e:d5:e2:1a:5a:27:6a:dc:d5:e7:ef:cb
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Certificados Notariales"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\300\232\260\310\255\161\024\161\116\325\342\032\132\047\152\334
\325\347\357\313
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\105\367\120\021\116\305\255\275\123\150\206\143\354\173\152\341
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\203\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\047\060
\045\006\003\125\004\003\023\036\101\116\103\105\122\124\040\103
\145\162\164\151\146\151\143\141\144\157\163\040\116\157\164\141
\162\151\141\154\145\163
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\364\317\211\352\335\244\306\076\221\255\110\016\055
\042\066\204
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "ANCERT Corporaciones de Derecho Publico"
# Issuer: CN=ANCERT Corporaciones de Derecho Publico,O=Agencia Notarial de Certificacion S.L. Unipersonal -
CIF B83395988,C=ES
# Serial Number:3f:b2:e5:f2:d1:7c:8b:18:64:56:62:a9:39:81:7f:a7
# Subject: CN=ANCERT Corporaciones de Derecho Publico,O=Agencia Notarial de Certificacion
```

S.L. Unipersonal - CIF B83395988,C=ES
Not Valid Before: Wed Feb 11 17:22:45 2004
Not Valid After: Sun Feb 11 17:22:45 2024
Fingerprint (MD5): 20:6b:d6:8b:4a:8f:48:ab:e4:88:09:0d:e5:65:1a:50
Fingerprint (SHA1): 0c:fd:83:db:ae:44:b9:a0:c8:f6:76:f3:b5:70:65:0b:94:b6:9d:bf
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Corporaciones de Derecho Publico"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\214\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\060\060
\056\006\003\125\004\003\023\047\101\116\103\105\122\124\040\103
\157\162\160\157\162\141\143\151\157\156\145\163\040\144\145\040
\104\145\162\145\143\150\157\040\120\165\142\154\151\143\157
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\214\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\060\060
\056\006\003\125\004\003\023\047\101\116\103\105\122\124\040\103
\157\162\160\157\162\141\143\151\157\156\145\163\040\144\145\040
\104\145\162\145\143\150\157\040\120\165\142\154\151\143\157
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\077\262\345\362\321\174\213\030\144\126\142\251\071\201
\177\247
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\115\060\202\004\065\240\003\002\001\002\002\020\077
\262\345\362\321\174\213\030\144\126\142\251\071\201\177\247\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\214\061\013\060\011\006\003\125\004\006\023\002\105\123\061\113
\060\111\006\003\125\004\012\023\102\101\147\145\156\143\151\141
\040\116\157\164\141\162\151\141\154\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\156\040\123\056\114\056\040
\125\156\151\160\145\162\163\157\156\141\154\040\055\040\103\111

\106\040\102\070\063\063\071\065\071\070\070\061\060\060\056\006
\003\125\004\003\023\047\101\116\103\105\122\124\040\103\157\162
\160\157\162\141\143\151\157\156\145\163\040\144\145\040\104\145
\162\145\143\150\157\040\120\165\142\154\151\143\157\060\036\027
\015\060\064\060\062\061\061\061\067\062\062\064\065\132\027\015
\062\064\060\062\061\061\061\067\062\062\064\065\132\060\201\214
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\113\060
\111\006\003\125\004\012\023\102\101\147\145\156\143\151\141\040
\116\157\164\141\162\151\141\154\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\040\123\056\114\056\040\125
\156\151\160\145\162\163\157\156\141\154\040\055\040\103\111\106
\040\102\070\063\063\071\065\071\070\070\061\060\060\056\006\003
\125\004\003\023\047\101\116\103\105\122\124\040\103\157\162\160
\157\162\141\143\151\157\156\145\163\040\144\145\040\104\145\162
\145\143\150\157\040\120\165\142\154\151\143\157\060\202\001\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\001\017\000\060\202\001\012\002\202\001\001\000\242\041\225
\207\334\212\353\326\172\220\250\150\065\375\027\374\164\072\124
\020\222\065\223\102\165\056\330\076\313\251\224\241\276\152\067
\077\122\272\244\173\332\204\231\026\171\116\000\150\324\037\023
\351\106\073\074\112\235\203\072\330\041\357\302\362\100\105\341
\017\140\105\004\355\374\212\030\056\371\075\344\244\021\062\040
\216\072\267\356\226\100\025\032\231\351\041\235\162\254\315\037
\211\256\252\331\241\100\260\250\147\276\374\172\016\107\261\136
\274\370\060\152\216\067\237\005\102\354\054\303\246\033\213\253
\304\120\075\372\344\163\365\041\260\270\125\137\207\340\242\107
\070\057\100\137\117\154\253\224\044\126\343\114\217\176\220\351
\047\202\050\233\230\272\232\326\265\233\127\157\153\025\034\371
\273\160\051\175\074\367\023\250\321\161\361\260\376\210\105\161
\251\245\164\145\313\303\371\365\003\017\020\303\206\060\000\156
\301\300\046\242\210\376\041\307\062\075\273\306\173\033\267\233
\212\263\372\261\174\161\331\001\247\102\220\252\057\230\220\204
\252\336\306\255\354\074\121\112\005\035\001\121\233\002\003\001
\000\001\243\202\001\247\060\202\001\243\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\202\001\040\006
\003\125\035\040\004\202\001\027\060\202\001\023\060\202\001\017
\006\011\053\006\001\004\001\201\223\150\003\060\202\001\000\060
\045\006\010\053\006\001\005\005\007\002\001\026\031\150\164\164
\160\072\057\057\167\167\167\056\141\156\143\145\162\164\056\143
\157\155\057\143\160\163\060\201\326\006\010\053\006\001\005\005
\007\002\002\060\201\311\060\015\026\006\101\116\103\105\122\124
\060\003\002\001\001\032\201\267\101\147\145\156\143\151\141\040
\116\157\164\141\162\151\141\154\040\144\145\040\103\145\162\164
\151\146\151\143\141\143\151\157\156\056\040\114\141\040\144\145
\143\154\141\162\141\143\151\157\156\040\144\145\040\160\162\141
\143\164\151\143\141\163\040\144\145\040\143\145\162\164\151\146
\151\141\143\151\157\156\040\161\165\145\040\162\151\147\145\040
\145\154\040\146\165\156\143\151\157\156\141\155\151\145\156\164

\157\040\144\145\040\154\141\040\160\162\145\163\145\156\164\145
\040\141\165\164\157\162\151\144\141\144\040\163\145\040\145\156
\143\165\145\156\164\162\141\040\144\151\163\160\157\156\151\142
\154\145\040\145\156\040\150\164\164\160\072\057\057\167\167\167
\056\141\156\143\145\162\164\056\143\157\155\057\143\160\163\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060
\034\006\003\125\035\021\004\025\060\023\201\021\141\156\143\145
\162\164\100\141\156\143\145\162\164\056\143\157\155\060\037\006
\003\125\035\043\004\030\060\026\200\024\214\114\036\067\014\261
\237\322\254\104\013\072\276\002\317\364\215\055\146\225\060\035
\006\003\125\035\016\004\026\004\024\214\114\036\067\014\261\237
\322\254\104\013\072\276\002\317\364\215\055\146\225\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\107\164\300\224\221\342\245\373\230\122\104\223\154\304\300
\035\340\171\333\151\144\055\141\256\244\167\221\065\265\267\312
\227\252\300\261\206\365\033\150\153\252\130\262\174\077\347\003
\047\370\101\161\274\246\322\040\251\200\225\242\107\255\155\106
\164\255\204\233\330\157\251\365\271\057\155\233\300\335\231\207
\355\131\262\165\201\245\211\205\052\314\320\205\201\115\363\257
\167\336\214\301\050\232\102\254\005\207\014\064\234\161\207\375
\354\001\024\037\276\303\056\360\337\372\044\246\135\037\074\361
\242\013\121\210\001\256\022\207\244\265\135\161\262\337\357\015
\174\040\343\177\023\013\115\246\300\167\314\077\326\017\161\307
\161\114\056\036\372\031\006\145\311\255\126\154\167\215\106\077
\275\060\203\036\340\056\125\270\170\043\164\074\130\012\143\072
\115\201\173\157\065\160\256\266\045\331\366\044\376\043\306\332
\032\210\257\250\024\223\163\340\300\133\260\061\151\032\366\051
\137\126\267\032\012\302\371\013\352\002\301\063\021\142\152\174
\103\350\352\032\253\220\000\205\340\105\017\175\216\272\120\325
\306
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ANCERT Corporaciones de Derecho Publico"
Issuer: CN=ANCERT Corporaciones de Derecho Publico,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Serial Number:3f:b2:e5:f2:d1:7c:8b:18:64:56:62:a9:39:81:7f:a7
Subject: CN=ANCERT Corporaciones de Derecho Publico,O=Agencia Notarial de Certificacion S.L. Unipersonal - CIF B83395988,C=ES
Not Valid
Before: Wed Feb 11 17:22:45 2004
Not Valid After: Sun Feb 11 17:22:45 2024
Fingerprint (MD5): 20:6b:d6:8b:4a:8f:48:ab:e4:88:09:0d:e5:65:1a:50
Fingerprint (SHA1): 0c:fd:83:db:ae:44:b9:a0:c8:f6:76:f3:b5:70:65:0b:94:b6:9d:bf

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ANCERT Corporaciones de Derecho Publico"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\014\375\203\333\256\104\271\240\310\366\166\363\265\160\145\013
\224\266\235\277
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\040\153\326\213\112\217\110\253\344\210\011\015\345\145\032\120
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\214\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\113\060\111\006\003\125\004\012\023\102\101\147\145\156\143
\151\141\040\116\157\164\141\162\151\141\154\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\156\040\123\056\114
\056\040\125\156\151\160\145\162\163\157\156\141\154\040\055\040
\103\111\106\040\102\070\063\063\071\065\071\070\070\061\060\060
\056\006\003\125\004\003\023\047\101\116\103\105\122\124\040\103
\157\162\160\157\162\141\143\151\157\156\145\163\040\144\145\040
\104\145\162\145\143\150\157\040\120\165\142\154\151\143\157
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\077\262\345\362\321\174\213\030\144\126\142\251\071\201
\177\247
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GLOBALTRUST"
Issuer: 1.2.840.113549.1.9.1=info@globaltrust.info,CN=GLOBALTRUST,OU=GLOBALTRUST Certification Service,O=ARGE DATEN - Austrian Society for Data Protection,ST=Austria,L=Vienna,C=AT
Serial Number: 0 (0x0)
Subject: 1.2.840.113549.1.9.1=info@globaltrust.info,CN=GLOBALTRUST,OU=GLOBALTRUST Certification Service,O=ARGE DATEN - Austrian Society
 for Data Protection,ST=Austria,L=Vienna,C=AT
Not Valid Before: Mon Aug 07 14:12:35 2006
Not Valid After: Thu Sep 18 14:12:35 2036
Fingerprint (MD5): df:0d:bc:7c:c8:36:b7:76:99:a1:ab:f0:d2:0f:89:6a
Fingerprint (SHA1): 34:2c:d9:d3:06:2d:a4:8c:34:69:65:29:7f:08:1e:bc:2e:f6:8f:dc
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\324\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\017\060\015\006\003\125\004\007\023\006\126\151\145\156\156
\141\061\020\060\016\006\003\125\004\010\023\007\101\165\163\164
\162\151\141\061\072\060\070\006\003\125\004\012\023\061\101\122
\107\105\040\104\101\124\105\116\040\055\040\101\165\163\164\162
\151\141\156\040\123\157\143\151\145\164\171\040\146\157\162\040
\104\141\164\141\040\120\162\157\164\145\143\164\151\157\156\061
\052\060\050\006\003\125\004\013\023\041\107\114\117\102\101\114
\124\122\125\123\124\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\123\145\162\166\151\143\145\061\024\060\022\006
\003\125\004\003\023\013\107\114\117\102\101\114\124\122\125\123
\124\061\044\060\042\006\011\052\206\110\206\367\015\001\011\001
\026\025\151\156\146\157\100\147\154\157\142\141\154\164\162\165
\163\164\056\151\156\146\157
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\324\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\017\060\015\006\003\125\004\007\023\006\126\151\145\156\156
\141\061\020\060\016\006\003\125\004\010\023\007\101\165\163\164
\162\151\141\061\072\060\070\006\003\125\004\012\023\061\101\122
\107\105\040\104\101\124\105\116\040\055\040\101\165\163\164\162
\151\141\156\040\123\157\143\151\145\164\171\040\146\157\162\040
\104\141\164\141\040\120\162\157\164\145\143\164\151\157\156\061
\052\060\050\006\003\125\004\013\023\041\107\114\117\102\101\114
\124\122\125\123\124\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\123\145\162\166\151\143\145\061\024\060\022\006
\003\125\004\003\023\013\107\114\117\102\101\114\124\122\125\123
\124\061\044\060\042\006\011\052\206\110\206\367\015\001\011\001
\026\025\151\156\146\157\100\147\154\157\142\141\154\164\162\165
\163\164\056\151\156\146\157
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\376\060\202\005\346\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\324\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\017\060\015\006\003\125\004\007\023\006\126\151\145\156\156\141
\061\020\060\016\006\003\125\004\010\023\007\101\165\163\164\162
\151\141\061\072\060\070\006\003\125\004\012\023\061\101\122\107

\105\040\104\101\124\105\116\040\055\040\101\165\163\164\162\151
\141\156\040\123\157\143\151\145\164\171\040\146\157\162\040\104
\141\164\141\040\120\162\157\164\145\143\164\151\157\156\061\052
\060\050\006\003\125\004\013\023\041\107\114\117\102\101\114\124
\122\125\123\124\040\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\061\024\060\022\006\003
\125\004\003\023\013\107\114\117\102\101\114\124\122\125\123\124
\061\044\060\042\006\011\052\206\110\206\367\015\001\011\001\026
\025\151\156\146\157\100\147\154\157\142\141\154\164\162\165\163
\164\056\151\156\146\157\060\036\027\015\060\066\060\070\060\067
\061\064\061\062\063\065\132\027\015\063\066\060\071\061\070\061
\064\061\062\063\065\132\060\201\324\061\013\060\011\006\003\125
\004\006\023\002\101\124\061\017\060\015\006\003\125\004\007\023
\006\126\151\145\156\156\141\061\020\060\016\006\003\125\004\010
\023\007\101\165\163\164\162\151\141\061\072\060\070\006\003\125
\004\012\023\061\101\122\107\105\040\104\101\124\105\116\040\055
\040\101\165\163\164\162\151\141\156\040\123\157\143\151\145\164
\171\040\146\157\162\040\104\141\164\141\040\120\162\157\164\145
\143\164\151\157\156\061\052\060\050\006\003\125\004\013\023\041
\107\114\117\102\101\114\124\122\125\123\124\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\061\024\060\022\006\003\125\004\003\023\013\107\114\117\102
\101\114\124\122\125\123\124\061\044\060\042\006\011\052\206\110
\206\367\015\001\011\001\026\025\151\156\146\157\100\147\154\157
\142\141\154\164\162\165\163\164\056\151\156\146\157\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\322\022
\107\354\137\230\350\015\206\025\111\304\335\354\236\361\154\315
\121\266\373\225\117\213\304\220\075\123\063\261\323\023\305\110
\342\245\277\365\364\003\204\017\234\170\161\366\222\227\361\133
\131\165\030\077\047\013\121\057\134\150\307\241\353\000\363\366
\225\075\151\303\176\302\254\304\012\066\162\172\133\246\320\367
\001\173\050\307\052\307\062\140\356\131\270\327\013\047\335\263
\105\005\053\173\144\247\163\134\350\223\002\227\150\354\374\204
\333\236\324\325\201\107\306\234\300\254\227\313\031\352\207\245
\012\243\270\165\044\347\120\047\015\253\026\371\126\135\261\201
\001\026\175\363\351\341\044\363\010\041\271\272\254\135\236\307
\110\171\177\152\312\337\071\167\004\155\033\156\072\315\177\316
\134\110\254\022\074\131\362\152\317\200\110\341\366\000\147\170
\040\340\375\265\144\173\027\227\263\345\047\335\105\153\233\141
\231\006\276\362\347\236\244\155\213\073\153\014\201\356\264\157
\241\276\032\022\101\113\236\255\016\371\106\264\132\321\003\000
\224\026\300\300\363\254\373\174\274\226\300\051\330\371\063\026
\211\243\016\035\225\331\003\324\041\014\335\126\010\111\145\310
\215\253\041\037\124\273\231\274\361\104\133\173\000\030\375\052
\031\130\322\005\311\331\051\066\045\376\167\356\153\131\124\117
\010\024\242\231\011\105\127\255\007\336\042\374\207\034\240\357
\240\171\335\012\175\300\177\065\350\014\146\115\343\265\152\026

\131\161\133\363\220\260\122\136\221\002\307\250\271\302\004\157
\236\117\264\000\055\354\010\354\256\100\156\360\051\047\042\071
\266\315\240\206\020\272\013\065\354\173\132\015\266\171\303\372
\307\255\301\373\353\355\053\204\015\352\336\371\353\232\131\063
\154\301\053\022\214\270\076\305\066\043\070\032\326\167\223\220
\326\167\165\152\130\031\027\241\025\216\156\166\016\243\163\341
\134\225\111\333\301\017\224\024\305\325\142\033\231\253\070\325
\147\156\322\251\031\341\132\072\207\152\110\077\221\226\343\306
\305\047\153\127\164\061\230\366\076\161\161\355\176\336\260\115
\054\363\356\217\333\173\150\327\020\104\051\255\354\253\120\131
\122\232\154\152\162\024\115\026\024\121\367\327\176\037\002\003
\001\000\001\243\202\001\327\060\202\001\323\060\035\006\003\125
\035\016\004\026\004\024\300\001\325\340\170\037\057\164\072\343
\353\300\041\122\246\004\356\046\313\244\060\202\001\001\006\003
\125\035\043\004\201\371\060\201\366\200\024\300\001\325\340\170
\037\057\164\072\343\353\300\041\122\246\004\356\046\313\244\241
\201\332\244\201\327\060\201\324\061\013\060\011\006\003\125\004
\006\023\002\101\124\061\017\060\015\006\003\125\004\007\023\006
\126\151\145\156\156\141\061\020\060\016\006\003\125\004\010\023
\007\101\165\163\164\162\151\141\061\072\060\070\006\003\125\004
\012\023\061\101\122\107\105\040\104\101\124\105\116\040\055\040
\101\165\163\164\162\151\141\156\040\123\157\143\151\145\164\171
\040\146\157\162\040\104\141\164\141\040\120\162\157\164\145\143
\164\151\157\156\061\052\060\050\006\003\125\004\013\023\041\107
\114\117\102\101\114\124\122\125\123\124\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145
\061\024\060\022\006\003\125\004\003\023\013\107\114\117\102\101
\114\124\122\125\123\124\061\044\060\042\006\011\052\206\110\206
\367\015\001\011\001\026\025\151\156\146\157\100\147\154\157\142
\141\154\164\162\165\163\164\056\151\156\146\157\202\001\000\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\013\006\003\125\035\017\004\004\003\002\001\306\060\021\006
\003\125\035\040\004\012\060\010\060\006\006\004\125\035\040\000
\060\075\006\003\125\035\021\004\066\060\064\201\025\151\156\146
\157\100\147\154\157\142\141\154\164\162\165\163\164\056\151\156
\146\157\206\033\150\164\164\160\072\057\057\167\167\167\056\147
\154\157\142\141\154\164\162\165\163\164\056\151\156\146\157\060
\075\006\003\125\035\022\004\066\060\064\201\025\151\156\146\157
\100\147\154\157\142\141\154\164\162\165\163\164\056\151\156\146
\157\206\033\150\164\164\160\072\057\057\167\167\167\056\147\154
\157\142\141\154\164\162\165\163\164\056\151\156\146\157\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202\002
\001\000\025\073\210\203\136\016\336\076\360\076\135\334\055\241
\112\372\050\245\326\007\245\044\110\316\236\171\350\171\232\134
\044\216\130\162\024\101\205\307\105\356\074\050\151\070\111\256
\042\215\273\214\005\155\256\145\273\207\271\176\166\073\050\143
\152\326\157\063\060\210\176\125\005\272\271\025\003\230\035\142
\322\316\300\017\156\034\232\064\356\344\257\037\142\321\354\264

\171\317\317\151\222\212\130\375\301\307\166\013\134\315\122\064
\110\153\345\013\177\311\062\022\337\230\012\026\331\063\126\026
\217\337\103\077\327\275\077\305\036\305\255\041\254\207\054\232
\344\034\037\205\003\254\213\307\267\063\142\111\301\370\252\053
\116\135\207\076\166\122\256\131\176\061\341\174\272\122\213\130
\220\327\200\106\013\064\066\336\357\021\311\134\042\106\302\074
\247\177\142\004\157\337\076\110\216\352\013\076\010\254\030\032
\122\326\361\366\324\142\057\003\271\232\326\074\123\177\125\046
\306\065\053\041\164\260\211\220\124\344\001\210\134\234\205\052
\232\145\136\113\127\362\200\034\354\147\064\232\106\334\002\166
\376\162\067\162\011\261\360\043\217\130\263\002\175\356\170\016
\271\075\163\022\055\125\237\027\143\257\256\330\256\163\266\307
\120\152\205\301\333\175\373\224\131\160\306\303\007\154\126\305
\260\007\374\116\175\223\035\271\047\300\260\225\325\347\174\005
\274\367\017\012\263\364\156\025\127\111\033\265\024\000\244\060
\053\132\364\126\130\277\166\064\242\075\376\001\046\360\335\270
\155\360\244\347\274\040\366\121\010\366\343\067\211\127\066\366
\367\057\376\315\270\144\275\352\327\246\320\377\170\357\176\341
\034\036\124\176\017\064\031\201\020\163\322\343\170\006\027\266
\322\121\373\065\170\166\332\167\203\067\101\076\055\106\250\176
\206\336\126\364\312\220\236\264\255\260\036\105\030\074\064\210
\002\207\350\360\066\221\353\362\347\265\322\004\271\056\270\135
\215\035\232\056\013\026\031\315\166\244\253\373\321\342\243\242
\334\204\175\173\352\120\352\365\262\004\073\211\122\072\262\303
\031\117\271\046\261\274\274\054\262\341\201\246\263\141\265\364
\105\140\057\054\165\305\310\055\210\113\046\273\160\356\073\177
\001\055
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GLOBALTRUST"
Issuer: 1.2.840.113549.1.9.1=info@globaltrust.info,CN=GLOBALTRUST,OU=GLOBALTRUST
Certification Service,O=ARGE DATEN - Austrian Society for Data Protection,ST=Austria,L=Vienna,C=AT
Serial Number: 0 (0x0)
Subject: 1.2.840.113549.1.9.1=info@globaltrust.info,CN=GLOBALTRUST,OU=GLOBALTRUST Certification
Service,O=ARGE DATEN - Austrian Society for Data Protection,ST=Austria,L=Vienna,C=AT
Not Valid Before: Mon Aug 07 14:12:35 2006
Not Valid After: Thu Sep 18 14:12:35 2036
Fingerprint (MD5): df:0d:bc:7c:c8:36:b7:76:99:a1:ab:f0:d2:0f:89:6a
Fingerprint (SHA1): 34:2c:d9:d3:06:2d:a4:8c:34:69:65:29:7f:08:1e:bc:2e:f6:8f:dc
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "GLOBALTRUST"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\064\054\331\323\006\055\244\214\064\151\145\051\177\010\036\274
\056\366\217\334
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\337\015\274\174\310\066\267\166\231\241\253\360\322\017\211\152
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\324\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\017\060\015\006\003\125\004\007\023\006\126\151\145\156\156
\141\061\020\060\016\006\003\125\004\010\023\007\101\165\163\164
\162\151\141\061\072\060\070\006\003\125\004\012\023\061\101\122
\107\105\040\104\101\124\105\116\040\055\040\101\165\163\164\162
\151\141\156\040\123\157\143\151\145\164\171\040\146\157\162\040
\104\141\164\141\040\120\162\157\164\145\143\164\151\157\156\061
\052\060\050\006\003\125\004\013\023\041\107\114\117\102\101\114
\124\122\125\123\124\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\123\145\162\166\151\143\145\061\024\060\022\006
\003\125\004\003\023\013\107\114\117\102\101\114\124\122\125\123
\124\061\044\060\042\006\011\052\206\110\206\367\015\001\011\001
\026\025\151\156\146\157\100\147\154\157\142\141\154\164\162\165
\163\164\056\151\156\146\157
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST
 CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certipost E-Trust TOP Root CA"
Issuer: CN=Certipost E-Trust TOP Root CA,O=Certipost s.a./n.v.,C=BE
Serial Number:04:00:00:00:00:01:05:52:64:c1:95
Subject: CN=Certipost E-Trust TOP Root CA,O=Certipost s.a./n.v.,C=BE
Not Valid Before: Tue Jul 26 10:00:00 2005
Not Valid After: Sat Jul 26 10:00:00 2025
Fingerprint (MD5): b8:d3:12:03:4e:8c:0c:5a:47:c9:b6:c5:9e:5b:97:fd
Fingerprint (SHA1): 05:60:a2:c7:38:ff:98:d1:17:2a:94:fe:45:fb:8a:47:d6:65:37:1e
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certipost E-Trust TOP Root CA"

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\046\060
\044\006\003\125\004\003\023\035\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\124\117\120\040\122\157
\157\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\046\060
\044\006\003\125\004\003\023\035\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\124\117\120\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\301\225
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\314\060\202\002\264\240\003\002\001\002\002\013\004
\000\000\000\000\001\005\122\144\301\225\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\123\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\034\060\032\006\003\125\004
\012\023\023\103\145\162\164\151\160\157\163\164\040\163\056\141
\056\057\156\056\166\056\061\046\060\044\006\003\125\004\003\023
\035\103\145\162\164\151\160\157\163\164\040\105\055\124\162\165
\163\164\040\124\117\120\040\122\157\157\164\040\103\101\060\036
\027\015\060\065\060\067\062\066\061\060\060\060\060\060\132\027
\015\062\065\060\067\062\066\061\060\060\060\060\060\132\060\123
\061\013\060\011\006\003\125\004\006\023\002\102\105\061\034\060
\032\006\003\125\004\012\023\023\103\145\162\164\151\160\157\163
\164\040\163\056\141\056\057\156\056\166\056\061\046\060\044\006
\003\125\004\003\023\035\103\145\162\164\151\160\157\163\164\040
\105\055\124\162\165\163\164\040\124\117\120\040\122\157\157\164
\040\103\101\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\245\324\113\100\326\373\361\065\030\073\242\260
\103\344\311\125\241\300\007\273\010\276\072\031\265\043\303\036
\235\263\010\112\364\103\113\351\301\031\140\220\337\204\327\130
\306\072\335\012\054\225\054\275\227\177\376\242\165\332\006\343
\253\233\154\321\270\317\104\206\301\122\140\267\334\076\073\260
\362\351\304\121\074\112\271\203\271\116\141\152\003\233\034\122
\200\072\120\264\040\262\333\323\262\306\124\177\313\140\233\310
\044\236\257\011\307\145\015\050\366\332\232\042\302\063\156\362

\363\045\324\244\371\226\365\157\252\074\153\334\101\060\345\346
\157\312\110\037\060\170\035\171\175\247\321\277\256\305\136\103
\371\306\057\203\166\233\064\112\244\050\130\053\250\210\205\104
\152\053\362\126\102\166\231\220\063\252\356\371\041\317\362\075
\371\167\204\313\335\051\204\304\324\212\052\244\071\134\076\371
\034\045\150\115\365\347\233\135\261\032\064\136\312\002\163\371
\010\304\014\155\136\335\022\052\345\173\305\066\170\122\235\062
\301\305\050\245\040\250\345\230\015\271\157\317\271\200\236\345
\276\271\233\375\002\003\001\000\001\243\201\240\060\201\235\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\113\336\276\005\061
\056\363\065\310\330\312\247\126\305\224\015\264\132\145\305\060
\110\006\003\125\035\040\004\101\060\077\060\075\006\011\003\220
\016\007\001\000\001\002\000\060\060\060\056\006\010\053\006\001
\005\005\007\002\001\026\042\150\164\164\160\072\057\057\167\167
\167\056\145\055\164\162\165\163\164\056\142\145\057\103\120\123
\057\121\116\143\145\162\164\163\040\060\021\006\011\140\206\110
\001\206\370\102\001\001\004\004\003\002\000\007\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\211\143\314\242\316\370\124\152\174\131\064\170\253\001\264\226
\055\052\041\156\100\055\137\320\226\042\231\203\005\034\345\044
\315\342\365\065\004\277\000\226\007\354\262\244\072\152\053\043
\076\311\017\312\023\035\270\044\226\011\046\330\074\052\201\316
\341\201\310\311\163\076\365\273\017\010\036\220\340\260\222\271
\322\072\227\120\340\006\216\344\202\060\074\140\040\267\244\356
\253\211\006\341\374\045\273\221\324\371\267\137\150\143\250\240
\150\206\153\247\354\222\313\042\372\120\133\023\130\047\256\053
\103\013\266\027\306\060\162\004\063\104\046\112\104\007\037\163
\240\203\101\051\340\222\006\274\325\001\352\376\274\257\161\353
\040\037\012\135\015\240\051\136\316\344\101\121\125\226\303\037
\264\061\245\243\363\123\352\377\302\234\206\162\317\066\114\126
\132\006\062\176\136\253\112\241\316\247\353\237\244\214\052\271
\044\213\270\265\363\006\115\246\312\175\231\373\366\125\352\256
\110\171\356\046\131\323\037\014\123\025\367\142\121\371\204\015
\226\154\136\261\010\346\131\010\053\046\051\012\301\203\100\163
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certipost E-Trust TOP Root CA"
Issuer: CN=Certipost E-Trust TOP
Root CA,O=Certipost s.a./n.v.,C=BE
Serial Number:04:00:00:00:00:01:05:52:64:c1:95
Subject: CN=Certipost E-Trust TOP Root CA,O=Certipost s.a./n.v.,C=BE

```
# Not Valid Before: Tue Jul 26 10:00:00 2005
# Not Valid After: Sat Jul 26 10:00:00 2025
# Fingerprint (MD5): b8:d3:12:03:4e:8c:0c:5a:47:c9:b6:c5:9e:5b:97:fd
# Fingerprint (SHA1): 05:60:a2:c7:38:ff:98:d1:17:2a:94:fe:45:fb:8a:47:d6:65:37:1e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certipost E-Trust TOP Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\005\140\242\307\070\377\230\321\027\052\224\376\105\373\212\107
\326\145\067\036
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\270\323\022\003\116\214\014\132\107\311\266\305\236\133\227\375
END
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\046\060
\044\006\003\125\004\003\023\035\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\124\117\120\040\122\157
\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\301\225
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Certipost E-Trust Primary Qualified CA"
# Issuer: CN=Certipost E-Trust Primary Qualified CA,O=Certipost s.a./n.v.,C=BE
# Serial Number:04:00:00:00:00:01:05:52:64:c4:25
# Subject: CN=Certipost E-Trust Primary Qualified CA,O=Certipost s.a./n.v.,C=BE
# Not Valid Before: Tue Jul 26 10:00:00 2005
# Not Valid After: Sun Jul 26 10:00:00 2020
# Fingerprint (MD5): 10:0e:ad:f3:5c:84:1d:8e:03:5f:2d:c9:39:37:f5:52
# Fingerprint (SHA1): 74:2c:df:15:94:04:9c:bf:17:a2:04:6c:c6:39:bb:38:88:e0:2e:33
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certipost E-Trust Primary Qualified CA"
```

CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\057\060
\055\006\003\125\004\003\023\046\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\121\165\141\154\151\146\151\145\144\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\057\060
\055\006\003\125\004\003\023\046\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\121\165\141\154\151\146\151\145\144\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\304\045
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\336\060\202\002\306\240\003\002\001\002\002\013\004
\000\000\000\000\001\005\122\144\304\045\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\134\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\034\060\032\006\003\125\004
\012\023\023\103\145\162\164\151\160\157\163\164\040\163\056\141
\056\057\156\056\166\056\061\057\060\055\006\003\125\004\003\023
\046\103\145\162\164\151\160\157\163\164\040\105\055\124\162\165
\163\164\040\120\162\151\155\141\162\171\040\121\165\141\154\151
\146\151\145\144\040\103\101\060\036\027\015\060\065\060\067\062
\066\061\060\060\060\060\060\132\027\015\062\060\060\067\062\066
\061\060\060\060\060\060\132\060\134\061\013\060\011\006\003\125
\004\006\023\002\102\105\061\034\060\032\006\003\125\004\012\023
\023\103\145\162\164\151\160\157\163\164\040\163\056\141\056\057
\156\056\166\056\061\057\060\055\006\003\125\004\003\023\046\103
\145\162\164\151\160\157\163\164\040\105\055\124\162\165\163\164
\040\120\162\151\155\141\162\171\040\121\165\141\154\151\146\151
\145\144\040\103\101\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\256\040\322\170\333\232\240\162\234\004
\122\045\054\155\122\330\327\047\211\063\240\341\262\325\373\060
\165\153\055\177\034\147\216\016\347\037\022\337\027\171\030\273
\264\033\157\370\075\165\033\236\147\067\360\361\372\017\165\355
\206\235\003\004\241\050\160\055\074\262\153\240\163\121\343\065
\251\164\245\010\076\224\205\047\066\052\252\162\144\374\167\356
\166\224\034\162\353\277\062\307\167\003\152\045\202\011\005\257

\137\140\074\177\254\033\274\222\350\074\164\131\316\361\174\124
\055\070\256\226\360\254\157\241\063\014\041\132\001\272\043\040
\133\240\206\002\325\123\334\111\037\250\062\263\257\073\106\073
\266\357\237\071\263\070\013\347\172\212\366\050\371\247\157\120
\051\310\171\130\213\111\322\245\330\205\176\126\361\151\025\170
\104\021\065\327\245\124\076\253\146\045\322\333\343\030\361\056
\053\342\161\043\011\067\144\103\102\164\062\226\167\336\227\242
\351\226\206\234\045\104\011\324\001\235\121\176\063\267\011\104
\345\200\227\015\144\133\167\030\227\245\113\251\236\020\235\207
\372\126\247\317\012\175\002\003\001\000\001\243\201\240\060\201
\235\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\360\170\371
\007\167\020\273\334\036\241\256\171\373\060\020\333\306\064\370
\027\060\110\006\003\125\035\040\004\101\060\077\060\075\006\011
\003\220\016\007\001\000\001\002\000\060\060\060\056\006\010\053
\006\001\005\005\007\002\001\026\042\150\164\164\160\072\057\057
\167\167\167\056\145\055\164\162\165\163\164\056\142\145\057\103
\120\123\057\121\116\143\145\162\164\163\040\060\021\006\011\140
\206\110\001\206\370\102\001\001\004\004\003\002\000\007\060\015
\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001
\001\000\154\341\330\137\164\130\351\160\111\326\312\015\054\130
\332\312\144\266\121\117\303\006\144\001\351\212\163\035\236\317
\106\170\277\073\205\206\342\075\112\030\224\052\201\167\157\202
\370\157\364\356\042\374\235\030\041\162\140\273\030\200\202\225
\373\371\367\225\044\201\146\301\265\303\265\322\266\166\213\073
\201\134\270\241\016\053\001\024\213\200\011\100\356\370\140\114
\031\344\027\315\047\001\263\143\022\005\244\010\311\264\277\236
\120\116\265\336\017\222\063\146\165\320\075\347\043\174\352\045
\161\174\376\076\056\066\171\241\345\051\120\043\065\005\225\170
\273\237\171\144\334\127\110\047\054\342\134\063\315\302\273\176
\150\167\247\057\243\111\027\162\341\000\204\153\175\172\257\071
\013\054\325\330\127\144\062\154\204\012\152\166\072\323\254\315
\235\261\347\067\334\354\014\057\305\127\140\337\210\365\103\261
\001\144\046\264\047\202\020\262\243\120\357\227\346\177\277\221
\207\263\333\220\251\052\342\172\064\154\163\111\364\350\215\056
\153\212\335\241\212\177\143\320\277\130\036\257\314\077\222\120
\055\321
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certipost E-Trust Primary Qualified CA"
Issuer: CN=Certipost E-Trust Primary Qualified CA,O=Certipost s.a./n.v.,C=BE
Serial Number:04:00:00:00:00:01:05:52:64:c4:25

Subject: CN=Certipost E-Trust Primary Qualified CA,O=Certipost s.a./n.v.,C=BE
Not Valid Before: Tue Jul 26 10:00:00 2005
Not Valid After: Sun Jul 26 10:00:00 2020
Fingerprint (MD5): 10:0e:ad:f3:5c:84:1d:8e:03:5f:2d:c9:39:37:f5:52
Fingerprint (SHA1): 74:2c:df:15:94:04:9c:bf:17:a2:04:6c:c6:39:bb:38:88:e0:2e:33
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certipost E-Trust Primary Qualified CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\164\054\337\025\224\004\234\277\027\242\004\154\306\071\273\070
\210\340\056\063
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\020\016\255\363\134\204\035\216\003\137\055\311\071\067\365\122
END
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\057\060
\055\006\003\125\004\003\023\046\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\121\165\141\154\151\146\151\145\144\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\304\045
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Certipost E-Trust Primary Normalised CA"
Issuer: CN=Certipost E-Trust Primary Normalised CA,O=Certipost s.a./n.v.,C=BE
Serial Number:04:00:00:00:00:01:05:52:64:c7:61
Subject: CN=Certipost E-Trust Primary Normalised CA,O=Certipost s.a./n.v.,C=BE
Not Valid Before: Tue Jul 26 10:00:00 2005
Not Valid After: Sun Jul 26 10:00:00 2020
Fingerprint (MD5): 21:ef:b8:50:40:39:3f:75:6f:27:fe:e3:ea:58:70:eb
Fingerprint (SHA1): a5:9c:9b:10:ec:73:57:51:5a:bb:66:0c:4d:94:f7:3b:9e:6e:92:72
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Certipost E-Trust Primary Normalised CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\060\060
\056\006\003\125\004\003\023\047\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\116\157\162\155\141\154\151\163\145\144\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\060\060
\056\006\003\125\004\003\023\047\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\116\157\162\155\141\154\151\163\145\144\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\307\141
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\340\060\202\002\310\240\003\002\001\002\002\013\004
\000\000\000\000\001\005\122\144\307\141\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\135\061\013\060\011\006
\003\125\004\006\023\002\102\105\061\034\060\032\006\003\125\004
\012\023\023\103\145\162\164\151\160\157\163\164\040\163\056\141
\056\057\156\056\166\056\061\060\060\056\006\003\125\004\003\023
\047\103\145\162\164\151\160\157\163\164\040\105\055\124\162\165
\163\164\040\120\162\151\155\141\162\171\040\116\157\162\155\141
\154\151\163\145\144\040\103\101\060\036\027\015\060\065\060\067
\062\066\061\060\060\060\060\060\132\027\015\062\060\060\067\062
\066\061\060\060\060\060\060\132\060\135\061\013\060\011\006\003
\125\004\006\023\002\102\105\061\034\060\032\006\003\125\004\012
\023\023\103\145\162\164\151\160\157\163\164\040\163\056\141\056
\057\156\056\166\056\061\060\060\056\006\003\125\004\003\023\047
\103\145\162\164\151\160\157\163\164\040\105\055\124\162\165\163
\164\040\120\162\151\155\141\162\171\040\116\157\162\155\141\154
\151\163\145\144\040\103\101\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\325\263\252\122\204\172\027\223
\042\017\270\004\030\312\311\362\202\052\254\025\013\247\120\161
\266\114\045\153\367\377\001\252\127\132\167\116\136\023\024\015
\125\362\036\361\205\315\205\327\202\034\014\332\011\053\275\375
\274\236\376\155\211\115\242\002\044\346\121\352\067\177\061\106
\132\173\232\166\263\056\240\135\137\344\370\231\012\007\276\356

\222\046\022\311\173\347\135\154\320\203\107\016\300\214\247\321
\171\127\300\013\031\234\233\236\103\305\116\221\045\316\210\053
\155\171\331\171\212\326\146\116\042\303\032\105\116\357\310\260
\142\046\116\046\124\120\237\014\157\263\153\314\174\237\177\336
\017\015\265\217\303\153\324\341\302\373\273\126\120\252\214\075
\217\000\213\074\374\110\027\152\322\132\363\165\155\145\201\275
\106\135\237\242\142\123\256\316\363\251\344\221\053\132\046\303
\171\146\321\246\123\146\065\034\006\161\261\356\231\016\304\373
\130\022\254\042\106\055\342\042\222\333\341\074\277\273\376\206
\347\223\064\163\317\170\151\323\313\336\371\014\262\150\332\311
\212\012\140\124\304\363\126\143\002\003\001\000\001\243\201\240
\060\201\235\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\110\006\003\125\035\040\004\101\060\077\060
\075\006\011\003\220\016\007\001\000\001\002\000\060\060\060\056
\006\010\053\006\001\005\005\007\002\001\026\042\150\164\164\160
\072\057\057\167\167\167\056\145\055\164\162\165\163\164\056\142
\145\057\103\120\123\057\121\116\143\145\162\164\163\040\060\035
\006\003\125\035\016\004\026\004\024\021\362\013\226\322\063\070
\201\127\130\023\375\100\244\021\157\116\231\372\147\060\021\006
\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\065\153\117\336\235\363\003\266\035\310\274\215
\347\136\152\236\251\351\355\242\053\227\352\257\321\341\106\323
\002\111\175\304\122\205\353\272\366\323\277\071\142\030\235\223
\111\275\170\003\277\323\136\025\335\357\047\034\341\273\105\001
\042\201\000\115\072\340\205\312\132\062\003\314\040\217\257\357
\301\333\250\372\363\334\327\262\261\017\003\201\011\051\340\161
\174\213\372\177\313\066\156\033\350\024\316\360\113\046\241\062
\051\117\314\264\365\207\110\014\023\374\307\235\257\253\324\223
\365\052\115\177\110\202\130\076\027\377\303\200\052\253\077\127
\125\270\071\054\146\020\144\046\155\214\153\326\335\240\203\032
\132\126\021\226\106\275\256\160\050\326\070\127\133\221\325\077
\115\351\254\263\303\044\112\226\145\134\064\320\036\324\277\010
\245\227\135\367\106\333\166\360\315\076\165\143\000\053\257\255
\256\206\336\137\246\231\124\015\205\043\245\374\272\355\033\122
\372\111\030\167\205\133\252\162\233\047\010\065\105\067\047\333
\227\311\372\213\075\310\320\235\336\132\357\135\243\026\266\230
\171\312\174\313
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Certipost E-Trust Primary Normalised CA"

```
# Issuer: CN=Certipost E-Trust Primary Normalised CA,O=Certipost s.a./n.v.,C=BE
# Serial Number:04:00:00:00:00:01:05:52:64:c7:61
# Subject: CN=Certipost E-Trust Primary Normalised CA,O=Certipost s.a./n.v.,C=BE
# Not Valid Before: Tue Jul 26 10:00:00 2005
# Not Valid After: Sun Jul 26 10:00:00 2020
# Fingerprint (MD5): 21:ef:b8:50:40:39:3f:75:6f:27:fe:e3:ea:58:70:eb
# Fingerprint (SHA1): a5:9c:9b:10:ec:73:57:51:5a:bb:66:0c:4d:94:f7:3b:9e:6e:92:72
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Certipost E-Trust Primary Normalised CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\245\234\233\020\354\163\127\121\132\273\146\014\115\224\367\073
\236\156\222\162
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\041\357\270\120\100\071\077\165\157\047\376\343\352\130\160\353
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\034\060\032\006\003\125\004\012\023\023\103\145\162\164\151\160
\157\163\164\040\163\056\141\056\057\156\056\166\056\061\060\060
\056\006\003\125\004\003\023\047\103\145\162\164\151\160\157\163
\164\040\105\055\124\162\165\163\164\040\120\162\151\155\141\162
\171\040\116\157\162\155\141\154\151\163\145\144\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\005\122\144\307\141
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Cybertrust Global Root"
# Issuer: CN=Cybertrust Global Root,O=Cybertrust\, Inc
# Serial Number:04:00:00:00:00:01:0f:85:aa:2d:48
# Subject: CN=Cybertrust Global Root,O=Cybertrust\, Inc
# Not Valid Before: Fri Dec
 15 08:00:00 2006
# Not Valid After: Wed Dec 15 08:00:00 2021
# Fingerprint (MD5): 72:e4:4a:87:e3:69:40:80:77:ea:bc:e3:f4:ff:f0:e1
# Fingerprint (SHA1): 5f:43:e5:b1:bf:f8:78:8c:ac:1c:c7:ca:4a:9a:c6:22:2b:cc:34:c6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
```

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Cybertrust Global Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\073\061\030\060\026\006\003\125\004\012\023\017\103\171\142
\145\162\164\162\165\163\164\054\040\111\156\143\061\037\060\035
\006\003\125\004\003\023\026\103\171\142\145\162\164\162\165\163
\164\040\107\154\157\142\141\154\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\030\060\026\006\003\125\004\012\023\017\103\171\142
\145\162\164\162\165\163\164\054\040\111\156\143\061\037\060\035
\006\003\125\004\003\023\026\103\171\142\145\162\164\162\165\163
\164\040\107\154\157\142\141\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\017\205\252\055\110
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\241\060\202\002\211\240\003\002\001\002\002\013\004
\000\000\000\000\001\017\205\252\055\110\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\073\061\030\060\026\006
\003\125\004\012\023\017\103\171\142\145\162\164\162\165\163\164
\054\040\111\156\143\061\037\060\035\006\003\125\004\003\023\026
\103\171\142\145\162\164\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164\060\036\027\015\060\066\061\062\061\065
\060\070\060\060\060\060\132\027\015\062\061\061\062\061\065\060
\070\060\060\060\060\132\060\073\061\030\060\026\006\003\125\004
\012\023\017\103\171\142\145\162\164\162\165\163\164\054\040\111
\156\143\061\037\060\035\006\003\125\004\003\023\026\103\171\142
\145\162\164\162\165\163\164\040\107\154\157\142\141\154\040\122
\157\157\164\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\370\310\274\275\024\120\146\023\377\360\323\171
\354\043\362\267\032\307\216\205\361\022\163\246\031\252\020\333
\234\242\145\164\132\167\076\121\175\126\366\334\043\266\324\355
\137\130\261\067\115\325\111\016\156\365\152\207\326\322\214\322
\047\306\342\377\066\237\230\145\240\023\116\306\052\144\233\325
\220\022\317\024\006\364\073\343\324\050\276\350\016\370\253\116
\110\224\155\216\225\061\020\134\355\242\055\275\325\072\155\262
\034\273\140\300\106\113\001\365\111\256\176\106\212\320\164\215
\241\014\002\316\356\374\347\217\270\153\146\363\177\104\000\277
\146\045\024\053\335\020\060\035\007\226\077\115\366\153\270\217
\267\173\014\245\070\353\336\107\333\325\135\071\374\210\247\363
\327\052\164\361\350\132\242\073\237\120\272\246\214\105\065\302

\120\145\225\334\143\202\357\335\277\167\115\234\142\311\143\163
\026\320\051\017\111\251\110\360\263\252\267\154\305\247\060\071
\100\135\256\304\342\135\046\123\360\316\034\043\010\141\250\224
\031\272\004\142\100\354\037\070\160\167\022\006\161\247\060\030
\135\045\047\245\002\003\001\000\001\243\201\245\060\201\242\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\035\006\003\125\035\016\004\026\004\024\266\010\173\015\172
\314\254\040\114\206\126\062\136\317\253\156\205\055\160\127\060
\077\006\003\125\035\037\004\070\060\066\060\064\240\062\240\060
\206\056\150\164\164\160\072\057\057\167\167\167\062\056\160\165
\142\154\151\143\055\164\162\165\163\164\056\143\157\155\057\143
\162\154\057\143\164\057\143\164\162\157\157\164\056\143\162\154
\060\037\006\003\125\035\043\004\030\060\026\200\024\266\010\173
\015\172\314\254\040\114\206\126\062\136\317\253\156\205\055\160
\127\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\126\357\012\043\240\124\116\225\227\311\370
\211\332\105\301\324\243\000\045\364\037\023\253\267\243\205\130
\151\302\060\255\330\025\212\055\343\311\315\201\132\370\163\043
\132\247\174\005\363\375\042\073\016\321\006\304\333\066\114\163
\004\216\345\260\042\344\305\363\056\245\331\043\343\270\116\112
\040\247\156\002\044\237\042\140\147\173\213\035\162\011\305\061
\134\351\171\237\200\107\075\255\241\013\007\024\075\107\377\003
\151\032\014\013\104\347\143\045\247\177\262\311\270\166\204\355
\043\366\175\007\253\105\176\323\337\263\277\351\212\266\315\250
\242\147\053\122\325\267\145\360\071\114\143\240\221\171\223\122
\017\124\335\203\273\237\321\217\247\123\163\303\313\377\060\354
\174\004\270\330\104\037\223\137\161\011\042\267\156\076\352\034
\003\116\235\032\040\141\373\201\067\354\136\374\012\105\253\327
\347\027\125\320\240\352\140\233\246\366\343\214\133\051\302\006
\140\024\235\055\227\114\251\223\025\235\141\304\001\137\110\326
\130\275\126\061\022\116\021\310\041\340\263\021\221\145\333\264
\246\210\070\316\125
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Cybertrust Global Root"
Issuer: CN=Cybertrust Global Root,O=Cybertrust\, Inc
Serial Number:04:00:00:00:00:01:0f:85:aa:2d:48
Subject: CN=Cybertrust Global Root,O=Cybertrust\, Inc
Not Valid Before: Fri Dec 15 08:00:00 2006
Not Valid After: Wed Dec 15 08:00:00 2021
Fingerprint (MD5): 72:e4:4a:87:e3:69:40:80:77:ea:bc:e3:f4:ff:f0:e1

```
# Fingerprint (SHA1): 5f:43:e5:b1:bf:f8:78:8c:ac:1c:c7:ca:4a:9a:c6:22:2b:cc:34:c6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Cybertrust Global Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\103\345\261\277\370\170\214\254\034\307\312\112\232\306\042
\053\314\064\306
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\162\344\112\207\343\151\100\200\167\352\274\343\364\377\360\341
END
CKA_ISSUER MULTILINE_OCTAL
\060\073\061\030\060\026\006\003\125\004\012\023\017\103\171\142
\145\162\164\162\165\163\164\054\040\111\156\143\061\037\060\035
\006\003\125\004\003\023\026\103\171\142\145\162\164\162\165\163
\164\040\107\154\157\142\141\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\017\205\252\055\110
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "GlobalSign"
# Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R2
# Serial Number:04:00:00:00:00:01:0f:86:26:e6:0d
# Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R2
# Not Valid Before: Fri Dec 15 08:00:00 2006
# Not Valid After: Wed Dec 15 08:00:00 2021
# Fingerprint (MD5): 94:14:77:7e:3e:5e:fd:8f:30:bd:41:b0:cf:e7:d0:30
# Fingerprint (SHA1): 75:e0:ab:b6:13:85:12:27:1c:04:f8:5f:dd:de:38:e4:b7:24:2e:fe
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\062\061\023\060\021\006\003\125\004\012\023\012\107
```

\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\062\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\017\206\046\346\015
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\003\272\060\202\002\242\240\003\002\001\002\002\013\004
\000\000\000\000\001\017\206\046\346\015\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\114\061\040\060\036\006
\003\125\004\013\023\027\107\154\157\142\141\154\123\151\147\156
\040\122\157\157\164\040\103\101\040\055\040\122\062\061\023\060
\021\006\003\125\004\012\023\012\107\154\157\142\141\154\123\151
\147\156\061\023\060\021\006\003\125\004\003\023\012\107\154\157
\142\141\154\123\151\147\156\060\036\027\015\060\066\061\062\061
\065\060\070\060\060\060\060\132\027\015\062\061\061\062\061\065
\060\070\060\060\060\060\132\060\114\061\040\060\036\006\003\125
\004\013\023\027\107\154\157\142\141\154\123\151\147\156\040\122
\157\157\164\040\103\101\040\055\040\122\062\061\023\060\021\006
\003\125\004\012\023\012\107\154\157\142\141\154\123\151\147\156
\061\023\060\021\006\003\125\004\003\023\012\107\154\157\142\141
\154\123\151\147\156\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\246\317\044\016\276\056\157\050\231\105
\102\304\253\076\041\124\233\013\323\177\204\160\372\022\263\313
\277\207\137\306\177\206\323\262\060\134\326\375\255\361\173\334
\345\370\140\226\011\222\020\365\320\123\336\373\173\176\163\210
\254\122\210\173\112\246\312\111\246\136\250\247\214\132\021\274
\172\202\353\276\214\351\263\254\226\045\007\227\112\231\052\007
\057\264\036\167\277\212\017\265\002\174\033\226\270\305\271\072
\054\274\326\022\271\353\131\175\342\320\006\206\137\136\111\152
\265\071\136\210\064\354\274\170\014\010\230\204\154\250\315\113
\264\240\175\014\171\115\360\270\055\313\041\312\325\154\133\175
\341\240\051\204\241\371\323\224\111\313\044\142\221\040\274\335
\013\325\331\314\371\352\047\012\053\163\221\306\235\033\254\310
\313\350\340\240\364\057\220\213\115\373\260\066\033\366\031\172
\205\340\155\362\141\023\210\134\237\340\223\012\121\227\212\132
\316\257\253\325\367\252\011\252\140\275\334\331\137\337\162\251
\140\023\136\000\001\311\112\372\077\244\352\007\003\041\002\216

\202\312\003\302\233\217\002\003\001\000\001\243\201\234\060\201
\231\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\233\342\007
\127\147\034\036\300\152\006\336\131\264\232\055\337\334\031\206
\056\060\066\006\003\125\035\037\004\057\060\055\060\053\240\051
\240\047\206\045\150\164\164\160\072\057\057\143\162\154\056\147
\154\157\142\141\154\163\151\147\156\056\156\145\164\057\162\157
\157\164\055\162\062\056\143\162\154\060\037\006\003\125\035\043
\004\030\060\026\200\024\233\342\007\127\147\034\036\300\152\006
\336\131\264\232\055\337\334\031\206\056\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\231\201
\123\207\034\150\227\206\221\354\340\112\270\104\013\253\201\254
\047\117\326\301\270\034\103\170\263\014\232\374\352\054\074\156
\141\033\115\113\051\365\237\005\035\046\301\270\351\203\000\142
\105\266\251\010\223\271\251\063\113\030\232\302\370\207\210\116
\333\335\161\064\032\301\124\332\106\077\340\323\052\253\155\124
\042\365\072\142\315\040\157\272\051\211\327\335\221\356\323\134
\242\076\241\133\101\365\337\345\144\103\055\351\325\071\253\322
\242\337\267\213\320\300\200\031\034\105\300\055\214\350\370\055
\244\164\126\111\305\005\265\117\025\336\156\104\170\071\207\250
\176\273\363\171\030\221\273\364\157\235\301\360\214\065\214\135
\001\373\303\155\271\357\104\155\171\106\061\176\012\376\251\202
\301\377\357\253\156\040\304\120\311\137\235\115\233\027\214\014
\345\001\311\240\101\152\163\123\372\245\120\264\156\045\017\373
\114\030\364\375\122\331\216\151\261\350\021\017\336\210\330\373
\035\111\367\252\336\225\317\040\170\302\140\022\333\045\100\214
\152\374\176\102\070\100\144\022\367\236\201\341\223\056
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GlobalSign"
Issuer: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R2
Serial Number:04:00:00:00:00:01:0f:86:26:e6:0d
Subject: CN=GlobalSign,O=GlobalSign,OU=GlobalSign Root CA - R2
Not Valid Before: Fri Dec 15 08:00:00 2006
Not Valid After: Wed Dec 15 08:00:00 2021
Fingerprint (MD5): 94:14:77:7e:3e:5e:fd:8f:30:bd:41:b0:cf:e7:d0:30
Fingerprint (SHA1): 75:e0:ab:b6:13:85:12:27:1c:04:f8:5f:dd:de:38:e4:b7:24:2e:fe
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "GlobalSign"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\165\340\253\266\023\205\022\047\034\004\370\137\335\336\070\344
\267\044\056\376
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\224\024\167\176\076\136\375\217\060\275\101\260\317\347\320\060
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\040\060\036\006\003\125\004\013\023\027\107\154\157
\142\141\154\123\151\147\156\040\122\157\157\164\040\103\101\040
\055\040\122\062\061\023\060\021\006\003\125\004\012\023\012\107
\154\157\142\141\154\123\151\147\156\061\023\060\021\006\003\125
\004\003\023\012\107\154\157\142\141\154\123\151\147\156
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\004\000\000\000\000\001\017\206\046\346\015
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "IGC/A"
Issuer:
1.2.840.113549.1.9.1=igca@sgdn.pm.gouv.fr,CN=IGC/A,OU=DCSSI,O=PM/SGDN,L=Paris,ST=France,C=FR
Serial Number:39:11:45:10:94
Subject:
1.2.840.113549.1.9.1=igca@sgdn.pm.gouv.fr,CN=IGC/A,OU=DCSSI,O=PM/SGDN,L=Paris,ST=France,C=FR
Not Valid Before: Fri Dec 13 14:29:23 2002
Not Valid After: Sat Oct 17 14:29:22
 2020
Fingerprint (MD5): 0c:7f:dd:6a:f4:2a:b9:c8:9b:bd:20:7e:a9:db:5c:37
Fingerprint (SHA1): 60:d6:89:74:b5:c2:65:9e:8a:0f:c1:88:7c:88:d2:46:69:1b:18:2c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IGC/A"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\106\122
\061\017\060\015\006\003\125\004\010\023\006\106\162\141\156\143
\145\061\016\060\014\006\003\125\004\007\023\005\120\141\162\151
\163\061\020\060\016\006\003\125\004\012\023\007\120\115\057\123
\107\104\116\061\016\060\014\006\003\125\004\013\023\005\104\103

\123\123\111\061\016\060\014\006\003\125\004\003\023\005\111\107
\103\057\101\061\043\060\041\006\011\052\206\110\206\367\015\001
\011\001\026\024\151\147\143\141\100\163\147\144\156\056\160\155
\056\147\157\165\166\056\146\162
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\106\122
\061\017\060\015\006\003\125\004\010\023\006\106\162\141\156\143
\145\061\016\060\014\006\003\125\004\007\023\005\120\141\162\151
\163\061\020\060\016\006\003\125\004\012\023\007\120\115\057\123
\107\104\116\061\016\060\014\006\003\125\004\013\023\005\104\103
\123\123\111\061\016\060\014\006\003\125\004\003\023\005\111\107
\103\057\101\061\043\060\041\006\011\052\206\110\206\367\015\001
\011\001\026\024\151\147\143\141\100\163\147\144\156\056\160\155
\056\147\157\165\166\056\146\162
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\005\071\021\105\020\224
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\002\060\202\002\352\240\003\002\001\002\002\005\071
\021\105\020\224\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\060\201\205\061\013\060\011\006\003\125\004\006\023
\002\106\122\061\017\060\015\006\003\125\004\010\023\006\106\162
\141\156\143\145\061\016\060\014\006\003\125\004\007\023\005\120
\141\162\151\163\061\020\060\016\006\003\125\004\012\023\007\120
\115\057\123\107\104\116\061\016\060\014\006\003\125\004\013\023
\005\104\103\123\123\111\061\016\060\014\006\003\125\004\003\023
\005\111\107\103\057\101\061\043\060\041\006\011\052\206\110\206
\367\015\001\011\001\026\024\151\147\143\141\100\163\147\144\156
\056\160\155\056\147\157\165\166\056\146\162\060\036\027\015\060
\062\061\062\061\063\061\064\062\071\062\063\132\027\015\062\060
\061\060\061\067\061\064\062\071\062\062\132\060\201\205\061\013
\060\011\006\003\125\004\006\023\002\106\122\061\017\060\015\006
\003\125\004\010\023\006\106\162\141\156\143\145\061\016\060\014
\006\003\125\004\007\023\005\120\141\162\151\163\061\020\060\016
\006\003\125\004\012\023\007\120\115\057\123\107\104\116\061\016
\060\014\006\003\125\004\013\023\005\104\103\123\123\111\061\016
\060\014\006\003\125\004\003\023\005\111\107\103\057\101\061\043
\060\041\006\011\052\206\110\206\367\015\001\011\001\026\024\151
\147\143\141\100\163\147\144\156\056\160\155\056\147\157\165\166
\056\146\162\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\262\037\321\320\142\305\063\073\300\004\206\210
\263\334\370\210\367\375\337\103\337\172\215\232\111\134\366\116
\252\314\034\271\241\353\047\211\362\106\351\073\112\161\325\035

\216\055\317\346\255\253\143\120\307\124\013\156\022\311\220\066
\306\330\057\332\221\252\150\305\162\376\027\012\262\027\176\171
\265\062\210\160\312\160\300\226\112\216\344\125\315\035\047\224
\277\316\162\052\354\134\371\163\040\376\275\367\056\211\147\270
\273\107\163\022\367\321\065\151\072\362\012\271\256\377\106\102
\106\242\277\241\205\032\371\277\344\377\111\205\367\243\160\206
\062\034\135\237\140\367\251\255\245\377\317\321\064\371\175\133
\027\306\334\326\016\050\153\302\335\361\365\063\150\235\116\374
\207\174\066\022\326\243\200\350\103\015\125\141\224\352\144\067
\107\352\167\312\320\262\130\005\303\135\176\261\250\106\220\061
\126\316\160\052\226\262\060\270\167\346\171\300\275\051\073\375
\224\167\114\275\040\315\101\045\340\056\307\033\273\356\244\004
\101\322\135\255\022\152\212\233\107\373\311\335\106\100\341\235
\074\063\320\265\002\003\001\000\001\243\167\060\165\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\013
\006\003\125\035\017\004\004\003\002\001\106\060\025\006\003\125
\035\040\004\016\060\014\060\012\006\010\052\201\172\001\171\001
\001\001\060\035\006\003\125\035\016\004\026\004\024\243\005\057
\030\140\120\302\211\012\335\053\041\117\377\216\116\250\060\061
\066\060\037\006\003\125\035\043\004\030\060\026\200\024\243\005
\057\030\140\120\302\211\012\335\053\041\117\377\216\116\250\060
\061\066\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\001\001\000\005\334\046\330\372\167\025\104\150\374
\057\146\072\164\340\135\344\051\377\006\007\023\204\112\253\317
\155\240\037\121\224\370\111\313\164\066\024\274\025\335\333\211
\057\335\217\240\135\174\365\022\353\237\236\070\244\107\314\263
\226\331\276\234\045\253\003\176\063\017\225\201\015\375\026\340
\210\276\067\360\154\135\320\061\233\062\053\135\027\145\223\230
\140\274\156\217\261\250\074\036\331\034\363\251\046\102\371\144
\035\302\347\222\366\364\036\132\252\031\122\135\257\350\242\367
\140\240\366\215\360\211\365\156\340\012\005\001\225\311\213\040
\012\272\132\374\232\054\074\275\303\267\311\135\170\045\005\077
\126\024\233\014\332\373\072\110\376\227\151\136\312\020\206\367
\116\226\004\010\115\354\260\276\135\334\073\216\117\301\375\232
\066\064\232\114\124\176\027\003\110\225\010\021\034\007\157\205
\010\176\135\115\304\235\333\373\256\316\262\321\263\270\203\154
\035\262\263\171\361\330\160\231\176\360\023\002\316\136\335\121
\323\337\066\201\241\033\170\057\161\263\361\131\114\106\030\050
\253\205\322\140\126\132
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing
 Only Certificate
Trust for "IGC/A"

```
# Issuer:
1.2.840.113549.1.9.1=igca@sgdn.pm.gouv.fr,CN=IGC/A,OU=DCSSI,O=PM/SGDN,L=Paris,ST=France,C=FR
# Serial Number:39:11:45:10:94
# Subject:
1.2.840.113549.1.9.1=igca@sgdn.pm.gouv.fr,CN=IGC/A,OU=DCSSI,O=PM/SGDN,L=Paris,ST=France,C=FR
# Not Valid Before: Fri Dec 13 14:29:23 2002
# Not Valid After: Sat Oct 17 14:29:22 2020
# Fingerprint (MD5): 0c:7f:dd:6a:f4:2a:b9:c8:9b:bd:20:7e:a9:db:5c:37
# Fingerprint (SHA1): 60:d6:89:74:b5:c2:65:9e:8a:0f:c1:88:7c:88:d2:46:69:1b:18:2c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "IGC/A"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\140\326\211\164\265\302\145\236\212\017\301\210\174\210\322\106
\151\033\030\054
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\014\177\335\152\364\052\271\310\233\275\040\176\251\333\134\067
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\205\061\013\060\011\006\003\125\004\006\023\002\106\122
\061\017\060\015\006\003\125\004\010\023\006\106\162\141\156\143
\145\061\016\060\014\006\003\125\004\007\023\005\120\141\162\151
\163\061\020\060\016\006\003\125\004\012\023\007\120\115\057\123
\107\104\116\061\016\060\014\006\003\125\004\013\023\005\104\103
\123\123\111\061\016\060\014\006\003\125\004\003\023\005\111\107
\103\057\101\061\043\060\041\006\011\052\206\110\206\367\015\001
\011\001\026\024\151\147\143\141\100\163\147\144\156\056\160\155
\056\147\157\165\166\056\146\162
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\005\071\021\105\020\224
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "SwissSign Platinum CA - G2"
# Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
# Serial Number:4e:b2:00:67:0c:03:5d:4f
# Subject: CN=SwissSign Platinum CA - G2,O=SwissSign
 AG,C=CH
# Not Valid Before: Wed Oct 25 08:36:00 2006
```

Not Valid After: Sat Oct 25 08:36:00 2036
Fingerprint (MD5): c9:98:27:77:28:1e:3d:0e:15:3c:84:00:b8:85:03:e6
Fingerprint (SHA1): 56:e0:fa:c0:3b:8f:18:23:55:18:e5:d3:11:ca:e8:c2:43:31:ab:66
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\301\060\202\003\251\240\003\002\001\002\002\010\116
\262\000\147\014\003\135\117\060\015\006\011\052\206\110\206\367
\015\001\001\005\005\000\060\111\061\013\060\011\006\003\125\004
\006\023\002\103\110\061\025\060\023\006\003\125\004\012\023\014
\123\167\151\163\163\123\151\147\156\040\101\107\061\043\060\041
\006\003\125\004\003\023\032\123\167\151\163\163\123\151\147\156
\040\120\154\141\164\151\156\165\155\040\103\101\040\055\040\107
\062\060\036\027\015\060\066\061\060\062\065\060\070\063\066\060
\060\132\027\015\063\066\061\060\062\065\060\070\063\066\060\060
\132\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110
\061\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163
\123\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003
\023\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164
\151\156\165\155\040\103\101\040\055\040\107\062\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\312\337\242
\002\342\332\370\374\007\026\261\336\140\252\336\226\134\144\037
\307\057\176\317\147\372\104\102\326\166\143\225\256\353\257\162
\040\212\105\107\206\142\170\206\326\040\071\046\364\256\243\375

\043\347\245\234\265\042\041\031\267\067\223\042\300\120\234\202
\173\324\325\004\104\134\313\264\302\237\222\276\044\330\173\147
\042\342\151\137\345\005\170\324\207\331\161\160\063\045\123\264
\207\073\051\220\050\066\232\125\104\060\150\244\203\227\177\015
\036\234\166\377\025\235\140\227\000\215\212\205\003\354\200\276
\352\054\156\020\121\222\314\176\325\243\063\330\326\111\336\130
\052\257\366\026\353\113\173\220\062\227\271\272\235\130\361\370
\127\111\004\036\242\135\006\160\335\161\333\371\335\213\232\033
\214\317\075\243\115\316\313\174\366\273\234\240\372\011\316\043
\142\262\351\015\037\342\162\050\217\237\254\150\040\175\157\073
\250\205\061\011\177\013\307\350\145\351\343\170\016\011\147\060
\213\064\202\373\135\340\314\235\201\155\142\356\010\036\004\054
\116\233\354\376\251\117\137\375\151\170\357\011\037\241\264\277
\372\363\357\220\036\114\005\213\036\352\172\221\172\303\327\345
\373\060\274\154\033\020\130\230\367\032\137\320\051\062\003\023
\106\115\141\152\205\114\122\164\057\006\037\173\021\342\204\227
\306\231\363\155\177\327\147\203\176\023\150\330\161\050\132\330
\316\335\350\020\024\232\376\155\043\207\156\216\132\160\074\325
\215\011\000\247\252\274\260\061\067\155\310\204\024\036\133\275
\105\143\040\153\113\164\214\275\333\072\016\301\317\132\026\217
\245\230\362\166\211\262\023\022\073\013\167\167\254\273\345\074
\051\112\222\162\312\141\032\053\136\114\342\203\164\167\372\065
\110\172\205\115\215\232\123\304\337\170\312\227\221\110\053\105
\053\001\367\034\032\242\355\030\272\012\275\203\372\157\274\215
\127\223\073\324\324\246\316\036\361\240\261\316\253\375\053\050
\232\117\033\327\303\162\333\244\304\277\135\114\365\335\173\226
\151\356\150\200\346\347\230\272\066\267\376\156\355\053\275\040
\370\145\031\332\125\011\176\045\334\376\141\142\162\371\176\030
\002\357\143\264\320\373\257\345\073\143\214\147\217\002\003\001
\000\001\243\201\254\060\201\251\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016
\004\026\004\024\120\257\314\007\207\025\107\157\070\305\264\145
\321\336\225\252\351\337\234\314\060\037\006\003\125\035\043\004
\030\060\026\200\024\120\257\314\007\207\025\107\157\070\305\264
\145\321\336\225\252\351\337\234\314\060\106\006\003\125\035\040
\004\077\060\075\060\073\006\011\140\205\164\001\131\001\001\001
\001\060\056\060\054\006\010\053\006\001\005\005\007\002\001\026
\040\150\164\164\160\072\057\057\162\145\160\157\163\151\164\157
\162\171\056\163\167\151\163\163\163\151\147\156\056\143\157\155
\057\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\002\001\000\010\205\246\365\026\014\374\104\032\301\143
\340\371\125\106\010\374\160\034\102\050\226\216\267\305\301\101
\165\116\011\161\171\345\155\226\312\113\245\210\140\320\060\164
\270\312\010\334\264\060\236\100\007\026\153\145\225\167\001\256
\244\267\065\013\201\332\161\025\251\164\027\070\173\130\312\371
\057\373\300\145\166\215\133\001\271\175\336\202\075\144\270\276
\024\164\243\012\124\323\054\225\030\027\065\365\121\153\077\217

\242\226\141\071\170\153\113\345\246\240\370\123\337\121\020\223
\142\347\200\057\342\321\340\274\216\066\106\167\063\354\270\373
\216\232\054\211\115\061\021\017\046\236\004\273\267\004\215\013
\362\271\374\132\235\073\026\267\057\310\230\253\376\212\120\131
\056\243\073\374\051\135\213\301\113\311\342\212\023\035\261\277
\273\102\035\122\335\116\330\024\136\020\306\061\007\357\161\047
\367\033\071\011\334\202\352\213\263\225\206\136\375\365\332\135
\061\246\340\061\266\224\346\104\111\164\305\026\345\367\037\003
\141\050\305\310\313\022\240\102\113\371\153\210\010\215\264\062
\030\363\165\237\304\177\000\117\005\225\234\243\027\002\303\263
\123\233\252\040\071\051\053\146\372\235\257\136\263\222\322\265
\246\341\032\371\055\101\151\201\024\264\264\265\355\211\075\316
\373\251\235\065\102\104\261\034\024\163\201\317\052\001\065\232
\061\325\055\217\155\204\337\200\115\127\343\077\305\204\165\332
\211\306\060\273\353\217\313\042\010\240\256\252\361\003\154\072
\113\115\011\245\016\162\306\126\153\041\102\116\043\045\024\150
\256\166\012\174\014\007\160\144\371\232\057\366\005\071\046\306
\014\217\031\177\103\136\156\364\133\025\057\333\141\135\346\147
\057\077\010\224\371\140\264\230\061\332\164\361\204\223\161\115
\137\373\140\130\321\373\304\301\155\211\242\273\040\037\235\161
\221\313\062\233\023\075\076\175\222\122\065\254\222\224\242\323
\030\302\174\307\352\257\166\005\026\335\147\047\302\176\034\007
\042\041\363\100\012\033\064\007\104\023\302\204\152\216\337\031
\132\277\177\353\035\342\032\070\321\134\257\107\222\153\200\265
\060\245\311\215\330\253\061\201\037\337\302\146\067\323\223\251
\205\206\171\145\322
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SwissSign Platinum CA - G2"
Issuer: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Serial Number:4e:b2:00:67:0c:03:5d:4f
Subject: CN=SwissSign Platinum CA - G2,O=SwissSign AG,C=CH
Not Valid Before: Wed Oct 25 08:36:00 2006
Not Valid After: Sat Oct 25 08:36:00 2036
Fingerprint (MD5): c9:98:27:77:28:1e:3d:0e:15:3c:84:00:b8:85:03:e6
Fingerprint (SHA1): 56:e0:fa:c0:3b:8f:18:23:55:18:e5:d3:11:ca:e8:c2:43:31:ab:66
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SwissSign Platinum CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL

\126\340\372\300\073\217\030\043\125\030\345\323\021\312\350\302
\103\061\253\146
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\311\230\047\167\050\036\075\016\025\074\204\000\270\205\003\346
END
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\025\060\023\006\003\125\004\012\023\014\123\167\151\163\163\123
\151\147\156\040\101\107\061\043\060\041\006\003\125\004\003\023
\032\123\167\151\163\163\123\151\147\156\040\120\154\141\164\151
\156\165\155\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\116\262\000\147\014\003\135\117
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "S-TRUST
 Authentication and Encryption Root CA 2005:PN"
Issuer: CN=S-TRUST Authentication and Encryption Root CA 2005:PN,O=Deutscher Sparkassen Verlag
GmbH,L=Stuttgart,ST=Baden-Wuerttemberg (BW),C=DE
Serial Number:37:19:18:e6:53:54:7c:1a:b5:b8:cb:59:5a:db:35:b7
Subject: CN=S-TRUST Authentication and Encryption Root CA 2005:PN,O=Deutscher Sparkassen Verlag
GmbH,L=Stuttgart,ST=Baden-Wuerttemberg (BW),C=DE
Not Valid Before: Wed Jun 22 00:00:00 2005
Not Valid After: Fri Jun 21 23:59:59 2030
Fingerprint (MD5): 04:4b:fd:c9:6c:da:2a:32:85:7c:59:84:61:46:8a:64
Fingerprint (SHA1): be:b5:a9:95:74:6b:9e:df:73:8b:56:e6:df:43:7a:77:be:10:6b:81
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "S-TRUST Authentication and Encryption Root CA 2005:PN"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\040\060\036\006\003\125\004\010\023\027\102\141\144\145\156
\055\127\165\145\162\164\164\145\155\142\145\162\147\040\050\102
\127\051\061\022\060\020\006\003\125\004\007\023\011\123\164\165
\164\164\147\141\162\164\061\051\060\047\006\003\125\004\012\023
\040\104\145\165\164\163\143\150\145\162\040\123\160\141\162\153
\141\163\163\145\156\040\126\145\162\154\141\147\040\107\155\142
\110\061\076\060\074\006\003\125\004\003\023\065\123\055\124\122

\125\123\124\040\101\165\164\150\145\156\164\151\143\141\164\151
\157\156\040\141\156\144\040\105\156\143\162\171\160\164\151\157
\156\040\122\157\157\164\040\103\101\040\062\060\060\065\072\120
\116
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\040\060\036\006\003\125\004\010\023\027\102\141\144\145\156
\055\127\165\145\162\164\164\145\155\142\145\162\147\040\050\102
\127\051\061\022\060\020\006\003\125\004\007\023\011\123\164\165
\164\164\147\141\162\164\061\051\060\047\006\003\125\004\012\023
\040\104\145\165\164\163\143\150\145\162\040\123\160\141\162\153
\141\163\163\145\156\040\126\145\162\154\141\147\040\107\155\142
\110\061\076\060\074\006\003\125\004\003\023\065\123\055\124\122
\125\123\124\040\101\165\164\150\145\156\164\151\143\141\164\151
\157\156\040\141\156\144\040\105\156\143\162\171\160\164\151\157
\156\040\122\157\157\164\040\103\101\040\062\060\060\065\072\120
\116
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\067\031\030\346\123\124\174\032\265\270\313\131\132\333
\065\267
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\173\060\202\003\143\240\003\002\001\002\002\020\067
\031\030\346\123\124\174\032\265\270\313\131\132\333\065\267\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\256\061\013\060\011\006\003\125\004\006\023\002\104\105\061\040
\060\036\006\003\125\004\010\023\027\102\141\144\145\156\055\127
\165\145\162\164\164\145\155\142\145\162\147\040\050\102\127\051
\061\022\060\020\006\003\125\004\007\023\011\123\164\165\164\164
\147\141\162\164\061\051\060\047\006\003\125\004\012\023\040\104
\145\165\164\163\143\150\145\162\040\123\160\141\162\153\141\163
\163\145\156\040\126\145\162\154\141\147\040\107\155\142\110\061
\076\060\074\006\003\125\004\003\023\065\123\055\124\122\125\123
\124\040\101\165\164\150\145\156\164\151\143\141\164\151\157\156
\040\141\156\144\040\105\156\143\162\171\160\164\151\157\156\040
\122\157\157\164\040\103\101\040\062\060\060\065\072\120\116\060
\036\027\015\060\065\060\066\062\062\060\060\060\060\060\060\132
\027\015\063\060\060\066\062\061\062\063\065\071\065\071\132\060
\201\256\061\013\060\011\006\003\125\004\006\023\002\104\105\061
\040\060\036\006\003\125\004\010\023\027\102\141\144\145\156\055
\127\165\145\162\164\164\145\155\142\145\162\147\040\050\102\127
\051\061\022\060\020\006\003\125\004\007\023\011\123\164\165\164
\164\147\141\162\164\061\051\060\047\006\003\125\004\012\023\040

\104\145\165\164\163\143\150\145\162\040\123\160\141\162\153\141
\163\163\145\156\040\126\145\162\154\141\147\040\107\155\142\110
\061\076\060\074\006\003\125\004\003\023\065\123\055\124\122\125
\123\124\040\101\165\164\150\145\156\164\151\143\141\164\151\157
\156\040\141\156\144\040\105\156\143\162\171\160\164\151\157\156
\040\122\157\157\164\040\103\101\040\062\060\060\065\072\120\116
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\331\265\112\301\323\063\352\323\106\263\321\342\114\322\365
\266\203\320\157\325\030\351\223\257\047\216\023\315\265\045\066
\120\064\022\144\051\241\125\341\072\140\223\236\050\311\343\363
\233\341\004\260\043\277\225\212\216\133\033\101\177\132\303\350
\115\114\325\044\026\076\207\110\324\047\256\346\367\123\035\273
\014\000\357\076\141\161\255\277\072\172\130\037\224\075\134\201
\325\325\157\337\270\233\322\365\345\313\203\162\222\302\123\262
\202\002\353\255\255\137\026\055\222\123\166\361\211\266\054\365
\301\057\340\247\112\157\240\060\152\062\353\232\164\003\150\170
\023\235\312\057\233\013\035\276\317\165\015\046\227\233\307\365
\136\012\237\170\337\263\274\354\232\272\357\125\217\033\232\246
\007\143\051\027\131\142\011\052\171\007\167\245\340\321\027\151
\351\133\335\366\220\253\342\230\012\000\321\045\155\236\327\205
\207\057\222\361\321\166\203\117\013\072\131\067\050\057\063\247
\027\120\326\040\013\012\364\046\371\237\070\347\055\244\270\233
\211\215\255\255\311\152\175\211\027\273\366\177\200\203\172\346
\355\002\003\001\000\001\243\201\222\060\201\217\060\022\006\003
\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001\000
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\051\006\003\125\035\021\004\042\060\040\244\036\060\034\061
\032\060\030\006\003\125\004\003\023\021\123\124\122\157\156\154
\151\156\145\061\055\062\060\064\070\055\065\060\035\006\003\125
\035\016\004\026\004\024\017\312\036\134\171\340\242\363\051\266
\322\205\263\013\112\265\145\354\153\122\060\037\006\003\125\035
\043\004\030\060\026\200\024\017\312\036\134\171\340\242\363\051
\266\322\205\263\013\112\265\145\354\153\122\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\257
\001\360\355\031\074\050\350\115\134\273\245\143\034\210\063\003
\247\000\207\244\037\040\253\326\034\343\006\037\227\176\124\275
\267\321\262\311\325\332\200\354\027\327\212\365\173\302\000\366
\351\021\157\204\240\132\045\061\342\211\371\244\000\077\061\150
\056\325\075\350\156\346\325\035\074\077\262\275\237\167\353\235
\323\214\272\300\327\266\115\354\123\234\017\004\156\352\065\147
\127\343\012\145\173\220\072\341\117\076\303\000\222\172\273\005
\211\163\214\313\246\115\300\373\366\002\326\260\007\243\003\302
\047\100\237\014\344\205\202\055\257\232\102\035\320\307\215\370
\100\356\235\006\127\034\331\242\330\200\024\376\341\143\055\062
\207\325\224\122\226\072\106\306\161\226\075\367\230\016\262\221
\252\217\332\364\116\044\000\071\125\350\255\027\271\323\064\053
\112\251\100\314\027\052\125\145\101\164\102\176\365\300\257\310

\223\255\362\030\133\075\211\014\333\107\071\044\370\340\114\362
\037\260\075\012\312\005\116\211\041\032\343\052\231\254\374\177
\241\361\017\033\037\075\236\004\203\335\226\331\035\072\224
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "S-TRUST Authentication and Encryption Root CA 2005:PN"
Issuer: CN=S-TRUST Authentication and Encryption Root CA 2005:PN,O=Deutscher Sparkassen Verlag GmbH,L=Stuttgart,ST=Baden-Wuerttemberg (BW),C=DE
Serial Number:37:19:18:e6:53:54:7c:1a:b5:b8:cb:59:5a:db:35:b7
Subject: CN=S-TRUST Authentication and Encryption Root CA 2005:PN,O=Deutscher Sparkassen Verlag GmbH,L=Stuttgart,ST=Baden-Wuerttemberg (BW),C=DE
Not Valid Before: Wed Jun 22 00:00:00 2005
Not Valid After: Fri Jun 21 23:59:59 2030
Fingerprint (MD5): 04:4b:fd:c9:6c:da:2a:32:85:7c:59:84:61:46:8a:64
#
Fingerprint (SHA1): be:b5:a9:95:74:6b:9e:df:73:8b:56:e6:df:43:7a:77:be:10:6b:81
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "S-TRUST Authentication and Encryption Root CA 2005:PN"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\276\265\251\225\164\153\236\337\163\213\126\346\337\103\172\167
\276\020\153\201
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\004\113\375\311\154\332\052\062\205\174\131\204\141\106\212\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\256\061\013\060\011\006\003\125\004\006\023\002\104\105
\061\040\060\036\006\003\125\004\010\023\027\102\141\144\145\156
\055\127\165\145\162\164\164\145\155\142\145\162\147\040\050\102
\127\051\061\022\060\020\006\003\125\004\007\023\011\123\164\165
\164\164\147\141\162\164\061\051\060\047\006\003\125\004\012\023
\040\104\145\165\164\163\143\150\145\162\040\123\160\141\162\153
\141\163\163\145\156\040\126\145\162\154\141\147\040\107\155\142
\110\061\076\060\074\006\003\125\004\003\023\065\123\055\124\122
\125\123\124\040\101\165\164\150\145\156\164\151\143\141\164\151
\157\156\040\141\156\144\040\105\156\143\162\171\160\164\151\157
\156\040\122\157\157\164\040\103\101\040\062\060\060\065\072\120
\116
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\020\067\031\030\346\123\124\174\032\265\270\313\131\132\333
\065\267
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Primary Certification Authority"
Issuer: CN=GeoTrust Primary Certification Authority,O=GeoTrust Inc.,C=US
Serial Number:18:ac:b5:6a:fd:69:b6:15:3a:63:6c:af:da:fa:c4:a1
Subject: CN=GeoTrust Primary Certification Authority,O=GeoTrust Inc.,C=US
Not Valid Before: Mon Nov 27 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
#
Fingerprint (MD5): 02:26:c3:01:5e:08:30:37:43:a9:d0:7d:cf:37:e6:bf
Fingerprint (SHA1): 32:3c:11:8e:1b:f7:b8:b6:52:54:e2:e2:10:0d:d6:02:90:37:f0:96
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\061\060\057\006\003\125\004\003
\023\050\107\145\157\124\162\165\163\164\040\120\162\151\155\141
\162\171\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\061\060\057\006\003\125\004\003
\023\050\107\145\157\124\162\165\163\164\040\120\162\151\155\141
\162\171\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\030\254\265\152\375\151\266\025\072\143\154\257\332\372
\304\241
END
CKA_VALUE MULTILINE_OCTAL

\060\202\003\174\060\202\002\144\240\003\002\001\002\002\020\030
\254\265\152\375\151\266\025\072\143\154\257\332\372\304\241\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\130
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\026\060
\024\006\003\125\004\012\023\015\107\145\157\124\162\165\163\164
\040\111\156\143\056\061\061\060\057\006\003\125\004\003\023\050
\107\145\157\124\162\165\163\164\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\060\036\027\015\060\066\061\061
\062\067\060\060\060\060\060\060\132\027\015\063\066\060\067\061
\066\062\063\065\071\065\071\132\060\130\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\026\060\024\006\003\125\004\012
\023\015\107\145\157\124\162\165\163\164\040\111\156\143\056\061
\061\060\057\006\003\125\004\003\023\050\107\145\157\124\162\165
\163\164\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\060\202\001\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202
\001\001\000\276\270\025\173\377\324\174\175\147\255\203\144\173
\310\102\123\055\337\366\204\010\040\141\326\001\131\152\234\104
\021\257\357\166\375\225\176\316\141\060\273\172\203\137\002\275
\001\146\312\356\025\215\157\241\060\234\275\241\205\236\224\072
\363\126\210\000\061\317\330\356\152\226\002\331\355\003\214\373
\165\155\347\352\270\125\026\005\026\232\364\340\136\261\210\300
\144\205\134\025\115\210\307\267\272\340\165\351\255\005\075\235
\307\211\110\340\273\050\310\003\341\060\223\144\136\122\300\131
\160\042\065\127\210\212\361\225\012\203\327\274\061\163\001\064
\355\357\106\161\340\153\002\250\065\162\153\227\233\146\340\313
\034\171\137\330\032\004\150\036\107\002\346\235\140\342\066\227
\001\337\316\065\222\337\276\147\307\155\167\131\073\217\235\326
\220\025\224\274\102\064\020\301\071\371\261\047\076\176\326\212
\165\305\262\257\226\323\242\336\233\344\230\276\175\341\351\201
\255\266\157\374\327\016\332\340\064\260\015\032\167\347\343\010
\230\357\130\372\234\204\267\066\257\302\337\254\322\364\020\006
\160\161\065\002\003\001\000\001\243\102\060\100\060\017\006\003
\125\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006
\003\125\035\016\004\026\004\024\054\325\120\101\227\025\213\360
\217\066\141\133\112\373\153\331\231\311\063\222\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000
\132\160\177\054\335\267\064\117\365\206\121\251\046\276\113\270
\252\361\161\015\334\141\307\240\352\064\036\172\167\017\004\065
\350\047\217\154\220\277\221\026\044\106\076\112\116\316\053\026
\325\013\122\035\374\037\147\242\002\105\061\117\316\363\372\003
\247\171\235\123\152\331\332\143\072\370\200\327\323\231\341\245
\341\276\324\125\161\230\065\072\276\223\352\256\255\102\262\220
\157\340\374\041\115\065\143\063\211\111\326\233\116\312\307\347
\116\011\000\367\332\307\357\231\142\231\167\266\225\042\136\212

\240\253\364\270\170\230\312\070\031\231\311\162\236\170\315\113
\254\257\031\240\163\022\055\374\302\101\272\201\221\332\026\132
\061\267\371\264\161\200\022\110\231\162\163\132\131\123\301\143
\122\063\355\247\311\322\071\002\160\372\340\261\102\146\051\252
\233\121\355\060\124\042\024\137\331\253\035\301\344\224\360\370
\365\053\367\352\312\170\106\326\270\221\375\246\015\053\032\024
\001\076\200\360\102\240\225\007\136\155\315\314\113\244\105\215
\253\022\350\263\336\132\345\240\174\350\017\042\035\132\351\131
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Primary Certification Authority"
Issuer: CN=GeoTrust Primary Certification Authority,O=GeoTrust Inc.,C=US
Serial Number:18:ac:b5:6a:fd:69:b6:15:3a:63:6c:af:da:fa:c4:a1
Subject: CN=GeoTrust Primary Certification Authority,O=GeoTrust Inc.,C=US
Not Valid Before: Mon Nov 27 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): 02:26:c3:01:5e:08:30:37:43:a9:d0:7d:cf:37:e6:bf
Fingerprint (SHA1): 32:3c:11:8e:1b:f7:b8:b6:52:54:e2:e2:10:0d:d6:02:90:37:f0:96
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Primary Certification Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\062\074\021\216\033\367\270\266\122\124\342\342\020\015\326\002
\220\067\360\226
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\002\046\303\001\136\010\060\067\103\251\320\175\317\067\346\277
END
CKA_ISSUER MULTILINE_OCTAL
\060\130\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\061\060\057\006\003\125\004\003
\023\050\107\145\157\124\162\165\163\164\040\120\162\151\155\141
\162\171\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\030\254\265\152\375\151\266\025\072\143\154\257\332\372
\304\241
END

CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "thawte Primary Root CA"
Issuer: CN=thawte Primary Root CA,OU=(c) 2006 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Serial Number:34:4e:d5:57:20:d5:ed:ec:49:f4:2f:ce:37:db:2b:6d
Subject: CN=thawte Primary Root CA,OU=(c) 2006 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Not Valid Before: Fri Nov 17 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): 8c:ca:dc:0b:22:ce:f5:be:72:ac:41:1a:11:a8:d8:12
Fingerprint (SHA1): 91:c6:d6:ee:3e:8a:c8:63:84:e5:48:c2:99:29:5c:75:6c:81:7b:81
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\251\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\066\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\037\060\035\006
\003\125\004\003\023\026\164\150\141\167\164\145\040\120\162\151
\155\141\162\171\040\122\157\157\164\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\251\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\066\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\037\060\035\006
\003\125\004\003\023\026\164\150\141\167\164\145\040\120\162\151

\155\141\162\171\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\064\116\325\127\040\325\355\354\111\364\057\316\067\333
\053\155
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\040\060\202\003\010\240\003\002\001\002\002\020\064
\116\325\127\040\325\355\354\111\364\057\316\067\333\053\155\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\251\061\013\060\011\006\003\125\004\006\023\002\125\123\061\025
\060\023\006\003\125\004\012\023\014\164\150\141\167\164\145\054
\040\111\156\143\056\061\050\060\046\006\003\125\004\013\023\037
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\123\145
\162\166\151\143\145\163\040\104\151\166\151\163\151\157\156\061
\070\060\066\006\003\125\004\013\023\057\050\143\051\040\062\060
\060\066\040\164\150\141\167\164\145\054\040\111\156\143\056\040
\055\040\106\157\162\040\141\165\164\150\157\162\151\172\145\144
\040\165\163\145\040\157\156\154\171\061\037\060\035\006\003\125
\004\003\023\026\164\150\141\167\164\145\040\120\162\151\155\141
\162\171\040\122\157\157\164\040\103\101\060\036\027\015\060\066
\061\061\061\067\060\060\060\060\060\060\132\027\015\063\066\060
\067\061\066\062\063\065\071\065\071\132\060\201\251\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\025\060\023\006\003
\125\004\012\023\014\164\150\141\167\164\145\054\040\111\156\143
\056\061\050\060\046\006\003\125\004\013\023\037\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143
\145\163\040\104\151\166\151\163\151\157\156\061\070\060\066\006
\003\125\004\013\023\057\050\143\051\040\062\060\060\066\040\164
\150\141\167\164\145\054\040\111\156\143\056\040\055\040\106\157
\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145
\040\157\156\154\171\061\037\060\035\006\003\125\004\003\023\026
\164\150\141\167\164\145\040\120\162\151\155\141\162\171\040\122
\157\157\164\040\103\101\060\202\001\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202
\001\012\002\202\001\001\000\254\240\360\373\200\131\324\234\307
\244\317\235\241\131\163\011\020\105\014\015\054\156\150\361\154
\133\110\150\111\131\067\374\013\063\031\302\167\177\314\020\055
\225\064\034\346\353\115\011\247\034\322\270\311\227\066\002\267
\211\324\044\137\006\300\314\104\224\224\215\002\142\157\353\132
\335\021\215\050\232\134\204\220\020\172\015\275\164\146\057\152
\070\240\342\325\124\104\353\035\007\237\007\272\157\356\351\375
\116\013\051\365\076\204\240\001\361\234\253\370\034\176\211\244
\350\241\330\161\145\015\243\121\173\356\274\322\042\140\015\271
\133\235\337\272\374\121\133\013\257\230\262\351\056\351\004\350
\142\207\336\053\310\327\116\301\114\144\036\335\317\207\130\272
\112\117\312\150\007\035\034\235\112\306\325\057\221\314\174\161

\162\034\305\300\147\353\062\375\311\222\134\224\332\205\300\233
\277\123\175\053\011\364\214\235\221\037\227\152\122\313\336\011
\066\244\167\330\173\207\120\104\325\076\156\051\151\373\071\111
\046\036\011\245\200\173\100\055\353\350\047\205\311\376\141\375
\176\346\174\227\035\325\235\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\035\006\003\125\035\016\004\026\004\024\173\133\105\317
\257\316\313\172\375\061\222\032\152\266\363\106\353\127\110\120
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\171\021\300\113\263\221\266\374\360\351\147\324
\015\156\105\276\125\350\223\322\316\003\077\355\332\045\260\035
\127\313\036\072\166\240\114\354\120\166\350\144\162\014\244\251
\361\270\213\326\326\207\204\273\062\345\101\021\300\167\331\263
\140\235\353\033\325\321\156\104\104\251\246\001\354\125\142\035
\167\270\134\216\110\111\174\234\073\127\021\254\255\163\067\216
\057\170\134\220\150\107\331\140\140\346\374\007\075\042\040\027
\304\367\026\351\304\330\162\371\310\163\174\337\026\057\025\251
\076\375\152\047\266\241\353\132\272\230\037\325\343\115\144\012
\235\023\310\141\272\365\071\034\207\272\270\275\173\042\177\366
\376\254\100\171\345\254\020\157\075\217\033\171\166\213\304\067
\263\041\030\204\345\066\000\353\143\040\231\271\351\376\063\004
\273\101\310\301\002\371\104\143\040\236\201\316\102\323\326\077
\054\166\323\143\234\131\335\217\246\341\016\240\056\101\367\056
\225\107\317\274\375\063\363\366\013\141\176\176\221\053\201\107
\302\047\060\356\247\020\135\067\217\134\071\053\344\004\360\173
\215\126\214\150
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "thawte Primary Root CA"
Issuer: CN=thawte Primary Root CA,OU=(c) 2006 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
#
Serial Number:34:4e:d5:57:20:d5:ed:ec:49:f4:2f:ce:37:db:2b:6d
Subject: CN=thawte Primary Root CA,OU=(c) 2006 thawte\, Inc. - For authorized use only,OU=Certification Services Division,O=thawte\, Inc.,C=US
Not Valid Before: Fri Nov 17 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): 8c:ca:dc:0b:22:ce:f5:be:72:ac:41:1a:11:a8:d8:12
Fingerprint (SHA1): 91:c6:d6:ee:3e:8a:c8:63:84:e5:48:c2:99:29:5c:75:6c:81:7b:81
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "thawte Primary Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\221\306\326\356\076\212\310\143\204\345\110\302\231\051\134\165
\154\201\173\201
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\214\312\334\013\042\316\365\276\162\254\101\032\021\250\330\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\251\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\025\060\023\006\003\125\004\012\023\014\164\150\141\167\164
\145\054\040\111\156\143\056\061\050\060\046\006\003\125\004\013
\023\037\103\145\162\164\151\146\151\143\141\164\151\157\156\040
\123\145\162\166\151\143\145\163\040\104\151\166\151\163\151\157
\156\061\070\060\066\006\003\125\004\013\023\057\050\143\051\040
\062\060\060\066\040\164\150\141\167\164\145\054\040\111\156\143
\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151\172
\145\144\040\165\163\145\040\157\156\154\171\061\037\060\035\006
\003\125\004\003\023\026\164\150\141\167\164\145\040\120\162\151
\155\141\162\171\040\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\064\116\325\127\040\325\355\354\111\364\057\316\067\333
\053\155
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign Class 3 Public Primary
 Certification Authority - G5"
Issuer: CN=VeriSign Class 3 Public Primary Certification Authority - G5,OU=(c) 2006 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:18:da:d1:9e:26:7d:e8:bb:4a:21:58:cd:cc:6b:3b:4a
Subject: CN=VeriSign Class 3 Public Primary Certification Authority - G5,OU=(c) 2006 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Wed Nov 08 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): cb:17:e4:31:67:3e:e2:09:fe:45:57:93:f3:0a:fa:1c
Fingerprint (SHA1): 4e:b6:d5:78:49:9b:1c:cf:5f:58:1e:ad:56:be:3d:9b:67:44:a5:e5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\066\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\065
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\066\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\030\332\321\236\046\175\350\273\112\041\130\315\314\153
\073\112
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\323\060\202\003\273\240\003\002\001\002\002\020\030
\332\321\236\046\175\350\273\112\041\130\315\314\153\073\112\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\312\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027
\060\025\006\003\125\004\012\023\016\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\061\037\060\035\006\003\125\004\013
\023\026\126\145\162\151\123\151\147\156\040\124\162\165\163\164
\040\116\145\164\167\157\162\153\061\072\060\070\006\003\125\004

\013\023\061\050\143\051\040\062\060\060\066\040\126\145\162\151
\123\151\147\156\054\040\111\156\143\056\040\055\040\106\157\162
\040\141\165\164\150\157\162\151\172\145\144\040\165\163\145\040
\157\156\154\171\061\105\060\103\006\003\125\004\003\023\074\126
\145\162\151\123\151\147\156\040\103\154\141\163\163\040\063\040
\120\165\142\154\151\143\040\120\162\151\155\141\162\171\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\055\040\107\065\060\036\027\015\060
\066\061\061\060\070\060\060\060\060\060\060\132\027\015\063\066
\060\067\061\066\062\063\065\071\065\071\132\060\201\312\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006
\003\125\004\012\023\016\126\145\162\151\123\151\147\156\054\040
\111\156\143\056\061\037\060\035\006\003\125\004\013\023\026\126
\145\162\151\123\151\147\156\040\124\162\165\163\164\040\116\145
\164\167\157\162\153\061\072\060\070\006\003\125\004\013\023\061
\050\143\051\040\062\060\060\066\040\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165
\164\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154
\171\061\105\060\103\006\003\125\004\003\023\074\126\145\162\151
\123\151\147\156\040\103\154\141\163\163\040\063\040\120\165\142
\154\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\055\040\107\065\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\257\044\010\010\051\172\065
\236\140\014\252\347\113\073\116\334\174\274\074\105\034\273\053
\340\376\051\002\371\127\010\243\144\205\025\047\365\361\255\310
\061\211\135\042\350\052\252\246\102\263\217\370\271\125\267\261
\267\113\263\376\217\176\007\127\354\357\103\333\146\142\025\141
\317\140\015\244\330\336\370\340\303\142\010\075\124\023\353\111
\312\131\124\205\046\345\053\217\033\237\353\365\241\221\302\063
\111\330\103\143\152\122\113\322\217\350\160\121\115\321\211\151
\173\307\160\366\263\334\022\164\333\173\135\113\126\323\226\277
\025\167\241\260\364\242\045\362\257\034\222\147\030\345\364\006
\004\357\220\271\344\000\344\335\072\265\031\377\002\272\364\074
\356\340\213\353\067\213\354\364\327\254\362\366\360\075\257\335
\165\221\063\031\035\034\100\313\164\044\031\041\223\331\024\376
\254\052\122\307\217\325\004\111\344\215\143\107\210\074\151\203
\313\376\107\275\053\176\117\305\225\256\016\235\324\321\103\300
\147\163\343\024\010\176\345\077\237\163\270\063\012\317\135\077
\064\207\226\212\356\123\350\045\025\002\003\001\000\001\243\201
\262\060\201\257\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\006\060\155\006\010\053\006\001\005\005\007\001
\014\004\141\060\137\241\135\240\133\060\131\060\127\060\125\026
\011\151\155\141\147\145\057\147\151\146\060\041\060\037\060\007
\006\005\053\016\003\002\032\004\024\217\345\323\032\206\254\215
\216\153\303\317\200\152\324\110\030\054\173\031\056\060\045\026

\043\150\164\164\160\072\057\057\154\157\147\157\056\166\145\162
\151\163\151\147\156\056\143\157\155\057\166\163\154\157\147\157
\056\147\151\146\060\035\006\003\125\035\016\004\026\004\024\177
\323\145\247\302\335\354\273\360\060\011\363\103\071\372\002\257
\063\061\063\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\001\001\000\223\044\112\060\137\142\317\330\032
\230\057\075\352\334\231\055\275\167\366\245\171\042\070\354\304
\247\240\170\022\255\142\016\105\160\144\305\347\227\146\055\230
\011\176\137\257\326\314\050\145\362\001\252\010\032\107\336\371
\371\174\222\132\010\151\040\015\331\076\155\156\074\015\156\330
\346\006\221\100\030\271\370\301\355\337\333\101\252\340\226\040
\311\315\144\025\070\201\311\224\356\242\204\051\013\023\157\216
\333\014\335\045\002\333\244\213\031\104\322\101\172\005\151\112
\130\117\140\312\176\202\152\013\002\252\045\027\071\265\333\177
\347\204\145\052\225\212\275\206\336\136\201\026\203\055\020\314
\336\375\250\202\052\155\050\037\015\013\304\345\347\032\046\031
\341\364\021\157\020\265\225\374\347\102\005\062\333\316\235\121
\136\050\266\236\205\323\133\357\245\175\105\100\162\216\267\016
\153\016\006\373\063\065\110\161\270\235\047\213\304\145\137\015
\206\166\234\104\172\366\225\134\366\135\062\010\063\244\124\266
\030\077\150\134\362\102\112\205\070\124\203\137\321\350\054\362
\254\021\326\250\355\143\152
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL
 CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign Class 3 Public Primary Certification Authority - G5"
Issuer: CN=VeriSign Class 3 Public Primary Certification Authority - G5,OU=(c) 2006 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:18:da:d1:9e:26:7d:e8:bb:4a:21:58:cd:cc:6b:3b:4a
Subject: CN=VeriSign Class 3 Public Primary Certification Authority - G5,OU=(c) 2006 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Wed Nov 08 00:00:00 2006
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): cb:17:e4:31:67:3e:e2:09:fe:45:57:93:f3:0a:fa:1c
Fingerprint (SHA1): 4e:b6:d5:78:49:9b:1c:cf:5f:58:1e:ad:56:be:3d:9b:67:44:a5:e5
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G5"
CKA_CERT_SHA1_HASH
 MULTILINE_OCTAL
\116\266\325\170\111\233\034\317\137\130\036\255\126\276\075\233

\147\104\245\345
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\313\027\344\061\147\076\342\011\376\105\127\223\363\012\372\034
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\062\060\060\066\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\030\332\321\236\046\175\350\273\112\041\130\315\314\153
\073\112
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swisscom Root CA 1"
Issuer: CN=Swisscom Root CA 1,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:5c:0b:85:5c:0b:e7:59:41:df:57:cc:3f:7f:9d:a8:36
Subject: CN=Swisscom Root CA 1,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Thu Aug 18 12:06:20 2005
Not Valid After: Mon Aug 18 22:06:20 2025
Fingerprint (MD5): f8:38:7c:77:88:df:2c:16:68:2e:c2:e2:52:4b:b8:f9
Fingerprint (SHA1): 5f:3a:fc:0a:8b:64:f6:86:67:34:74:df:7e:a9:a2:fe:f9:fa:7a:51
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root CA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061

\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125
\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125
\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\134\013\205\134\013\347\131\101\337\127\314\077\177\235
\250\066
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\331\060\202\003\301\240\003\002\001\002\002\020\134
\013\205\134\013\347\131\101\337\127\314\077\177\235\250\066\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\144
\061\013\060\011\006\003\125\004\006\023\002\143\150\061\021\060
\017\006\003\125\004\012\023\010\123\167\151\163\163\143\157\155
\061\045\060\043\006\003\125\004\013\023\034\104\151\147\151\164
\141\154\040\103\145\162\164\151\146\151\143\141\164\145\040\123
\145\162\166\151\143\145\163\061\033\060\031\006\003\125\004\003
\023\022\123\167\151\163\163\143\157\155\040\122\157\157\164\040
\103\101\040\061\060\036\027\015\060\065\060\070\061\070\061\062
\060\066\062\060\132\027\015\062\065\060\070\061\070\062\062\060
\066\062\060\132\060\144\061\013\060\011\006\003\125\004\006\023
\002\143\150\061\021\060\017\006\003\125\004\012\023\010\123\167
\151\163\163\143\157\155\061\045\060\043\006\003\125\004\013\023
\034\104\151\147\151\164\141\154\040\103\145\162\164\151\146\151
\143\141\164\145\040\123\145\162\166\151\143\145\163\061\033\060
\031\006\003\125\004\003\023\022\123\167\151\163\163\143\157\155
\040\122\157\157\164\040\103\101\040\061\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\320\271\260\250\014
\331\273\077\041\370\033\325\063\223\200\026\145\040\165\262\075
\233\140\155\106\310\214\061\157\027\303\372\232\154\126\355\074
\305\221\127\303\315\253\226\111\220\052\031\113\036\243\155\127
\335\361\053\142\050\165\105\136\252\326\133\372\013\045\330\241
\026\371\034\304\056\346\225\052\147\314\320\051\156\074\205\064

\070\141\111\261\000\237\326\072\161\137\115\155\316\137\271\251
\344\211\177\152\122\372\312\233\362\334\251\371\235\231\107\077
\116\051\137\264\246\215\135\173\013\231\021\003\003\376\347\333
\333\243\377\035\245\315\220\036\001\037\065\260\177\000\333\220
\157\306\176\173\321\356\172\172\247\252\014\127\157\244\155\305
\023\073\260\245\331\355\062\034\264\136\147\213\124\334\163\207
\345\323\027\174\146\120\162\135\324\032\130\301\331\317\330\211
\002\157\247\111\264\066\135\320\244\336\007\054\266\165\267\050
\221\326\227\276\050\365\230\036\352\133\046\311\275\260\227\163
\332\256\221\046\353\150\301\371\071\025\326\147\113\012\155\117
\313\317\260\344\102\161\214\123\171\347\356\341\333\035\240\156
\035\214\032\167\065\134\026\036\053\123\037\064\213\321\154\374
\362\147\007\172\365\255\355\326\232\253\241\261\113\341\314\067
\137\375\177\315\115\256\270\037\234\103\371\052\130\125\103\105
\274\226\315\160\016\374\311\343\146\272\116\215\073\201\313\025
\144\173\271\224\350\135\063\122\205\161\056\117\216\242\006\021
\121\311\343\313\241\156\061\010\144\014\302\322\074\365\066\350
\327\320\016\170\043\040\221\311\044\052\145\051\133\042\367\041
\316\203\136\244\363\336\113\323\150\217\106\165\134\203\011\156
\051\153\304\160\214\365\235\327\040\057\377\106\322\053\070\302
\057\165\034\075\176\332\245\357\036\140\205\151\102\323\314\370
\143\376\036\103\071\205\246\266\143\101\020\263\163\036\274\323
\372\312\175\026\107\342\247\325\320\243\212\012\010\226\142\126
\156\064\333\331\002\271\060\165\343\004\322\347\217\302\260\021
\100\012\254\325\161\002\142\213\061\276\335\306\043\130\061\102
\103\055\164\371\306\236\246\212\017\351\376\277\203\346\103\127
\044\272\357\106\064\252\327\022\001\070\355\002\003\001\000\001
\243\201\206\060\201\203\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\035\006\003\125\035\041\004\026\060
\024\060\022\006\007\140\205\164\001\123\000\001\006\007\140\205
\164\001\123\000\001\060\022\006\003\125\035\023\001\001\377\004
\010\060\006\001\001\377\002\001\007\060\037\006\003\125\035\043
\004\030\060\026\200\024\003\045\057\336\157\202\001\072\134\054
\334\053\241\151\265\147\324\214\323\375\060\035\006\003\125\035
\016\004\026\004\024\003\045\057\336\157\202\001\072\134\054\334
\053\241\151\265\147\324\214\323\375\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\065\020\313
\354\246\004\015\015\017\315\300\333\253\250\362\210\227\014\337
\223\057\115\174\100\126\061\172\353\244\017\140\315\172\363\276
\303\047\216\003\076\244\335\022\357\176\036\164\006\074\077\061
\362\034\173\221\061\041\264\360\320\154\227\324\351\227\262\044
\126\036\126\303\065\275\210\005\017\133\020\032\144\341\307\202
\060\371\062\255\236\120\054\347\170\005\320\061\261\132\230\212
\165\116\220\134\152\024\052\340\122\107\202\140\346\036\332\201
\261\373\024\013\132\361\237\322\225\272\076\320\033\326\025\035
\243\276\206\325\333\017\300\111\144\273\056\120\031\113\322\044
\370\335\036\007\126\320\070\240\225\160\040\166\214\327\335\036
\336\237\161\304\043\357\203\023\134\243\044\025\115\051\100\074

\152\304\251\330\267\246\104\245\015\364\340\235\167\036\100\160
\046\374\332\331\066\344\171\344\265\077\274\233\145\276\273\021
\226\317\333\306\050\071\072\010\316\107\133\123\132\305\231\376
\135\251\335\357\114\324\306\245\255\002\346\214\007\022\036\157
\003\321\157\240\243\363\051\275\022\307\120\242\260\177\210\251
\231\167\232\261\300\245\071\056\134\174\151\342\054\260\352\067
\152\244\341\132\341\365\120\345\203\357\245\273\052\210\347\214
\333\375\155\136\227\031\250\176\146\165\153\161\352\277\261\307
\157\240\364\216\244\354\064\121\133\214\046\003\160\241\167\325
\001\022\127\000\065\333\043\336\016\212\050\231\375\261\020\157
\113\377\070\055\140\116\054\234\353\147\265\255\111\356\113\037
\254\257\373\015\220\132\146\140\160\135\252\315\170\324\044\356
\310\101\240\223\001\222\234\152\236\374\271\044\305\263\025\202
\176\276\256\225\053\353\261\300\332\343\001\140\013\136\151\254
\204\126\141\276\161\027\376\035\023\017\376\306\207\105\351\376
\062\240\032\015\023\244\224\125\161\245\026\213\272\312\211\260
\262\307\374\217\330\124\265\223\142\235\316\317\131\373\075\030
\316\052\313\065\025\202\135\377\124\042\133\161\122\373\267\311
\376\140\233\000\101\144\360\252\052\354\266\102\103\316\211\146
\201\310\213\237\071\124\003\045\323\026\065\216\204\320\137\372
\060\032\365\232\154\364\016\123\371\072\133\321\034
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swisscom Root CA 1"
Issuer: CN=Swisscom Root CA 1,OU=Digital Certificate Services,O=Swisscom,C=ch
Serial Number:5c:0b:85:5c:0b:e7:59:41:df:57:cc:3f:7f:9d:a8:36
Subject: CN=Swisscom Root CA 1,OU=Digital Certificate Services,O=Swisscom,C=ch
Not Valid Before: Thu Aug 18 12:06:20 2005
Not Valid After: Mon Aug 18 22:06:20 2025
Fingerprint (MD5): f8:38:7c:77:88:df:2c:16:68:2e:c2:e2:52:4b:b8:f9
Fingerprint (SHA1): 5f:3a:fc:0a:8b:64:f6:86:67:34:74:df:7e:a9:a2:fe:f9:fa:7a:51
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swisscom Root CA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\137\072\374\012\213\144\366\206\147\064\164\337\176\251\242\376
\371\372\172\121
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\070\174\167\210\337\054\026\150\056\302\342\122\113\270\371

END
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\143\150\061
\021\060\017\006\003\125\004\012\023\010\123\167\151\163\163\143
\157\155\061\045\060\043\006\003\125\004\013\023\034\104\151\147
\151\164\141\154\040\103\145\162\164\151\146\151\143\141\164\145
\040\123\145\162\166\151\143\145\163\061\033\060\031\006\003\125
\004\003\023\022\123\167\151\163\163\143\157\155\040\122\157\157
\164\040\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\134\013\205\134\013\347\131\101\337\127\314\077\177\235
\250\066
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsec e-Szigno Root CA"
Issuer: CN=Microsec e-Szigno Root CA,OU=e-Szigno CA,O=Microsec Ltd.,L=Budapest,C=HU
Serial Number:cc:b8:e7:bf:4e:29:1a:fd:a2:dc:66:a5:1c:2c:0f:11
Subject: CN=Microsec e-Szigno Root CA,OU=e-Szigno CA,O=Microsec Ltd.,L=Budapest,C=HU
Not Valid Before: Wed Apr 06 12:28:44 2005
Not Valid After: Thu Apr 06 12:28:44 2017
Fingerprint (MD5): f0:96:b6:2f:c5:10:d5:67:8e:83:25:32:e8:5e:2e:e5
Fingerprint (SHA1): 23:88:c9:d3:71:cc:9e:96:3d:ff:7d:3c:a7:ce:fc:d6:25:ec:19:0d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\162\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\023\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\024\060\022\006\003
\125\004\013\023\013\145\055\123\172\151\147\156\157\040\103\101
\061\042\060\040\006\003\125\004\003\023\031\115\151\143\162\157
\163\145\143\040\145\055\123\172\151\147\156\157\040\122\157\157
\164\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL

\060\162\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\023\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\024\060\022\006\003
\125\004\013\023\013\145\055\123\172\151\147\156\157\040\103\101
\061\042\060\040\006\003\125\004\003\023\031\115\151\143\162\157
\163\145\143\040\145\055\123\172\151\147\156\157\040\122\157\157
\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\314\270\347\277\116\051\032\375\242\334\146\245\034
\054\017\021
END
CKA_VALUE MULTILINE_OCTAL
\060\202\007\250\060\202\006\220\240\003\002\001\002\002\021\000
\314\270\347\277\116\051\032\375\242\334\146\245\034\054\017\021
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\162\061\013\060\011\006\003\125\004\006\023\002\110\125\061\021
\060\017\006\003\125\004\007\023\010\102\165\144\141\160\145\163
\164\061\026\060\024\006\003\125\004\012\023\015\115\151\143\162
\157\163\145\143\040\114\164\144\056\061\024\060\022\006\003\125
\004\013\023\013\145\055\123\172\151\147\156\157\040\103\101\061
\042\060\040\006\003\125\004\003\023\031\115\151\143\162\157\163
\145\143\040\145\055\123\172\151\147\156\157\040\122\157\157\164
\040\103\101\060\036\027\015\060\065\060\064\060\066\061\062\062
\070\064\064\132\027\015\061\067\060\064\060\066\061\062\062\070
\064\064\132\060\162\061\013\060\011\006\003\125\004\006\023\002
\110\125\061\021\060\017\006\003\125\004\007\023\010\102\165\144
\141\160\145\163\164\061\026\060\024\006\003\125\004\012\023\015
\115\151\143\162\157\163\145\143\040\114\164\144\056\061\024\060
\022\006\003\125\004\013\023\013\145\055\123\172\151\147\156\157
\040\103\101\061\042\060\040\006\003\125\004\003\023\031\115\151
\143\162\157\163\145\143\040\145\055\123\172\151\147\156\157\040
\122\157\157\164\040\103\101\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\355\310\000\325\201\173\315\070
\000\107\314\333\204\301\041\151\054\164\220\014\041\331\123\207
\355\076\103\104\123\257\253\370\200\233\074\170\215\324\215\256
\270\357\323\021\334\201\346\317\073\226\214\326\157\025\306\167
\176\241\057\340\137\222\266\047\327\166\232\035\103\074\352\331
\354\057\356\071\363\152\147\113\213\202\317\042\370\145\125\376
\054\313\057\175\110\172\075\165\371\252\240\047\273\170\302\006
\312\121\302\176\146\113\257\315\242\247\115\002\202\077\202\254
\205\306\341\017\220\107\231\224\012\161\162\223\052\311\246\300
\276\074\126\114\163\222\047\361\153\265\365\375\374\060\005\140
\222\306\353\226\176\001\221\302\151\261\036\035\173\123\105\270
\334\101\037\311\213\161\326\124\024\343\213\124\170\077\276\364

\142\073\133\365\243\354\325\222\164\342\164\060\357\001\333\341
\324\253\231\233\052\153\370\275\246\034\206\043\102\137\354\111
\336\232\213\133\364\162\072\100\305\111\076\245\276\216\252\161
\353\154\372\365\032\344\152\375\173\175\125\100\357\130\156\346
\331\325\274\044\253\301\357\267\002\003\001\000\001\243\202\004
\067\060\202\004\063\060\147\006\010\053\006\001\005\005\007\001
\001\004\133\060\131\060\050\006\010\053\006\001\005\005\007\060
\001\206\034\150\164\164\160\163\072\057\057\162\143\141\056\145
\055\163\172\151\147\156\157\056\150\165\057\157\143\163\160\060
\055\006\010\053\006\001\005\005\007\060\002\206\041\150\164\164
\160\072\057\057\167\167\167\056\145\055\163\172\151\147\156\157
\056\150\165\057\122\157\157\164\103\101\056\143\162\164\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\202\001\163\006\003\125\035\040\004\202\001\152\060\202\001\146
\060\202\001\142\006\014\053\006\001\004\001\201\250\030\002\001
\001\001\060\202\001\120\060\050\006\010\053\006\001\005\005\007
\002\001\026\034\150\164\164\160\072\057\057\167\167\167\056\145
\055\163\172\151\147\156\157\056\150\165\057\123\132\123\132\057
\060\202\001\042\006\010\053\006\001\005\005\007\002\002\060\202
\001\024\036\202\001\020\000\101\000\040\000\164\000\141\000\156
\000\372\000\163\000\355\000\164\000\166\000\341\000\156\000\171
\000\040\000\351\000\162\000\164\000\145\000\154\000\155\000\145
\000\172\000\351\000\163\000\351\000\150\000\145\000\172\000\040
\000\351\000\163\000\040\000\145\000\154\000\146\000\157\000\147
\000\141\000\144\000\341\000\163\000\341\000\150\000\157\000\172
\000\040\000\141\000\040\000\123\000\172\000\157\000\154\000\147
\000\341\000\154\000\164\000\141\000\164\000\363\000\040\000\123
\000\172\000\157\000\154\000\147\000\341\000\154\000\164\000\141
\000\164\000\341\000\163\000\151\000\040\000\123\000\172\000\141
\000\142\000\341\000\154\000\171\000\172\000\141\000\164\000\141
\000\040\000\163\000\172\000\145\000\162\000\151\000\156\000\164
\000\040\000\153\000\145\000\154\000\154\000\040\000\145\000\154
\000\152\000\341\000\162\000\156\000\151\000\072\000\040\000\150
\000\164\000\164\000\160\000\072\000\057\000\057\000\167\000\167
\000\167\000\056\000\145\000\055\000\163\000\172\000\151\000\147
\000\156\000\157\000\056\000\150\000\165\000\057\000\123\000\132
\000\123\000\132\000\057\060\201\310\006\003\125\035\037\004\201
\300\060\201\275\060\201\272\240\201\267\240\201\264\206\041\150
\164\164\160\072\057\057\167\167\167\056\145\055\163\172\151\147
\156\157\056\150\165\057\122\157\157\164\103\101\056\143\162\154
\206\201\216\154\144\141\160\072\057\057\154\144\141\160\056\145
\055\163\172\151\147\156\157\056\150\165\057\103\116\075\115\151
\143\162\157\163\145\143\045\062\060\145\055\123\172\151\147\156
\157\045\062\060\122\157\157\164\045\062\060\103\101\054\117\125
\075\145\055\123\172\151\147\156\157\045\062\060\103\101\054\117
\075\115\151\143\162\157\163\145\143\045\062\060\114\164\144\056
\054\114\075\102\165\144\141\160\145\163\164\054\103\075\110\125
\077\143\145\162\164\151\146\151\143\141\164\145\122\145\166\157

\143\141\164\151\157\156\114\151\163\164\073\142\151\156\141\162
\171\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\201\226\006\003\125\035\021\004\201\216\060\201\213\201
\020\151\156\146\157\100\145\055\163\172\151\147\156\157\056\150
\165\244\167\060\165\061\043\060\041\006\003\125\004\003\014\032
\115\151\143\162\157\163\145\143\040\145\055\123\172\151\147\156
\303\263\040\122\157\157\164\040\103\101\061\026\060\024\006\003
\125\004\013\014\015\145\055\123\172\151\147\156\303\263\040\110
\123\132\061\026\060\024\006\003\125\004\012\023\015\115\151\143
\162\157\163\145\143\040\113\146\164\056\061\021\060\017\006\003
\125\004\007\023\010\102\165\144\141\160\145\163\164\061\013\060
\011\006\003\125\004\006\023\002\110\125\060\201\254\006\003\125
\035\043\004\201\244\060\201\241\200\024\307\240\111\165\026\141
\204\333\061\113\204\322\361\067\100\220\357\116\334\367\241\166
\244\164\060\162\061\013\060\011\006\003\125\004\006\023\002\110
\125\061\021\060\017\006\003\125\004\007\023\010\102\165\144\141
\160\145\163\164\061\026\060\024\006\003\125\004\012\023\015\115
\151\143\162\157\163\145\143\040\114\164\144\056\061\024\060\022
\006\003\125\004\013\023\013\145\055\123\172\151\147\156\157\040
\103\101\061\042\060\040\006\003\125\004\003\023\031\115\151\143
\162\157\163\145\143\040\145\055\123\172\151\147\156\157\040\122
\157\157\164\040\103\101\202\021\000\314\270\347\277\116\051\032
\375\242\334\146\245\034\054\017\021\060\035\006\003\125\035\016
\004\026\004\024\307\240\111\165\026\141\204\333\061\113\204\322
\361\067\100\220\357\116\334\367\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\001\001\000\323\023\234\146
\143\131\056\312\134\160\014\374\203\274\125\261\364\216\007\154
\146\047\316\301\073\040\251\034\273\106\124\160\356\132\314\240
\167\352\150\104\047\353\362\051\335\167\251\325\373\343\324\247
\004\304\225\270\013\341\104\150\140\007\103\060\061\102\141\345
\356\331\345\044\325\033\337\341\112\033\252\237\307\137\370\172
\021\352\023\223\000\312\212\130\261\356\355\016\115\264\327\250
\066\046\174\340\072\301\325\127\202\361\165\266\375\211\137\332
\363\250\070\237\065\006\010\316\042\225\276\315\325\374\276\133
\336\171\153\334\172\251\145\146\276\261\045\132\137\355\176\323
\254\106\155\114\364\062\207\264\040\004\340\154\170\260\167\321
\205\106\113\246\022\267\165\350\112\311\126\154\327\222\253\235
\365\111\070\322\117\123\343\125\220\021\333\230\226\306\111\362
\076\364\237\033\340\367\210\334\045\142\231\104\330\163\277\077
\060\363\014\067\076\324\302\050\200\163\261\001\267\235\132\226
\024\001\113\251\021\235\051\152\056\320\135\201\300\317\262\040
\103\307\003\340\067\116\135\012\334\131\040\045
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Microsoft Code Signing Only Certificate
# Trust for "Microsec e-Szigno Root CA"
# Issuer: CN=Microsec e-Szigno Root CA,OU=e-Szigno CA,O=Microsec Ltd.,L=Budapest,C=HU
# Serial Number:cc:b8:e7:bf:4e:29:1a:fd:a2:dc:66:a5:1c:2c:0f:11
# Subject: CN=Microsec e-Szigno Root CA,OU=e-Szigno CA,O=Microsec Ltd.,L=Budapest,C=HU
# Not Valid Before: Wed Apr 06 12:28:44 2005
# Not Valid After: Thu Apr 06 12:28:44 2017
# Fingerprint (MD5): f0:96:b6:2f:c5:10:d5:67:8e:83:25:32:e8:5e:2e:e5
# Fingerprint (SHA1): 23:88:c9:d3:71:cc:9e:96:3d:ff:7d:3c:a7:ce:fc:d6:25:ec:19:0d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsec e-Szigno Root CA"
CKA_CERT_SHA1_HASH
 MULTILINE_OCTAL
\043\210\311\323\161\314\236\226\075\377\175\074\247\316\374\326
\045\354\031\015
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\360\226\266\057\305\020\325\147\216\203\045\062\350\136\056\345
END
CKA_ISSUER MULTILINE_OCTAL
\060\162\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160\145
\163\164\061\026\060\024\006\003\125\004\012\023\015\115\151\143
\162\157\163\145\143\040\114\164\144\056\061\024\060\022\006\003
\125\004\013\023\013\145\055\123\172\151\147\156\157\040\103\101
\061\042\060\040\006\003\125\004\003\023\031\115\151\143\162\157
\163\145\143\040\145\055\123\172\151\147\156\157\040\122\157\157
\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\314\270\347\277\116\051\032\375\242\334\146\245\034
\054\017\021
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "LGPKI"
# Issuer: OU=Application CA G2,O=LGPKI,C=JP
# Serial Number: 49 (0x31)
# Subject: OU=Application CA G2,O=LGPKI,C=JP
# Not Valid Before: Fri Mar 31 15:00:00 2006
```

Not Valid After: Thu Mar 31 14:59:59 2016
Fingerprint (MD5): f3:d7:52:a8:75:fd:18:ec:e1:7d:35:b1:70:6e:a5:9c
Fingerprint (SHA1): 96:83:38:f1:13:e3:6a:7b:ab:dd:08:f7:77:63:91:a6:87:36:58:2e
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LGPKI"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\032\060\030\006\003\125\004\013\023\021\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\032\060\030\006\003\125\004\013\023\021\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\061
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\240\060\202\002\210\240\003\002\001\002\002\001\061
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\071\061\013\060\011\006\003\125\004\006\023\002\112\120\061\016
\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061\032
\060\030\006\003\125\004\013\023\021\101\160\160\154\151\143\141
\164\151\157\156\040\103\101\040\107\062\060\036\027\015\060\066
\060\063\063\061\061\065\060\060\060\060\132\027\015\061\066\060
\063\063\061\061\064\065\071\065\071\132\060\071\061\013\060\011
\006\003\125\004\006\023\002\112\120\061\016\060\014\006\003\125
\004\012\023\005\114\107\120\113\111\061\032\060\030\006\003\125
\004\013\023\021\101\160\160\154\151\143\141\164\151\157\156\040
\103\101\040\107\062\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\271\065\306\020\370\333\150\333\007\304
\100\114\260\035\036\066\334\303\101\366\317\125\025\155\010\177
\134\306\150\125\345\347\127\361\226\121\346\341\115\170\017\156
\100\025\160\073\145\376\021\337\347\323\326\130\065\073\341\237
\002\374\224\122\106\056\263\236\140\233\002\236\311\202\322\366
\343\256\011\117\204\104\266\142\233\000\121\150\270\072\255\354
\144\321\062\113\351\224\104\203\264\016\316\041\211\153\260\066
\300\230\306\113\234\302\076\133\140\052\011\061\053\055\253\114

\336\261\240\375\130\126\302\203\035\040\274\304\204\011\207\173
\250\225\227\306\045\216\203\340\076\223\015\321\307\175\163\251
\250\374\031\000\100\056\042\270\172\063\101\365\170\375\132\161
\347\202\331\110\210\134\354\250\205\207\055\155\200\211\147\032
\151\276\020\300\132\216\355\210\175\076\157\054\070\153\067\316
\107\330\242\061\060\336\176\123\145\154\213\206\123\101\040\154
\275\110\245\176\257\000\132\126\022\130\201\321\334\211\131\371
\265\356\370\115\232\330\104\051\213\171\247\367\042\252\352\174
\134\264\026\210\040\015\002\003\001\000\001\243\201\262\060\201
\257\060\035\006\003\125\035\016\004\026\004\024\177\270\135\216
\304\030\153\306\175\314\056\351\256\316\064\347\027\135\340\241
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\114\006\003\125\035\037\004\105\060\103\060\101\240\077\240
\075\244\073\060\071\061\013\060\011\006\003\125\004\006\023\002
\112\120\061\016\060\014\006\003\125\004\012\023\005\114\107\120
\113\111\061\032\060\030\006\003\125\004\013\023\021\101\160\160
\154\151\143\141\164\151\157\156\040\103\101\040\107\062\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\037\006\003\125\035\043\004\030\060\026\200\024\177\270\135\216
\304\030\153\306\175\314\056\351\256\316\064\347\027\135\340\241
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\074\330\163\066\100\006\110\112\124\031\365\047
\110\071\045\245\156\102\347\266\315\033\313\071\064\267\233\354
\117\052\276\167\344\312\204\374\035\353\233\042\100\325\364\373
\150\207\162\374\107\135\152\016\122\112\343\265\135\110\306\042
\226\346\063\155\155\253\366\315\327\313\044\132\214\250\105\236
\076\141\202\175\224\325\005\360\032\065\137\161\057\056\124\265
\101\005\357\206\015\122\357\234\230\033\361\054\114\072\321\363
\206\323\214\076\172\057\206\105\216\203\062\046\133\277\123\312
\016\121\126\334\232\302\132\060\031\015\247\236\325\252\233\040
\071\151\170\041\364\227\155\321\016\021\114\056\323\033\132\260
\371\227\170\134\052\217\122\145\356\114\102\045\302\067\060\016
\155\053\065\224\203\006\350\257\105\073\004\146\247\060\273\371
\340\041\073\143\156\175\104\135\072\152\123\357\021\027\044\375
\124\262\132\154\163\126\041\311\154\055\227\244\102\263\047\141
\005\041\143\155\352\050\274\117\032\157\102\334\230\253\125\323
\036\033\300\222\077\233\301\346\073\027\126\342\304\230\103\045
\356\266\313\000
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "LGPKI"
Issuer: OU=Application CA G2,O=LGPKI,C=JP
Serial Number: 49 (0x31)

```
# Subject: OU=Application CA G2,O=LGPKI,C=JP
# Not Valid Before: Fri Mar 31 15:00:00 2006
# Not Valid After: Thu Mar 31 14:59:59 2016
# Fingerprint (MD5): f3:d7:52:a8:75:fd:18:ec:e1:7d:35:b1:70:6e:a5:9c
# Fingerprint (SHA1): 96:83:38:f1:13:e3:6a:7b:ab:dd:08:f7:77:63:91:a6:87:36:58:2e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LGPKI"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\226\203\070\361\023\343\152\173\253\335\010\367\167\143\221\246
\207\066\130\056
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\363\327\122\250\165\375\030\354\341\175\065\261\160\156\245\234
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\032\060\030\006\003\125\004\013\023\021\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\061
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "AC RAIZ DNIE"
# Issuer: CN=AC RAIZ DNIE,OU=DNIE,O=DIRECCION GENERAL DE LA POLICIA,C=ES
# Serial Number:d2:85:70:fd:ae:a7:d6:5f:11:84:15:c6:31:b5:cb
# Subject: CN=AC RAIZ DNIE,OU=DNIE,O=DIRECCION GENERAL DE LA POLICIA,C=ES
# Not Valid Before: Thu Feb 16 10:37:25 2006
# Not Valid After: Fri Feb 08 22:59:59 2036
# Fingerprint (MD5): 15:5e:f5:11:7a:a2:c1:15:0e:92:7e:66:fe:3b:84:c3
#
 Fingerprint (SHA1): b3:8f:ec:ec:0b:14:8a:a6:86:c3:d0:0f:01:ec:c8:84:8e:80:85:eb
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ DNIE"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
```

CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\050\060\046\006\003\125\004\012\014\037\104\111\122\105\103\103
\111\117\116\040\107\105\116\105\122\101\114\040\104\105\040\114
\101\040\120\117\114\111\103\111\101\061\015\060\013\006\003\125
\004\013\014\004\104\116\111\105\061\025\060\023\006\003\125\004
\003\014\014\101\103\040\122\101\111\132\040\104\116\111\105
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\050\060\046\006\003\125\004\012\014\037\104\111\122\105\103\103
\111\117\116\040\107\105\116\105\122\101\114\040\104\105\040\114
\101\040\120\117\114\111\103\111\101\061\015\060\013\006\003\125
\004\013\014\004\104\116\111\105\061\025\060\023\006\003\125\004
\003\014\014\101\103\040\122\101\111\132\040\104\116\111\105
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\000\322\205\160\375\256\247\326\137\021\204\025\306\061
\265\313
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\277\060\202\003\247\240\003\002\001\002\002\020\000
\322\205\160\375\256\247\326\137\021\204\025\306\061\265\313\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\135
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\050\060
\046\006\003\125\004\012\014\037\104\111\122\105\103\103\111\117
\116\040\107\105\116\105\122\101\114\040\104\105\040\114\101\040
\120\117\114\111\103\111\101\061\015\060\013\006\003\125\004\013
\014\004\104\116\111\105\061\025\060\023\006\003\125\004\003\014
\014\101\103\040\122\101\111\132\040\104\116\111\105\060\036\027
\015\060\066\060\062\061\066\061\060\063\067\062\065\132\027\015
\063\066\060\062\060\070\062\062\065\071\065\071\132\060\135\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\050\060\046
\006\003\125\004\012\014\037\104\111\122\105\103\103\111\117\116
\040\107\105\116\105\122\101\114\040\104\105\040\114\101\040\120
\117\114\111\103\111\101\061\015\060\013\006\003\125\004\013\014
\004\104\116\111\105\061\025\060\023\006\003\125\004\003\014\014
\101\103\040\122\101\111\132\040\104\116\111\105\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\200\000\255
\014\303\243\040\007\243\143\377\367\064\240\315\356\152\124\010
\027\135\261\001\025\247\346\271\137\212\161\377\014\302\035\352
\067\363\336\223\177\326\005\115\204\262\325\327\034\014\364\304
\221\160\100\016\132\310\230\244\200\350\015\063\300\007\363\267
\365\254\241\070\172\300\146\124\044\374\122\314\060\052\362\303
\304\241\054\166\277\301\300\277\202\361\233\360\150\172\023\100

\310\227\274\034\045\007\010\012\267\226\357\314\051\124\340\346
\145\055\352\262\056\261\011\151\022\116\060\325\330\370\274\000
\200\057\115\223\017\315\056\127\033\063\273\237\060\116\304\245
\313\171\247\373\342\064\030\266\040\236\033\237\135\247\311\072
\255\105\144\263\030\316\021\022\234\155\036\125\105\050\204\234
\127\147\115\371\313\342\213\217\130\011\324\071\377\310\066\322
\070\342\014\145\177\025\016\175\301\007\335\251\042\337\221\000
\304\154\161\064\164\334\071\352\352\117\104\151\177\130\333\130
\012\122\161\053\354\251\035\120\164\063\371\051\152\372\376\231
\364\347\314\105\105\155\312\132\045\242\022\343\316\327\070\005
\071\360\032\011\365\166\131\316\142\157\172\064\015\054\321\274
\004\022\354\075\123\310\372\320\002\313\316\075\041\265\305\340
\071\063\145\317\071\123\311\233\106\371\235\063\363\131\200\010
\101\276\157\113\240\372\112\316\244\166\034\205\342\257\257\024
\235\145\254\367\177\227\344\063\111\246\257\276\316\053\067\361
\056\301\163\005\234\234\140\114\235\060\015\227\124\236\201\142
\273\347\340\057\367\024\007\024\251\167\221\351\334\221\225\216
\323\210\220\063\107\157\161\303\024\151\372\246\055\001\036\033
\352\323\056\342\177\013\334\317\347\042\360\361\101\243\001\222
\345\200\323\276\251\142\250\125\210\013\064\064\354\334\041\025
\252\357\326\042\136\211\365\121\222\023\052\157\200\026\331\261
\015\331\056\370\020\270\302\376\122\105\063\234\035\070\174\334
\025\151\064\163\277\240\054\273\021\173\224\315\370\067\055\157
\075\357\203\132\306\036\233\164\111\217\331\302\215\276\026\166
\120\310\132\321\045\026\366\366\314\214\234\132\060\236\145\276
\320\232\110\223\327\372\150\015\165\061\207\371\367\002\003\001
\000\001\243\173\060\171\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026
\004\024\216\105\364\237\163\305\377\057\033\005\333\001\107\140
\033\003\212\201\267\272\060\067\006\003\125\035\040\004\060\060
\056\060\054\006\004\125\035\040\000\060\044\060\042\006\010\053
\006\001\005\005\007\002\001\026\026\150\164\164\160\072\057\057
\167\167\167\056\144\156\151\145\056\145\163\057\144\160\143\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\002\001\000\165\345\163\311\121\121\057\213\031\240\207\351\377
\256\066\066\246\374\101\037\343\036\327\161\140\031\306\157\232
\002\060\275\142\161\255\163\376\221\055\116\344\046\100\104\251
\256\170\046\043\061\151\334\232\163\226\036\111\121\013\340\357
\301\270\103\357\161\234\356\101\267\305\120\037\062\204\236\042
\206\361\367\037\217\331\255\053\116\332\227\050\227\273\226\232
\032\370\261\331\172\004\363\124\231\022\031\226\025\200\147\071
\377\002\137\172\374\125\102\120\132\346\271\242\377\270\250\142
\036\024\315\331\077\276\243\145\110\305\073\327\067\316\015\372
\050\220\332\277\371\343\121\107\045\175\112\323\147\115\207\252
\142\274\136\354\172\200\104\174\367\237\012\275\145\127\224\312
\362\021\146\326\122\177\344\072\160\165\004\315\073\227\324\066
\162\367\121\126\277\064\365\322\101\341\264\332\250\103\376\153

\022\111\022\264\135\317\042\102\226\214\010\043\046\214\262\020
\116\135\252\123\356\001\057\165\345\271\242\021\063\304\327\152
\375\370\016\312\156\202\331\347\273\131\043\116\265\371\021\035
\057\153\043\365\173\021\040\352\101\022\220\062\106\333\061\073
\251\301\133\163\150\072\106\033\214\376\227\267\126\271\141\231
\314\116\360\203\372\067\361\336\034\235\034\161\213\003\223\303
\304\163\202\056\250\230\035\144\242\232\214\367\124\010\115\317
\352\201\313\365\133\011\231\143\257\165\214\226\370\171\065\325
\334\353\101\201\171\070\204\136\157\361\157\142\166\333\221\316
\132\205\140\071\035\133\342\052\057\103\045\333\302\172\044\323
\025\260\242\361\214\240\175\153\110\011\023\377\242\114\146\212
\354\160\122\011\123\214\060\314\270\325\272\044\334\060\231\076
\241\136\267\337\201\254\354\067\276\116\233\047\130\336\176\241
\233\124\177\006\266\057\344\062\120\375\347\020\273\250\315\332
\030\033\324\143\146\075\352\121\161\071\364\234\076\337\132\364
\332\307\114\046\355\213\265\041\272\064\171\002\163\141\020\332
\230\061\250\140\313\176\007\247\320\267\005\103\211\133\315\205
\046\331\260\121\257\367\214\122\252\022\247\130\337\222\233\147
\362\235\362\346\364\151\061\364\026\347\336\167\133\036\335\232
\005\001\255
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "AC RAIZ DNIE"
Issuer: CN=AC RAIZ DNIE,OU=DNIE,O=DIRECCION GENERAL DE LA POLICIA,C=ES
Serial Number:d2:85:70:fd:ae:a7:d6:5f:11:84:15:c6:31:b5:cb
Subject: CN=AC RAIZ DNIE,OU=DNIE,O=DIRECCION GENERAL DE LA POLICIA,C=ES
Not Valid Before: Thu Feb 16 10:37:25 2006
Not Valid After: Fri Feb 08 22:59:59 2036
Fingerprint (MD5): 15:5e:f5:11:7a:a2:c1:15:0e:92:7e:66:fe:3b:84:c3
Fingerprint (SHA1): b3:8f:ec:ec:0b:14:8a:a6:86:c3:d0:0f:01:ec:c8:84:8e:80:85:eb
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "AC RAIZ DNIE"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\263\217\354\354\013\024\212\246\206\303\320\017\001\354\310\204
\216\200\205\353
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\025\136\365\021\172\242\301\025\016\222\176\146\376\073\204\303
END

CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\050\060\046\006\003\125\004\012\014\037\104\111\122\105\103\103
\111\117\116\040\107\105\116\105\122\101\114\040\104\105\040\114
\101\040\120\117\114\111\103\111\101\061\015\060\013\006\003\125
\004\013\014\004\104\116\111\105\061\025\060\023\006\003\125\004
\003\014\014\101\103\040\122\101\111\132\040\104\116\111\105
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\000\322\205\160\375\256\247\326\137\021\204\025\306\061
\265\313
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING
 CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "EC-ACC"
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number: -237015792479557091396265551265248204 79 (0x-11d4c2142bde21eb579d53fb0c223bff)
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After: Tue Jan 07 22:59:59 2031
Fingerprint (MD5): eb:f5:9d:29:0d:61:f9:42:1f:7c:c2:ba:6d:e3:15:09
Fingerprint (SHA1): 28:90:3a:63:5b:52:80:fa:e6:77:4c:0b:6d:a7:d6:ba:a6:4a:f2:e8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "EC-ACC"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057

\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\356\053\075\353\324\041\336\024\250\142\254\004\363\335
\304\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\126\060\202\004\076\240\003\002\001\002\002\020\356
\053\075\353\324\041\336\024\250\142\254\004\363\335\304\001\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\363\061\013\060\011\006\003\125\004\006\023\002\105\123\061\073
\060\071\006\003\125\004\012\023\062\101\147\145\156\143\151\141
\040\103\141\164\141\154\141\156\141\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\040\050\116\111\106\040\121
\055\060\070\060\061\061\067\066\055\111\051\061\050\060\046\006
\003\125\004\013\023\037\123\145\162\166\145\151\163\040\120\165
\142\154\151\143\163\040\144\145\040\103\145\162\164\151\146\151
\143\141\143\151\157\061\065\060\063\006\003\125\004\013\023\054
\126\145\147\145\165\040\150\164\164\160\163\072\057\057\167\167
\167\056\143\141\164\143\145\162\164\056\156\145\164\057\166\145
\162\141\162\162\145\154\040\050\143\051\060\063\061\065\060\063
\006\003\125\004\013\023\054\112\145\162\141\162\161\165\151\141

\040\105\156\164\151\164\141\164\163\040\144\145\040\103\145\162
\164\151\146\151\143\141\143\151\157\040\103\141\164\141\154\141
\156\145\163\061\017\060\015\006\003\125\004\003\023\006\105\103
\055\101\103\103\060\036\027\015\060\063\060\061\060\067\062\063
\060\060\060\060\132\027\015\063\061\060\061\060\067\062\062\065
\071\065\071\132\060\201\363\061\013\060\011\006\003\125\004\006
\023\002\105\123\061\073\060\071\006\003\125\004\012\023\062\101
\147\145\156\143\151\141\040\103\141\164\141\154\141\156\141\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\040
\050\116\111\106\040\121\055\060\070\060\061\061\067\066\055\111
\051\061\050\060\046\006\003\125\004\013\023\037\123\145\162\166
\145\151\163\040\120\165\142\154\151\143\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\061\065\060\063\006
\003\125\004\013\023\054\126\145\147\145\165\040\150\164\164\160
\163\072\057\057\167\167\167\056\143\141\164\143\145\162\164\056
\156\145\164\057\166\145\162\141\162\162\145\154\040\050\143\051
\060\063\061\065\060\063\006\003\125\004\013\023\054\112\145\162
\141\162\161\165\151\141\040\105\156\164\151\164\141\164\163\040
\144\145\040\103\145\162\164\151\146\151\143\141\143\151\157\040
\103\141\164\141\154\141\156\145\163\061\017\060\015\006\003\125
\004\003\023\006\105\103\055\101\103\103\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\263\042\307\117\342
\227\102\225\210\107\203\100\366\035\027\363\203\163\044\036\121
\363\230\212\303\222\270\377\100\220\005\160\207\140\311\000\251
\265\224\145\031\042\025\027\302\103\154\146\104\232\015\004\076
\071\157\245\113\172\252\143\267\212\104\235\331\143\221\204\146
\340\050\017\272\102\343\156\216\367\024\047\223\151\356\221\016
\243\137\016\261\353\146\242\162\117\022\023\206\145\172\076\333
\117\007\364\247\011\140\332\072\102\231\307\262\177\263\026\225
\034\307\371\064\265\224\205\325\231\136\240\110\240\176\347\027
\145\270\242\165\270\036\363\345\102\175\257\355\363\212\110\144
\135\202\024\223\330\300\344\377\263\120\162\362\166\366\263\135
\102\120\171\320\224\076\153\014\000\276\330\153\016\116\052\354
\076\322\314\202\242\030\145\063\023\167\236\232\135\032\023\330
\303\333\075\310\227\172\356\160\355\247\346\174\333\161\317\055
\224\142\337\155\326\365\070\276\077\245\205\012\031\270\250\330
\011\165\102\160\304\352\357\313\016\310\064\250\022\042\230\014
\270\023\224\266\113\354\360\320\220\347\047\002\003\001\000\001
\243\201\343\060\201\340\060\035\006\003\125\035\021\004\026\060
\024\201\022\145\143\137\141\143\143\100\143\141\164\143\145\162
\164\056\156\145\164\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026\004
\024\240\303\213\104\252\067\245\105\277\227\200\132\321\361\170
\242\233\351\135\215\060\177\006\003\125\035\040\004\170\060\166
\060\164\006\013\053\006\001\004\001\365\170\001\003\001\012\060
\145\060\054\006\010\053\006\001\005\005\007\002\001\026\040\150

\164\164\160\163\072\057\057\167\167\167\056\143\141\164\143\145
\162\164\056\156\145\164\057\166\145\162\141\162\162\145\154\060
\065\006\010\053\006\001\005\005\007\002\002\060\051\032\047\126
\145\147\145\165\040\150\164\164\160\163\072\057\057\167\167\167
\056\143\141\164\143\145\162\164\056\156\145\164\057\166\145\162
\141\162\162\145\154\040\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\240\110\133\202\001\366
\115\110\270\071\125\065\234\200\172\123\231\325\132\377\261\161
\073\314\071\011\224\136\326\332\357\276\001\133\135\323\036\330
\375\175\117\315\240\101\340\064\223\277\313\342\206\234\067\222
\220\126\034\334\353\051\005\345\304\236\307\065\337\212\014\315
\305\041\103\351\252\210\345\065\300\031\102\143\132\002\136\244
\110\030\072\205\157\334\235\274\077\235\234\301\207\270\172\141
\010\351\167\013\177\160\253\172\335\331\227\054\144\036\205\277
\274\164\226\241\303\172\022\354\014\032\156\203\014\074\350\162
\106\237\373\110\325\136\227\346\261\241\370\344\357\106\045\224
\234\211\333\151\070\276\354\134\016\126\307\145\121\345\120\210
\210\277\102\325\053\075\345\371\272\236\056\263\312\364\163\222
\002\013\276\114\146\353\040\376\271\313\265\231\177\346\266\023
\372\312\113\115\331\356\123\106\006\073\306\116\255\223\132\201
\176\154\052\113\152\005\105\214\362\041\244\061\220\207\154\145
\234\235\245\140\225\072\122\177\365\321\253\010\156\363\356\133
\371\210\075\176\270\157\156\003\344\102
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "EC-ACC"
Issuer: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Serial Number: -237015792479557091396265551265248204 79 (0x-11d4c2142bde21eb579d53fb0c223bff)
Subject: CN=EC-ACC,OU=Jerarquia Entitats de Certificacio Catalanes,OU=Vegeu https://www.catcert.net/verarrel (c)03,OU=Serveis Publics de Certificacio,O=Agencia Catalana de Certificacio (NIF Q-0801176-I),C=ES
Not Valid Before: Tue Jan 07 23:00:00 2003
Not Valid After: Tue Jan 07 22:59:59 2031
Fingerprint (MD5): eb:f5:9d:29:0d:61:f9:42:1f:7c:c2:ba:6d:e3:15:09
Fingerprint (SHA1): 28:90:3a:63:5b:52:80:fa:e6:77:4c:0b:6d:a7:d6:ba:a6:4a:f2:e8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL

UTF8 "EC-ACC"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\050\220\072\143\133\122\200\372\346\167\114\013\155\247\326\272
\246\112\362\350
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\353\365\235\051\015\141\371\102\037\174\302\272\155\343\025\011
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\363\061\013\060\011\006\003\125\004\006\023\002\105\123
\061\073\060\071\006\003\125\004\012\023\062\101\147\145\156\143
\151\141\040\103\141\164\141\154\141\156\141\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\050\116\111\106
\040\121\055\060\070\060\061\061\067\066\055\111\051\061\050\060
\046\006\003\125\004\013\023\037\123\145\162\166\145\151\163\040
\120\165\142\154\151\143\163\040\144\145\040\103\145\162\164\151
\146\151\143\141\143\151\157\061\065\060\063\006\003\125\004\013
\023\054\126\145\147\145\165\040\150\164\164\160\163\072\057\057
\167\167\167\056\143\141\164\143\145\162\164\056\156\145\164\057
\166\145\162\141\162\162\145\154\040\050\143\051\060\063\061\065
\060\063\006\003\125\004\013\023\054\112\145\162\141\162\161\165
\151\141\040\105\156\164\151\164\141\164\163\040\144\145\040\103
\145\162\164\151\146\151\143\141\143\151\157\040\103\141\164\141
\154\141\156\145\163\061\017\060\015\006\003\125\004\003\023\006
\105\103\055\101\103\103
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\356\053\075\353\324\041\336\024\250\142\254\004\363\335
\304\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "A-Trust-nQual-03"
Issuer: CN=A-Trust-nQual-03,OU=A-Trust-nQual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number:14:b4:f9
Subject: CN=A-Trust-nQual-03,OU=A-Trust-nQual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Not Valid Before: Wed Jul 23 10:38:29 2014
#
Not Valid After: Wed Jul 23 08:38:29 2025
Fingerprint (MD5): a6:b2:ec:05:6b:b4:86:f0:e4:05:05:b0:d3:26:fc:fa
Fingerprint (SHA1): 4c:ae:e3:89:31:d1:9a:e7:3b:31:aa:75:ca:33:d6:21:29:0f:a7:5e

CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-nQual-03"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\215\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\031\060\027\006\003
\125\004\013\014\020\101\055\124\162\165\163\164\055\156\121\165
\141\154\055\060\063\061\031\060\027\006\003\125\004\003\014\020
\101\055\124\162\165\163\164\055\156\121\165\141\154\055\060\063
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\215\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\031\060\027\006\003
\125\004\013\014\020\101\055\124\162\165\163\164\055\156\121\165
\141\154\055\060\063\061\031\060\027\006\003\125\004\003\014\020
\101\055\124\162\165\163\164\055\156\121\165\141\154\055\060\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\024\264\371
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\317\060\202\002\267\240\003\002\001\002\002\003\024
\264\371\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\201\215\061\013\060\011\006\003\125\004\006\023\002\101
\124\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162
\165\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150
\145\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151
\155\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166
\145\162\153\145\150\162\040\107\155\142\110\061\031\060\027\006
\003\125\004\013\014\020\101\055\124\162\165\163\164\055\156\121
\165\141\154\055\060\063\061\031\060\027\006\003\125\004\003\014
\020\101\055\124\162\165\163\164\055\156\121\165\141\154\055\060
\063\060\036\027\015\061\064\060\067\062\063\061\060\063\070\062
\071\132\027\015\062\065\060\067\062\063\060\070\063\070\062\071
\132\060\201\215\061\013\060\011\006\003\125\004\006\023\002\101

\124\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162
\165\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150
\145\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151
\155\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166
\145\162\153\145\150\162\040\107\155\142\110\061\031\060\027\006
\003\125\004\013\014\020\101\055\124\162\165\163\164\055\156\121
\165\141\154\055\060\063\061\031\060\027\006\003\125\004\003\014
\020\101\055\124\162\165\163\164\055\156\121\165\141\154\055\060
\063\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\255\075\141\156\003\363\220\073\300\101\013\204\200\315
\354\052\243\235\153\273\156\302\102\204\367\121\024\341\240\250
\055\121\243\121\362\336\043\360\064\104\377\224\353\314\005\043
\225\100\271\007\170\245\045\366\012\275\105\206\350\331\275\300
\004\216\205\104\141\357\177\247\311\372\301\045\314\205\054\143
\077\005\140\163\111\005\340\140\170\225\020\113\334\371\021\131
\316\161\177\100\233\212\252\044\337\013\102\342\333\126\274\112
\322\245\014\233\267\103\076\335\203\323\046\020\002\317\352\043
\304\111\116\345\323\351\264\210\253\014\256\142\222\324\145\207
\331\152\327\364\205\237\344\063\042\045\245\345\310\063\272\303
\307\101\334\137\306\152\314\000\016\155\062\250\266\207\066\000
\142\167\233\036\037\064\313\220\074\170\210\164\005\353\171\365
\223\161\145\312\235\307\153\030\055\075\134\116\347\325\370\077
\061\175\217\207\354\012\042\057\043\351\376\273\175\311\340\364
\354\353\174\304\260\303\055\142\265\232\161\326\261\152\350\354
\331\355\325\162\354\276\127\001\316\005\125\237\336\321\140\210
\020\263\002\003\001\000\001\243\066\060\064\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\021\006\003
\125\035\016\004\012\004\010\104\152\225\147\125\171\021\117\060
\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003\202
\001\001\000\022\214\244\075\340\000\377\250\212\233\246\047\177
\033\022\034\127\276\016\330\232\237\154\200\037\302\366\116\243
\035\160\167\222\007\376\313\327\036\367\272\340\336\142\113\265
\205\262\220\001\171\337\136\173\137\361\037\225\202\064\001\117
\014\064\150\066\371\327\256\047\172\326\034\025\262\264\203\313
\225\131\120\252\072\137\060\177\162\133\001\114\107\113\326\353
\160\122\244\263\340\211\050\372\372\251\016\207\372\306\365\243
\335\166\355\317\110\101\046\130\077\164\277\200\300\032\033\015
\034\111\071\154\236\213\004\320\376\124\257\233\307\261\252\146
\025\135\325\371\123\243\140\333\066\030\264\256\341\164\002\142
\364\210\246\307\303\046\237\025\260\237\301\061\204\275\032\241
\257\103\377\152\031\255\037\300\106\304\061\247\133\346\147\011
\267\017\304\052\016\040\046\330\114\203\023\237\073\227\225\270
\044\067\074\001\026\071\356\145\254\352\323\166\364\310\226\032
\141\122\351\354\346\032\010\166\134\213\270\332\236\300\255\354
\024\236\215\343\253\024\354\270\311\056\244\212\140\100\174\272
\312\010\213

END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "A-Trust-nQual-03"
Issuer: CN=A-Trust-nQual-03,OU=A-Trust-nQual-03,O=A-Trust
Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
Serial Number:14:b4:f9
Subject: CN=A-Trust-nQual-03,OU=A-Trust-nQual-03,O=A-Trust Ges. f. Sicherheitssysteme im elektr.
Datenverkehr GmbH,C=AT
Not Valid Before: Wed Jul 23 10:38:29 2014
Not Valid After: Wed Jul 23 08:38:29 2025
Fingerprint (MD5): a6:b2:ec:05:6b:b4:86:f0:e4:05:05:b0:d3:26:fc:fa
Fingerprint (SHA1): 4c:ae:e3:89:31:d1:9a:e7:3b:31:aa:75:ca:33:d6:21:29:0f:a7:5e
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "A-Trust-nQual-03"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\114\256\343\211\061\321\232\347\073\061\252\165\312\063\326\041
\051\017\247\136
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\246\262\354\005\153\264\206\360\344\005\005\260\323\046\374\372
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\215\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\110\060\106\006\003\125\004\012\014\077\101\055\124\162\165
\163\164\040\107\145\163\056\040\146\056\040\123\151\143\150\145
\162\150\145\151\164\163\163\171\163\164\145\155\145\040\151\155
\040\145\154\145\153\164\162\056\040\104\141\164\145\156\166\145
\162\153\145\150\162\040\107\155\142\110\061\031\060\027\006\003
\125\004\013\014\020\101\055\124\162\165\163\164\055\156\121\165
\141\154\055\060\063\061\031\060\027\006\003\125\004\003\014\020
\101\055\124\162\165\163\164\055\156\121\165\141\154\055\060\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\003\024\264\371
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "KISA RootCA 1"
Issuer: CN=KISA RootCA 1,OU=Korea Certification Authority Central,O=KISA,C=KR
Serial Number: 4 (0x4)
Subject: CN=KISA RootCA 1,OU=Korea Certification Authority Central,O=KISA,C=KR
Not
 Valid Before: Wed Aug 24 08:05:46 2005
Not Valid After: Sun Aug 24 08:05:46 2025
Fingerprint (MD5): 68:9b:17:c6:54:e0:e0:e0:99:55:16:42:f7:5a:86:d8
Fingerprint (SHA1): 02:72:68:29:3e:5f:5d:17:aa:a4:b3:c3:e6:36:1e:1f:92:57:5e:aa
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "KISA RootCA 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\015\060\013\006\003\125\004\012\014\004\113\111\123\101\061\056
\060\054\006\003\125\004\013\014\045\113\157\162\145\141\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\103\145\156\164\162\141\154\061\026
\060\024\006\003\125\004\003\014\015\113\111\123\101\040\122\157
\157\164\103\101\040\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\015\060\013\006\003\125\004\012\014\004\113\111\123\101\061\056
\060\054\006\003\125\004\013\014\045\113\157\162\145\141\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\103\145\156\164\162\141\154\061\026
\060\024\006\003\125\004\003\014\015\113\111\123\101\040\122\157
\157\164\103\101\040\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\004
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\163\060\202\002\133\240\003\002\001\002\002\001\004
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\144\061\013\060\011\006\003\125\004\006\023\002\113\122\061\015
\060\013\006\003\125\004\012\014\004\113\111\123\101\061\056\060
\054\006\003\125\004\013\014\045\113\157\162\145\141\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\103\145\156\164\162\141\154\061\026\060

\024\006\003\125\004\003\014\015\113\111\123\101\040\122\157\157
\164\103\101\040\061\060\036\027\015\060\065\060\070\062\064\060
\070\060\065\064\066\132\027\015\062\065\060\070\062\064\060\070
\060\065\064\066\132\060\144\061\013\060\011\006\003\125\004\006
\023\002\113\122\061\015\060\013\006\003\125\004\012\014\004\113
\111\123\101\061\056\060\054\006\003\125\004\013\014\045\113\157
\162\145\141\040\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\101\165\164\150\157\162\151\164\171\040\103\145\156\164
\162\141\154\061\026\060\024\006\003\125\004\003\014\015\113\111
\123\101\040\122\157\157\164\103\101\040\061\060\202\001\040\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\015\000\060\202\001\010\002\202\001\001\000\274\004\344\372
\023\071\360\064\226\040\153\154\150\273\372\333\167\377\047\367
\254\354\057\347\375\360\177\155\157\214\052\315\045\011\133\044
\364\241\150\374\050\354\311\045\342\254\355\336\310\063\204\365
\260\245\011\072\247\261\107\110\305\314\117\214\171\234\371\006
\127\175\335\356\070\366\317\024\262\234\352\323\300\135\167\142
\360\107\015\271\032\100\123\134\144\160\257\010\132\300\367\317
\165\371\154\215\144\050\036\040\376\267\033\031\323\132\146\203
\162\342\260\233\275\323\045\025\015\062\157\144\067\224\205\106
\310\162\276\167\325\156\037\050\057\307\151\355\347\203\211\063
\130\323\336\240\277\100\350\103\120\356\334\115\153\274\245\352
\246\310\141\216\365\303\144\257\006\025\334\051\213\077\165\214
\274\161\104\333\374\255\265\027\035\155\211\203\317\306\063\275
\277\105\242\376\012\237\243\021\137\017\271\037\234\032\302\106
\314\234\050\146\237\160\046\074\056\337\252\200\376\214\305\004
\011\045\117\315\223\107\074\067\352\002\147\222\376\374\042\044
\134\254\322\054\340\134\001\063\212\301\031\333\002\001\003\243
\062\060\060\060\035\006\003\125\035\016\004\026\004\024\277\266
\047\330\003\132\166\145\114\141\001\101\126\061\345\213\173\072
\331\314\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\001\001\000\023\257\121\013\336\212\152\133\346
\232\012\310\261\220\112\116\241\002\235\314\210\322\253\146\275
\075\354\273\261\102\225\152\262\134\132\377\241\143\144\226\251
\150\025\177\045\136\212\370\244\163\301\200\212\205\012\016\122
\350\062\347\105\370\116\145\200\221\231\164\103\345\105\235\111
\052\360\224\225\335\351\341\060\322\023\156\311\116\261\167\345
\004\317\255\132\036\224\011\132\327\074\010\034\256\172\351\024
\062\301\105\255\322\046\110\162\254\250\101\332\360\041\207\071
\136\337\374\144\377\141\164\052\234\331\233\213\137\302\067\223
\330\243\067\057\073\223\153\262\033\007\247\177\011\120\357\323
\072\276\041\153\212\220\073\047\112\121\116\153\236\234\207\235
\370\170\220\061\355\021\047\306\250\131\276\374\030\013\373\216
\176\056\102\341\355\347\011\041\275\271\023\305\126\147\364\046
\246\102\103\220\104\124\264\161\233\166\344\032\022\254\032\050
\000\337\233\301\325\370\333\134\243\370\222\261\275\264\324\371
\120\331\000\002\117\333\203\320\021\117\244\102\126\141\072\176

\023\062\323\204\037\311\272
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "KISA RootCA 1"
Issuer: CN=KISA RootCA 1,OU=Korea Certification Authority Central,O=KISA,C=KR
Serial Number: 4 (0x4)
Subject: CN=KISA RootCA 1,OU=Korea Certification Authority Central,O=KISA,C=KR
Not Valid Before: Wed Aug 24 08:05:46 2005
Not Valid After: Sun Aug 24 08:05:46 2025
Fingerprint (MD5): 68:9b:17:c6:54:e0:e0:e0:99:55:16:42:f7:5a:86:d8
Fingerprint (SHA1): 02:72:68:29:3e:5f:5d:17:aa:a4:b3:c3:e6:36:1e:1f:92:57:5e:aa
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "KISA RootCA 1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\002\162\150\051\076\137\135\027\252\244\263\303\346\066\036\037
\222\127\136\252
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\150\233\027\306\124\340\340\340\231\125\026\102\367\132\206\330
END
CKA_ISSUER
MULTILINE_OCTAL
\060\144\061\013\060\011\006\003\125\004\006\023\002\113\122\061
\015\060\013\006\003\125\004\012\014\004\113\111\123\101\061\056
\060\054\006\003\125\004\013\014\045\113\157\162\145\141\040\103
\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164
\150\157\162\151\164\171\040\103\145\156\164\162\141\154\061\026
\060\024\006\003\125\004\003\014\015\113\111\123\101\040\122\157
\157\164\103\101\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\004
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado"

Issuer: 1.2.840.113549.1.9.1=info@netlock.hu,CN=NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado,OU=Tanusitvanykiadok,O=NetLock Halozatbiztonsagi Kft.,L=Budapest,C=HU
Serial Number: 123 (0x7b)
Subject: 1.2.840.113549.1.9.1=info@netlock.hu,CN=NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado,OU=Tanusitvanykiadok,O=NetLock Halozatbiztonsagi Kft.,L=Budapest,C=HU
Not Valid Before: Sun Mar 30 01:47:11 2003
Not Valid After: Thu Dec 15 01:47:11 2022
Fingerprint (MD5): d4:80:65:68:24:f9:89:22:28:db:f5:a4:9a:17:8f:14
Fingerprint (SHA1): 01:68:97:e1:a0:b8:f2:c3:b1:34:66:5c:20:a7:27:b7:a1:58:e2:8f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\311\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160
\145\163\164\061\047\060\045\006\003\125\004\012\023\036\116\145
\164\114\157\143\153\040\110\141\154\157\172\141\164\142\151\172
\164\157\156\163\141\147\151\040\113\146\164\056\061\032\060\030
\006\003\125\004\013\023\021\124\141\156\165\163\151\164\166\141
\156\171\153\151\141\144\157\153\061\102\060\100\006\003\125\004
\003\023\071\116\145\164\114\157\143\153\040\115\151\156\157\163
\151\164\145\164\164\040\113\157\172\152\145\147\171\172\157\151
\040\050\103\154\141\163\163\040\121\101\051\040\124\141\156\165
\163\151\164\166\141\156\171\153\151\141\144\157\061\036\060\034
\006\011\052\206\110\206\367\015\001\011\001\026\017\151\156\146
\157\100\156\145\164\154\157\143\153\056\150\165
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\311\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160
\145\163\164\061\047\060\045\006\003\125\004\012\023\036\116\145
\164\114\157\143\153\040\110\141\154\157\172\141\164\142\151\172
\164\157\156\163\141\147\151\040\113\146\164\056\061\032\060\030
\006\003\125\004\013\023\021\124\141\156\165\163\151\164\166\141
\156\171\153\151\141\144\157\153\061\102\060\100\006\003\125\004
\003\023\071\116\145\164\114\157\143\153\040\115\151\156\157\163
\151\164\145\164\164\040\113\157\172\152\145\147\171\172\157\151
\040\050\103\154\141\163\163\040\121\101\051\040\124\141\156\165
\163\151\164\166\141\156\171\153\151\141\144\157\061\036\060\034
\006\011\052\206\110\206\367\015\001\011\001\026\017\151\156\146
\157\100\156\145\164\154\157\143\153\056\150\165
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\173
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\321\060\202\005\271\240\003\002\001\002\002\001\173
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\201\311\061\013\060\011\006\003\125\004\006\023\002\110\125\061
\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160\145
\163\164\061\047\060\045\006\003\125\004\012\023\036\116\145\164
\114\157\143\153\040\110\141\154\157\172\141\164\142\151\172\164
\157\156\163\141\147\151\040\113\146\164\056\061\032\060\030\006
\003\125\004\013\023\021\124\141\156\165\163\151\164\166\141\156
\171\153\151\141\144\157\153\061\102\060\100\006\003\125\004\003
\023\071\116\145\164\114\157\143\153\040\115\151\156\157\163\151
\164\145\164\164\040\113\157\172\152\145\147\171\172\157\151\040
\050\103\154\141\163\163\040\121\101\051\040\124\141\156\165\163
\151\164\166\141\156\171\153\151\141\144\157\061\036\060\034\006
\011\052\206\110\206\367\015\001\011\001\026\017\151\156\146\157
\100\156\145\164\154\157\143\153\056\150\165\060\036\027\015\060
\063\060\063\063\060\060\061\064\067\061\061\132\027\015\062\062
\061\062\061\065\060\061\064\067\061\061\132\060\201\311\061\013
\060\011\006\003\125\004\006\023\002\110\125\061\021\060\017\006
\003\125\004\007\023\010\102\165\144\141\160\145\163\164\061\047
\060\045\006\003\125\004\012\023\036\116\145\164\114\157\143\153
\040\110\141\154\157\172\141\164\142\151\172\164\157\156\163\141
\147\151\040\113\146\164\056\061\032\060\030\006\003\125\004\013
\023\021\124\141\156\165\163\151\164\166\141\156\171\153\151\141
\144\157\153\061\102\060\100\006\003\125\004\003\023\071\116\145
\164\114\157\143\153\040\115\151\156\157\163\151\164\145\164\164
\040\113\157\172\152\145\147\171\172\157\151\040\050\103\154\141
\163\163\040\121\101\051\040\124\141\156\165\163\151\164\166\141
\156\171\153\151\141\144\157\061\036\060\034\006\011\052\206\110
\206\367\015\001\011\001\026\017\151\156\146\157\100\156\145\164
\154\157\143\153\056\150\165\060\202\001\042\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000\060
\202\001\012\002\202\001\001\000\307\122\045\262\330\075\324\204
\125\011\247\033\275\154\271\024\364\212\002\333\166\374\152\052
\170\253\345\167\360\156\340\214\043\147\333\245\144\231\271\335
\001\076\157\357\055\232\074\042\360\135\311\127\240\125\101\177
\362\103\136\130\202\123\061\145\316\036\362\046\272\000\124\036
\257\260\274\034\344\122\214\240\062\257\267\067\261\123\147\150
\164\147\120\366\055\056\144\336\256\046\171\337\337\231\206\253
\253\177\205\354\240\373\200\314\364\270\014\036\223\105\143\271
\334\270\133\233\355\133\071\324\137\142\260\247\216\174\146\070
\054\252\261\010\143\027\147\175\314\275\263\361\303\077\317\120
\071\355\321\031\203\025\333\207\022\047\226\267\332\352\345\235
\274\272\352\071\117\213\357\164\232\347\305\320\322\352\206\121

\034\344\376\144\010\050\004\171\005\353\312\305\161\016\013\357
\253\352\354\022\021\241\030\005\062\151\321\014\054\032\075\045
\231\077\265\174\312\155\260\256\231\231\372\010\140\347\031\302
\362\275\121\323\314\323\002\254\301\021\014\200\316\253\334\224
\235\153\243\071\123\072\326\205\002\003\000\305\175\243\202\002
\300\060\202\002\274\060\022\006\003\125\035\023\001\001\377\004
\010\060\006\001\001\377\002\001\004\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\202\002\165\006\011\140
\206\110\001\206\370\102\001\015\004\202\002\146\026\202\002\142
\106\111\107\131\105\114\105\115\041\040\105\172\145\156\040\164
\141\156\165\163\151\164\166\141\156\171\040\141\040\116\145\164
\114\157\143\153\040\113\146\164\056\040\115\151\156\157\163\151
\164\145\164\164\040\123\172\157\154\147\141\154\164\141\164\141
\163\151\040\123\172\141\142\141\154\171\172\141\164\141\142\141
\156\040\154\145\151\162\164\040\145\154\152\141\162\141\163\157
\153\040\141\154\141\160\152\141\156\040\153\145\163\172\165\154
\164\056\040\101\040\155\151\156\157\163\151\164\145\164\164\040
\145\154\145\153\164\162\157\156\151\153\165\163\040\141\154\141
\151\162\141\163\040\152\157\147\150\141\164\141\163\040\145\162
\166\145\156\171\145\163\165\154\145\163\145\156\145\153\054\040
\166\141\154\141\155\151\156\164\040\145\154\146\157\147\141\144
\141\163\141\156\141\153\040\146\145\154\164\145\164\145\154\145
\040\141\040\115\151\156\157\163\151\164\145\164\164\040\123\172
\157\154\147\141\154\164\141\164\141\163\151\040\123\172\141\142
\141\154\171\172\141\164\142\141\156\054\040\141\172\040\101\154
\164\141\154\141\156\157\163\040\123\172\145\162\172\157\144\145
\163\151\040\106\145\154\164\145\164\145\154\145\153\142\145\156
\040\145\154\157\151\162\164\040\145\154\154\145\156\157\162\172
\145\163\151\040\145\154\152\141\162\141\163\040\155\145\147\164
\145\164\145\154\145\056\040\101\040\144\157\153\165\155\145\156
\164\165\155\157\153\040\155\145\147\164\141\154\141\154\150\141
\164\157\153\040\141\040\150\164\164\160\163\072\057\057\167\167
\167\056\156\145\164\154\157\143\153\056\150\165\057\144\157\143
\163\057\040\143\151\155\145\156\040\166\141\147\171\040\153\145
\162\150\145\164\157\153\040\141\172\040\151\156\146\157\100\156
\145\164\154\157\143\153\056\156\145\164\040\145\055\155\141\151
\154\040\143\151\155\145\156\056\040\127\101\122\116\111\116\107
\041\040\124\150\145\040\151\163\163\165\141\156\143\145\040\141
\156\144\040\164\150\145\040\165\163\145\040\157\146\040\164\150
\151\163\040\143\145\162\164\151\146\151\143\141\164\145\040\141
\162\145\040\163\165\142\152\145\143\164\040\164\157\040\164\150
\145\040\116\145\164\114\157\143\153\040\121\165\141\154\151\146
\151\145\144\040\103\120\123\040\141\166\141\151\154\141\142\154
\145\040\141\164\040\150\164\164\160\163\072\057\057\167\167\167
\056\156\145\164\154\157\143\153\056\150\165\057\144\157\143\163
\057\040\157\162\040\142\171\040\145\055\155\141\151\154\040\141
\164\040\151\156\146\157\100\156\145\164\154\157\143\153\056\156
\145\164\060\035\006\003\125\035\016\004\026\004\024\011\152\142

\026\222\260\132\273\125\016\313\165\062\072\062\345\262\041\311
\050\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\202\001\001\000\221\152\120\234\333\170\201\233\077\213\102
\343\073\374\246\303\356\103\340\317\363\342\200\065\111\105\166
\002\342\343\057\005\305\361\052\347\300\101\063\306\266\233\320
\063\071\315\300\333\241\255\154\067\002\114\130\101\073\362\227
\222\306\110\250\315\345\212\071\211\141\371\122\227\351\275\366
\371\224\164\350\161\016\274\167\206\303\006\314\132\174\112\176
\064\120\060\056\373\177\062\232\215\075\363\040\133\370\152\312
\206\363\061\114\054\131\200\002\175\376\070\311\060\165\034\267
\125\343\274\237\272\250\155\204\050\005\165\263\213\015\300\221
\124\041\347\246\013\264\231\365\121\101\334\315\243\107\042\331
\307\001\201\304\334\107\117\046\352\037\355\333\315\015\230\364
\243\234\264\163\062\112\226\231\376\274\177\310\045\130\370\130
\363\166\146\211\124\244\246\076\304\120\134\272\211\030\202\165
\110\041\322\117\023\350\140\176\007\166\333\020\265\121\346\252
\271\150\252\315\366\235\220\165\022\352\070\032\312\104\350\267
\231\247\052\150\225\146\225\253\255\357\211\313\140\251\006\022
\306\224\107\351\050
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado"
Issuer: 1.2.840.113549.1.9.1=info@netlock.hu,CN=NetLock
Minositett Kozjegyzoi (Class QA) Tanusitvanykiado,OU=Tanusitvanykiadok,O=NetLock Halozatbiztonsagi
Kft.,L=Budapest,C=HU
Serial Number: 123 (0x7b)
Subject: 1.2.840.113549.1.9.1=info@netlock.hu,CN=NetLock Minositett Kozjegyzoi (Class QA)
Tanusitvanykiado,OU=Tanusitvanykiadok,O=NetLock Halozatbiztonsagi Kft.,L=Budapest,C=HU
Not Valid Before: Sun Mar 30 01:47:11 2003
Not Valid After: Thu Dec 15 01:47:11 2022
Fingerprint (MD5): d4:80:65:68:24:f9:89:22:28:db:f5:a4:9a:17:8f:14
Fingerprint (SHA1): 01:68:97:e1:a0:b8:f2:c3:b1:34:66:5c:20:a7:27:b7:a1:58:e2:8f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "NetLock Minositett Kozjegyzoi (Class QA) Tanusitvanykiado"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\001\150\227\341\240\270\362\303\261\064\146\134\040\247\047\267
\241\130\342\217
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\324\200\145\150\044\371\211\042\050\333\365\244\232\027\217\024

END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\311\061\013\060\011\006\003\125\004\006\023\002\110\125
\061\021\060\017\006\003\125\004\007\023\010\102\165\144\141\160
\145\163\164\061\047\060\045\006\003\125\004\012\023\036\116\145
\164\114\157\143\153\040\110\141\154\157\172\141\164\142\151\172
\164\157\156\163\141\147\151\040\113\146\164\056\061\032\060\030
\006\003\125\004\013\023\021\124\141\156\165\163\151\164\166\141
\156\171\153\151\141\144\157\153\061\102\060\100\006\003\125\004
\003\023\071\116\145\164\114\157\143\153\040\115\151\156\157\163
\151\164\145\164\164\040\113\157\172\152\145\147\171\172\157\151
\040\050\103\154\141\163\163\040\121\101\051\040\124\141\156\165
\163\151\164\166\141\156\171\153\151\141\144\157\061\036\060\034
\006\011\052\206\110\206\367\015\001\011\001\026\017\151\156\146
\157\100\156\145\164\154\157\143\153\056\150\165
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\173
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Staat der Nederlanden Root CA"
Issuer: CN=Staat der Nederlanden Root CA,O=Staat der Nederlanden,C=NL
Serial Number:98:96:8a
Subject: CN=Staat der Nederlanden Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Tue Dec 17 09:23:49 2002
Not Valid After: Wed Dec 16 09:15:38 2015
Fingerprint (MD5): 60:84:7c:5a:ce:db:0c:d4:cb:a7:e9:fe:02:c6:a9:c0
Fingerprint (SHA1): 10:1d:fa:3f:d5:0b:cb:bb:9b:b5:60:0c:19:55:a4:1a:f4:73:3a:04
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\023\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\046\060\044\006\003\125\004\003\023\035\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101

END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\023\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\046\060\044\006\003\125\004\003\023\035\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\000\230\226\212
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\272\060\202\002\242\240\003\002\001\002\002\004\000
\230\226\212\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\125\061\013\060\011\006\003\125\004\006\023\002\116
\114\061\036\060\034\006\003\125\004\012\023\025\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\061\046\060\044\006\003\125\004\003\023\035\123\164\141\141
\164\040\144\145\162\040\116\145\144\145\162\154\141\156\144\145
\156\040\122\157\157\164\040\103\101\060\036\027\015\060\062\061
\062\061\067\060\071\062\063\064\071\132\027\015\061\065\061\062
\061\066\060\071\061\065\063\070\132\060\125\061\013\060\011\006
\003\125\004\006\023\002\116\114\061\036\060\034\006\003\125\004
\012\023\025\123\164\141\141\164\040\144\145\162\040\116\145\144
\145\162\154\141\156\144\145\156\061\046\060\044\006\003\125\004
\003\023\035\123\164\141\141\164\040\144\145\162\040\116\145\144
\145\162\154\141\156\144\145\156\040\122\157\157\164\040\103\101
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\230\322\265\121\021\172\201\246\024\230\161\155\276\314\347
\023\033\326\047\016\172\263\152\030\034\266\141\132\325\141\011
\277\336\220\023\307\147\356\335\363\332\305\014\022\236\065\125
\076\054\047\210\100\153\367\334\335\042\141\365\302\307\016\365
\366\325\166\123\115\217\214\274\030\166\067\205\235\350\312\111
\307\322\117\230\023\011\242\076\042\210\234\177\326\362\020\145
\264\356\137\030\325\027\343\370\305\375\342\235\242\357\123\016
\205\167\242\017\341\060\107\356\000\347\063\175\104\147\032\013
\121\350\213\240\236\120\230\150\064\122\037\056\155\001\362\140
\105\362\061\353\251\061\150\051\273\172\101\236\306\031\177\224
\264\121\071\003\177\262\336\247\062\233\264\107\216\157\264\112
\256\345\257\261\334\260\033\141\274\231\162\336\344\211\267\172
\046\135\332\063\111\133\122\234\016\365\212\255\303\270\075\350
\006\152\302\325\052\013\154\173\204\275\126\005\313\206\145\222
\354\104\053\260\216\271\334\160\013\106\332\255\274\143\210\071
\372\333\152\376\043\372\274\344\110\364\147\053\152\021\020\041

\111\002\003\001\000\001\243\201\221\060\201\216\060\014\006\003
\125\035\023\004\005\060\003\001\001\377\060\117\006\003\125\035
\040\004\110\060\106\060\104\006\004\125\035\040\000\060\074\060
\072\006\010\053\006\001\005\005\007\002\001\026\056\150\164\164
\160\072\057\057\167\167\167\056\160\153\151\157\166\145\162\150
\145\151\144\056\156\154\057\160\157\154\151\143\151\145\163\057
\162\157\157\164\055\160\157\154\151\143\171\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003\125
\035\016\004\026\004\024\250\175\353\274\143\244\164\023\164\000
\354\226\340\323\064\301\054\277\154\370\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\005\204
\207\125\164\066\141\301\273\321\324\306\025\250\023\264\237\244
\376\273\356\025\264\057\006\014\051\362\250\222\244\141\015\374
\253\134\010\133\121\023\053\115\302\052\141\310\370\011\130\374
\055\002\262\071\175\231\146\201\277\156\134\225\105\040\154\346
\171\247\321\330\034\051\374\302\040\047\121\310\361\174\135\064
\147\151\205\021\060\306\000\322\327\363\323\174\266\360\061\127
\050\022\202\163\351\063\057\246\125\264\013\221\224\107\234\372
\273\172\102\062\350\256\176\055\310\274\254\024\277\331\017\331
\133\374\301\371\172\225\341\175\176\226\374\161\260\302\114\310
\337\105\064\311\316\015\362\234\144\010\320\073\303\051\305\262
\355\220\004\301\261\051\221\305\060\157\301\251\162\063\314\376
\135\026\027\054\021\151\347\176\376\305\203\010\337\274\334\042
\072\056\040\151\043\071\126\140\147\220\213\056\166\071\373\021
\210\227\366\174\275\113\270\040\026\147\005\215\342\073\301\162
\077\224\225\067\307\135\271\236\330\223\241\027\217\377\014\146
\025\301\044\174\062\174\003\035\073\241\130\105\062\223
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Staat der Nederlanden Root CA"
Issuer: CN=Staat der Nederlanden Root CA,O=Staat der Nederlanden,C=NL
Serial Number:98:96:8a
Subject: CN=Staat der Nederlanden
Root CA,O=Staat der Nederlanden,C=NL
Not Valid Before: Tue Dec 17 09:23:49 2002
Not Valid After: Wed Dec 16 09:15:38 2015
Fingerprint (MD5): 60:84:7c:5a:ce:db:0c:d4:cb:a7:e9:fe:02:c6:a9:c0
Fingerprint (SHA1): 10:1d:fa:3f:d5:0b:cb:bb:9b:b5:60:0c:19:55:a4:1a:f4:73:3a:04
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Staat der Nederlanden Root CA"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\020\035\372\077\325\013\313\273\233\265\140\014\031\125\244\032
\364\163\072\004
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\140\204\174\132\316\333\014\324\313\247\351\376\002\306\251\300
END
CKA_ISSUER MULTILINE_OCTAL
\060\125\061\013\060\011\006\003\125\004\006\023\002\116\114\061
\036\060\034\006\003\125\004\012\023\025\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\061
\046\060\044\006\003\125\004\003\023\035\123\164\141\141\164\040
\144\145\162\040\116\145\144\145\162\154\141\156\144\145\156\040
\122\157\157\164\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\000\230\226\212
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "America Online Root Certification Authority 1"
Issuer: CN=America Online Root Certification Authority 1,O=America Online Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=America Online Root Certification Authority 1,O=America Online Inc.,C=US
Not Valid Before: Tue May 28 06:00:00 2002
Not Valid After: Thu Nov 19 20:43:00 2037
Fingerprint (MD5): 14:f1:08:ad:9d:fa:64:e2:89:e7:1c:cf:a8:ad:7d:5e
Fingerprint (SHA1): 39:21:c1:15:c1:5d:0e:ca:5c:cb:5b:c4:f0:7d:21:d8:05:0b:56:6a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "America Online Root Certification Authority 1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\101\155\145\162\151\143
\141\040\117\156\154\151\156\145\040\111\156\143\056\061\066\060
\064\006\003\125\004\003\023\055\101\155\145\162\151\143\141\040
\117\156\154\151\156\145\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\061

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\101\155\145\162\151\143
\141\040\117\156\154\151\156\145\040\111\156\143\056\061\066\060
\064\006\003\125\004\003\023\055\101\155\145\162\151\143\141\040
\117\156\154\151\156\145\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\244\060\202\002\214\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061\034
\060\032\006\003\125\004\012\023\023\101\155\145\162\151\143\141
\040\117\156\154\151\156\145\040\111\156\143\056\061\066\060\064
\006\003\125\004\003\023\055\101\155\145\162\151\143\141\040\117
\156\154\151\156\145\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\061\060\036\027\015\060\062\060\065\062\070\060\066
\060\060\060\060\132\027\015\063\067\061\061\061\071\062\060\064
\063\060\060\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\034\060\032\006\003\125\004\012\023\023\101\155
\145\162\151\143\141\040\117\156\154\151\156\145\040\111\156\143
\056\061\066\060\064\006\003\125\004\003\023\055\101\155\145\162
\151\143\141\040\117\156\154\151\156\145\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101\165
\164\150\157\162\151\164\171\040\061\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\250\057\350\244\151\006
\003\107\303\351\052\230\377\031\242\160\232\306\120\262\176\245
\337\150\115\033\174\017\266\227\150\175\055\246\213\227\351\144
\206\311\243\357\240\206\277\140\145\234\113\124\210\302\110\305
\112\071\277\024\343\131\125\345\031\264\164\310\264\005\071\134
\026\245\342\225\005\340\022\256\131\213\242\063\150\130\034\246
\324\025\267\330\237\327\334\161\253\176\232\277\233\216\063\017
\042\375\037\056\347\007\066\357\142\071\305\335\313\272\045\024
\043\336\014\306\075\074\316\202\010\346\146\076\332\121\073\026
\072\243\005\177\240\334\207\325\234\374\162\251\240\175\170\344
\267\061\125\036\145\273\324\141\260\041\140\355\020\062\162\305
\222\045\036\370\220\112\030\170\107\337\176\060\067\076\120\033
\333\034\323\153\232\206\123\007\260\357\254\006\170\370\204\231
\376\041\215\114\200\266\014\202\366\146\160\171\032\323\117\243

\317\361\317\106\260\113\017\076\335\210\142\270\214\251\011\050
\073\172\307\227\341\036\345\364\237\300\300\256\044\240\310\241
\331\017\326\173\046\202\151\062\075\247\002\003\001\000\001\243
\143\060\141\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\000
\255\331\243\366\171\366\156\164\251\177\063\075\201\027\327\114
\317\063\336\060\037\006\003\125\035\043\004\030\060\026\200\024
\000\255\331\243\366\171\366\156\164\251\177\063\075\201\027\327
\114\317\063\336\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\001\001\000\174\212\321\037\030\067\202\340
\270\260\243\355\126\225\310\142\141\234\005\242\315\302\142\046
\141\315\020\026\327\314\264\145\064\320\021\212\255\250\251\005
\146\357\164\363\155\137\235\231\257\366\213\373\353\122\262\005
\230\242\157\052\305\124\275\045\275\137\256\310\206\352\106\054
\301\263\275\301\351\111\160\030\026\227\010\023\214\040\340\033
\056\072\107\313\036\344\000\060\225\133\364\105\243\300\032\260
\001\116\253\275\300\043\156\143\077\200\112\305\007\355\334\342
\157\307\301\142\361\343\162\326\004\310\164\147\013\372\210\253
\241\001\310\157\360\024\257\322\231\315\121\223\176\355\056\070
\307\275\316\106\120\075\162\343\171\045\235\233\210\053\020\040
\335\245\270\062\237\215\340\051\337\041\164\206\202\333\057\202
\060\306\307\065\206\263\371\226\137\106\333\014\105\375\363\120
\303\157\306\303\110\255\106\246\341\047\107\012\035\016\233\266
\302\167\177\143\362\340\175\032\276\374\340\337\327\307\247\154
\260\371\256\272\074\375\164\264\021\350\130\015\200\274\323\250
\200\072\231\355\165\314\106\173
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "America Online Root Certification Authority 1"
Issuer: CN=America Online Root Certification Authority 1,O=America Online Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=America Online Root Certification Authority 1,O=America Online Inc.,C=US
Not Valid Before: Tue May 28 06:00:00 2002
Not Valid After: Thu Nov 19 20:43:00 2037
Fingerprint (MD5): 14:f1:08:ad:9d:fa:64:e2:89:e7:1c:cf:a8:ad:7d:5e
Fingerprint (SHA1): 39:21:c1:15:c1:5d:0e:ca:5c:cb:5b:c4:f0:7d:21:d8:05:0b:56:6a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "America Online Root Certification Authority 1"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\071\041\301\025\301\135\016\312\134\313\133\304\360\175\041\330
\005\013\126\152
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\024\361\010\255\235\372\144\342\211\347\034\317\250\255\175\136
END
CKA_ISSUER
MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\101\155\145\162\151\143
\141\040\117\156\154\151\156\145\040\111\156\143\056\061\066\060
\064\006\003\125\004\003\023\055\101\155\145\162\151\143\141\040
\117\156\154\151\156\145\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Juur-SK"
Issuer: CN=Juur-SK,O=AS Sertifitseerimiskeskus,C=EE,1.2.840.113549.1.9.1=pki@sk.ee
Serial Number:3b:8e:4b:fc
Subject: CN=Juur-SK,O=AS Sertifitseerimiskeskus,C=EE,1.2.840.113549.1.9.1=pki@sk.ee
#
Not Valid Before: Thu Aug 30 14:23:01 2001
Not Valid After: Fri Aug 26 14:23:01 2016
Fingerprint (MD5): aa:8e:5d:d9:f8:db:0a:58:b7:8d:26:87:6c:82:35:55
Fingerprint (SHA1): 40:9d:4b:d9:17:b5:5c:27:b6:9b:64:cb:98:22:44:0d:cd:09:b8:89
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Juur-SK"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\030\060\026\006\011\052\206\110\206\367\015\001\011
\001\026\011\160\153\151\100\163\153\056\145\145\061\013\060\011
\006\003\125\004\006\023\002\105\105\061\042\060\040\006\003\125
\004\012\023\031\101\123\040\123\145\162\164\151\146\151\164\163
\145\145\162\151\155\151\163\153\145\163\153\165\163\061\020\060
\016\006\003\125\004\003\023\007\112\165\165\162\055\123\113

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\030\060\026\006\011\052\206\110\206\367\015\001\011
\001\026\011\160\153\151\100\163\153\056\145\145\061\013\060\011
\006\003\125\004\006\023\002\105\105\061\042\060\040\006\003\125
\004\012\023\031\101\123\040\123\145\162\164\151\146\151\164\163
\145\145\162\151\155\151\163\153\145\163\153\165\163\061\020\060
\016\006\003\125\004\003\023\007\112\165\165\162\055\123\113
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\004\073\216\113\374
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\346\060\202\003\316\240\003\002\001\002\002\004\073
\216\113\374\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\135\061\030\060\026\006\011\052\206\110\206\367\015
\001\011\001\026\011\160\153\151\100\163\153\056\145\145\061\013
\060\011\006\003\125\004\006\023\002\105\105\061\042\060\040\006
\003\125\004\012\023\031\101\123\040\123\145\162\164\151\146\151
\164\163\145\145\162\151\155\151\163\153\145\163\153\165\163\061
\020\060\016\006\003\125\004\003\023\007\112\165\165\162\055\123
\113\060\036\027\015\060\061\060\070\063\060\061\064\062\063\060
\061\132\027\015\061\066\060\070\062\066\061\064\062\063\060\061
\132\060\135\061\030\060\026\006\011\052\206\110\206\367\015\001
\011\001\026\011\160\153\151\100\163\153\056\145\145\061\013\060
\011\006\003\125\004\006\023\002\105\105\061\042\060\040\006\003
\125\004\012\023\031\101\123\040\123\145\162\164\151\146\151\164
\163\145\145\162\151\155\151\163\153\145\163\153\165\163\061\020
\060\016\006\003\125\004\003\023\007\112\165\165\162\055\123\113
\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001
\000\201\161\066\076\063\007\326\343\060\215\023\176\167\062\106
\313\317\031\262\140\061\106\227\206\364\230\106\244\302\145\105
\317\323\100\174\343\132\042\250\020\170\063\314\210\261\323\201
\112\366\142\027\173\137\115\012\056\320\317\213\043\356\117\002
\116\273\353\016\312\275\030\143\350\200\034\215\341\034\215\075
\340\377\133\137\352\144\345\227\350\077\231\177\014\012\011\063
\000\032\123\247\041\341\070\113\326\203\033\255\257\144\302\371
\034\172\214\146\110\115\146\037\030\012\342\076\273\037\007\145
\223\205\271\032\260\271\304\373\015\021\366\365\326\371\033\307
\054\053\267\030\121\376\340\173\366\250\110\257\154\073\117\057
\357\370\321\107\036\046\127\360\121\035\063\226\377\357\131\075
\332\115\321\025\064\307\352\077\026\110\173\221\034\200\103\017
\075\270\005\076\321\263\225\315\330\312\017\302\103\147\333\267
\223\340\042\202\056\276\365\150\050\203\271\301\073\151\173\040
\332\116\234\155\341\272\315\217\172\154\260\011\042\327\213\013

\333\034\325\132\046\133\015\300\352\345\140\320\237\376\065\337
\077\002\003\001\000\001\243\202\001\254\060\202\001\250\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\202\001\026\006\003\125\035\040\004\202\001\015\060\202\001\011
\060\202\001\005\006\012\053\006\001\004\001\316\037\001\001\001
\060\201\366\060\201\320\006\010\053\006\001\005\005\007\002\002
\060\201\303\036\201\300\000\123\000\145\000\145\000\040\000\163
\000\145\000\162\000\164\000\151\000\146\000\151\000\153\000\141
\000\141\000\164\000\040\000\157\000\156\000\040\000\166\000\344
\000\154\000\152\000\141\000\163\000\164\000\141\000\164\000\165
\000\144\000\040\000\101\000\123\000\055\000\151\000\163\000\040
\000\123\000\145\000\162\000\164\000\151\000\146\000\151\000\164
\000\163\000\145\000\145\000\162\000\151\000\155\000\151\000\163
\000\153\000\145\000\163\000\153\000\165\000\163\000\040\000\141
\000\154\000\141\000\155\000\055\000\123\000\113\000\040\000\163
\000\145\000\162\000\164\000\151\000\146\000\151\000\153\000\141
\000\141\000\164\000\151\000\144\000\145\000\040\000\153\000\151
\000\156\000\156\000\151\000\164\000\141\000\155\000\151\000\163
\000\145\000\153\000\163\060\041\006\010\053\006\001\005\005\007
\002\001\026\025\150\164\164\160\072\057\057\167\167\167\056\163
\153\056\145\145\057\143\160\163\057\060\053\006\003\125\035\037
\004\044\060\042\060\040\240\036\240\034\206\032\150\164\164\160
\072\057\057\167\167\167\056\163\153\056\145\145\057\152\165\165
\162\057\143\162\154\057\060\035\006\003\125\035\016\004\026\004
\024\004\252\172\107\243\344\211\257\032\317\012\100\247\030\077
\157\357\351\175\276\060\037\006\003\125\035\043\004\030\060\026
\200\024\004\252\172\107\243\344\211\257\032\317\012\100\247\030
\077\157\357\351\175\276\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\346\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\173\301\030\224\123\242
\011\363\376\046\147\232\120\344\303\005\057\053\065\170\221\114
\174\250\021\021\171\114\111\131\254\310\367\205\145\134\106\273
\073\020\240\002\257\315\117\265\314\066\052\354\135\376\357\240
\221\311\266\223\157\174\200\124\354\307\010\160\015\216\373\202
\354\052\140\170\151\066\066\321\305\234\213\151\265\100\310\224
\145\167\362\127\041\146\073\316\205\100\266\063\143\032\277\171
\036\374\134\035\323\035\223\033\213\014\135\205\275\231\060\062
\030\011\221\122\351\174\241\272\377\144\222\232\354\376\065\356
\214\057\256\374\040\206\354\112\336\033\170\062\067\246\201\322
\235\257\132\022\026\312\231\133\374\157\155\016\305\240\036\206
\311\221\320\134\230\202\137\143\014\212\132\253\330\225\246\314
\313\212\326\277\144\113\216\312\212\262\260\351\041\062\236\252
\250\205\230\064\201\071\041\073\250\072\122\062\075\366\153\067
\206\006\132\025\230\334\360\021\146\376\064\040\267\003\364\101
\020\175\071\204\171\226\162\143\266\226\002\345\153\271\255\031
\115\273\306\104\333\066\313\052\234\216
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Juur-SK"
Issuer: CN=Juur-SK,O=AS Sertifitseerimiskeskus,C=EE,1.2.840.113549.1.9.1=pki@sk.ee
Serial Number:3b:8e:4b:fc
Subject: CN=Juur-SK,O=AS Sertifitseerimiskeskus,C=EE,1.2.840.113549.1.9.1=pki@sk.ee
Not Valid Before: Thu Aug 30 14:23:01 2001
Not Valid After: Fri Aug 26 14:23:01 2016
#
Fingerprint (MD5): aa:8e:5d:d9:f8:db:0a:58:b7:8d:26:87:6c:82:35:55
Fingerprint (SHA1): 40:9d:4b:d9:17:b5:5c:27:b6:9b:64:cb:98:22:44:0d:cd:09:b8:89
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Juur-SK"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\100\235\113\331\027\265\134\047\266\233\144\313\230\042\104\015
\315\011\270\211
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\216\135\331\370\333\012\130\267\215\046\207\154\202\065\125
END
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\030\060\026\006\011\052\206\110\206\367\015\001\011
\001\026\011\160\153\151\100\163\153\056\145\145\061\013\060\011
\006\003\125\004\006\023\002\105\105\061\042\060\040\006\003\125
\004\012\023\031\101\123\040\123\145\162\164\151\146\151\164\163
\145\145\162\151\155\151\163\153\145\163\153\165\163\061\020\060
\016\006\003\125\004\003\023\007\112\165\165\162\055\123\113
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\073\216\113\374
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SECOM Trust.net"
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)
Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP

Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After: Sat Sep 30 04:20:49 2023
Fingerprint (MD5): f1:bc:63:6a:54:e0:b5:27:f5:cd:e7:1a:e3:4d:6e:4a
Fingerprint (SHA1): 36:b1:2b:49:f9:81:9e:d7:4c:9e:bc:38:0f:c6:56:8f:5d:ac:b2:f7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SECOM Trust.net"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\132\060\202\002\102\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061\030
\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040\124
\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125\004
\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155\155
\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103\101
\061\060\036\027\015\060\063\060\071\063\060\060\064\062\060\064
\071\132\027\015\062\063\060\071\063\060\060\064\062\060\064\071
\132\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120
\061\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115
\040\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003
\125\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157
\155\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164
\103\101\061\060\202\001\042\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002

\202\001\001\000\263\263\376\177\323\155\261\357\026\174\127\245
\014\155\166\212\057\113\277\144\373\114\356\212\360\363\051\174
\365\377\356\052\340\351\351\272\133\144\042\232\232\157\054\072
\046\151\121\005\231\046\334\325\034\152\161\306\232\175\036\235
\335\174\154\306\214\147\147\112\076\370\161\260\031\047\251\011
\014\246\225\277\113\214\014\372\125\230\073\330\350\042\241\113
\161\070\171\254\227\222\151\263\211\176\352\041\150\006\230\024
\226\207\322\141\066\274\155\047\126\236\127\356\300\300\126\375
\062\317\244\331\216\302\043\327\215\250\363\330\045\254\227\344
\160\070\364\266\072\264\235\073\227\046\103\243\241\274\111\131
\162\114\043\060\207\001\130\366\116\276\034\150\126\146\257\315
\101\135\310\263\115\052\125\106\253\037\332\036\342\100\075\333
\315\175\271\222\200\234\067\335\014\226\144\235\334\042\367\144
\213\337\141\336\025\224\122\025\240\175\122\311\113\250\041\311
\306\261\355\313\303\225\140\321\017\360\253\160\370\337\313\115
\176\354\326\372\253\331\275\177\124\362\245\351\171\372\331\326
\166\044\050\163\002\003\001\000\001\243\077\060\075\060\035\006
\003\125\035\016\004\026\004\024\240\163\111\231\150\334\205\133
\145\343\233\050\057\127\237\275\063\274\007\110\060\013\006\003
\125\035\017\004\004\003\002\001\006\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\150\100
\251\250\273\344\117\135\171\263\005\265\027\263\140\023\353\306
\222\135\340\321\323\152\376\373\276\233\155\277\307\005\155\131
\040\304\034\360\267\332\204\130\002\143\372\110\026\357\117\245
\013\367\112\230\362\077\236\033\255\107\153\143\316\010\107\353
\122\077\170\234\257\115\256\370\325\117\317\232\230\052\020\101
\071\122\304\335\331\233\016\357\223\001\256\262\056\312\150\102
\044\102\154\260\263\072\076\315\351\332\110\304\025\313\351\371
\007\017\222\120\111\212\335\061\227\137\311\351\067\252\073\131
\145\227\224\062\311\263\237\076\072\142\130\305\111\255\142\016
\161\245\062\252\057\306\211\166\103\100\023\023\147\075\242\124
\045\020\313\361\072\362\331\372\333\111\126\273\246\376\247\101
\065\303\340\210\141\311\210\307\337\066\020\042\230\131\352\260
\112\373\126\026\163\156\254\115\367\042\241\117\255\035\172\055
\105\047\345\060\301\136\362\332\023\313\045\102\121\225\107\003
\214\154\041\314\164\102\355\123\377\063\213\217\017\127\001\026
\057\317\246\356\311\160\042\024\275\375\276\154\013\003
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SECOM Trust.net"
Issuer: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Serial Number: 0 (0x0)

Subject: OU=Security Communication RootCA1,O=SECOM Trust.net,C=JP
Not Valid Before: Tue Sep 30 04:20:49 2003
Not Valid After: Sat Sep 30 04:20:49 2023
Fingerprint (MD5): f1:bc:63:6a:54:e0:b5:27:f5:cd:e7:1a:e3:4d:6e:4a
Fingerprint (SHA1): 36:b1:2b:49:f9:81:9e:d7:4c:9e:bc:38:0f:c6:56:8f:5d:ac:b2:f7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
 UTF8 "SECOM Trust.net"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\066\261\053\111\371\201\236\327\114\236\274\070\017\306\126\217
\135\254\262\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\361\274\143\152\124\340\265\047\365\315\347\032\343\115\156\112
END
CKA_ISSUER MULTILINE_OCTAL
\060\120\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\030\060\026\006\003\125\004\012\023\017\123\105\103\117\115\040
\124\162\165\163\164\056\156\145\164\061\047\060\045\006\003\125
\004\013\023\036\123\145\143\165\162\151\164\171\040\103\157\155
\155\165\156\151\143\141\164\151\157\156\040\122\157\157\164\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ComSign CA"
Issuer: C=IL,O=ComSign,CN=ComSign
 CA
Serial Number:14:13:96:83:14:55:8c:ea:7b:63:e5:fc:34:87:77:44
Subject: C=IL,O=ComSign,CN=ComSign CA
Not Valid Before: Wed Mar 24 11:32:18 2004
Not Valid After: Mon Mar 19 15:02:18 2029
Fingerprint (MD5): cd:f4:39:f3:b5:18:50:d7:3e:a4:c5:91:a0:3e:21:4b
Fingerprint (SHA1): e1:a4:5b:14:1a:21:da:1a:79:f4:1a:42:a9:61:d6:69:cd:06:34:c1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "ComSign CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\064\061\023\060\021\006\003\125\004\003\023\012\103\157\155
\123\151\147\156\040\103\101\061\020\060\016\006\003\125\004\012
\023\007\103\157\155\123\151\147\156\061\013\060\011\006\003\125
\004\006\023\002\111\114
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\023\060\021\006\003\125\004\003\023\012\103\157\155
\123\151\147\156\040\103\101\061\020\060\016\006\003\125\004\012
\023\007\103\157\155\123\151\147\156\061\013\060\011\006\003\125
\004\006\023\002\111\114
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\024\023\226\203\024\125\214\352\173\143\345\374\064\207
\167\104
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\223\060\202\002\173\240\003\002\001\002\002\020\024
\023\226\203\024\125\214\352\173\143\345\374\064\207\167\104\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\064
\061\023\060\021\006\003\125\004\003\023\012\103\157\155\123\151
\147\156\040\103\101\061\020\060\016\006\003\125\004\012\023\007
\103\157\155\123\151\147\156\061\013\060\011\006\003\125\004\006
\023\002\111\114\060\036\027\015\060\064\060\063\062\064\061\061
\063\062\061\070\132\027\015\062\071\060\063\061\071\061\065\060
\062\061\070\132\060\064\061\023\060\021\006\003\125\004\003\023
\012\103\157\155\123\151\147\156\040\103\101\061\020\060\016\006
\003\125\004\012\023\007\103\157\155\123\151\147\156\061\013\060
\011\006\003\125\004\006\023\002\111\114\060\202\001\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001
\017\000\060\202\001\012\002\202\001\001\000\360\344\124\151\053
\323\307\217\152\104\344\176\130\047\370\013\320\344\224\022\212
\361\033\070\070\057\037\061\234\006\324\054\247\336\013\052\256
\032\240\343\236\152\277\237\074\307\156\242\371\213\144\154\072
\255\205\125\121\124\245\070\125\270\253\203\004\362\077\144\066
\367\300\215\103\103\152\146\321\367\027\052\325\357\066\372\060
\020\102\327\123\315\371\372\063\163\114\263\351\204\040\212\326
\101\047\065\344\070\372\224\233\270\172\344\171\037\063\373\033
\330\041\011\050\174\115\030\151\136\144\212\172\031\223\312\176
\354\363\162\347\067\007\130\131\050\254\102\371\305\377\315\077
\347\245\372\070\261\320\014\307\331\122\032\123\326\201\314\102
\172\065\133\355\113\072\172\366\265\216\314\377\017\174\344\140
\066\207\057\255\360\241\045\175\377\322\113\021\210\160\124\246
\101\250\147\123\122\102\136\344\064\236\344\276\243\354\252\142

\135\335\303\114\246\202\101\344\063\013\254\311\063\017\144\202
\127\052\375\014\255\066\341\014\256\113\305\357\073\231\331\043
\263\133\135\264\127\354\164\160\014\052\117\002\003\001\000\001
\243\201\240\060\201\235\060\014\006\003\125\035\023\004\005\060
\003\001\001\377\060\075\006\003\125\035\037\004\066\060\064\060
\062\240\060\240\056\206\054\150\164\164\160\072\057\057\146\145
\144\151\162\056\143\157\155\163\151\147\156\056\143\157\056\151
\154\057\143\162\154\057\103\157\155\123\151\147\156\103\101\056
\143\162\154\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\037\006\003\125\035\043\004\030\060\026\200\024
\113\001\233\076\126\032\145\066\166\313\173\227\252\222\005\356
\062\347\050\061\060\035\006\003\125\035\016\004\026\004\024\113
\001\233\076\126\032\145\066\166\313\173\227\252\222\005\356\062
\347\050\061\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\003\202\001\001\000\320\331\245\176\376\051\140\105\235
\176\203\317\156\274\107\156\365\032\236\124\166\102\161\264\074
\130\077\055\100\045\102\366\201\234\361\211\020\310\016\252\170
\117\070\011\127\260\074\300\010\374\065\216\361\110\121\215\014
\161\164\272\204\304\327\162\233\204\174\070\116\144\006\047\052
\341\247\265\354\010\231\264\012\015\324\205\163\310\022\341\065
\355\361\005\061\035\163\231\014\353\226\312\335\323\346\205\252
\360\212\373\165\301\362\011\074\145\145\144\363\114\330\255\313
\210\151\363\344\203\267\014\275\027\132\226\027\312\133\377\255
\273\034\351\055\204\200\330\041\276\205\122\331\324\164\271\151
\205\272\115\355\050\062\353\371\141\112\344\304\066\036\031\334
\157\204\021\037\225\365\203\050\030\250\063\222\103\047\335\135
\023\004\105\117\207\325\106\315\075\250\272\360\363\270\126\044
\105\353\067\307\341\166\117\162\071\030\337\176\164\162\307\163
\055\071\352\140\346\255\021\242\126\207\173\303\150\232\376\370
\214\160\250\337\145\062\364\244\100\214\241\302\104\003\016\224
\000\147\240\161\000\202\110
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
 CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ComSign CA"
Issuer: C=IL,O=ComSign,CN=ComSign CA
Serial Number:14:13:96:83:14:55:8c:ea:7b:63:e5:fc:34:87:77:44
Subject: C=IL,O=ComSign,CN=ComSign CA
Not Valid Before: Wed Mar 24 11:32:18 2004
Not Valid After: Mon Mar 19 15:02:18 2029
Fingerprint (MD5): cd:f4:39:f3:b5:18:50:d7:3e:a4:c5:91:a0:3e:21:4b
Fingerprint (SHA1): e1:a4:5b:14:1a:21:da:1a:79:f4:1a:42:a9:61:d6:69:cd:06:34:c1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ComSign CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\341\244\133\024\032\041\332\032\171\364\032\102\251\141\326\151
\315\006\064\301
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\364\071\363\265\030\120\327\076\244\305\221\240\076\041\113
END
CKA_ISSUER MULTILINE_OCTAL
\060\064\061\023\060\021\006\003\125\004\003\023\012\103\157\155
\123\151\147\156\040\103\101\061\020\060\016\006\003\125\004\012
\023\007\103\157\155\123\151\147\156\061\013\060\011\006\003\125
\004\006\023\002\111\114
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\024\023\226\203\024\125\214\352\173\143\345\374\064\207
\167\104
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ComSign Secured CA"
Issuer: C=IL,O=ComSign,CN=ComSign Secured CA
Serial Number:c7:28:47:09:b3:b8:6c:45:8c:1d:fa:24:f5:36:4e:e9
Subject: C=IL,O=ComSign,CN=ComSign Secured CA
Not Valid Before: Wed Mar 24 11:37:20 2004
Not Valid After: Fri Mar 16 15:04:56 2029
Fingerprint (MD5): 40:01:25:06:8d:21:43:6a:0e:43:00:9c:e7:43:f3:d5
Fingerprint (SHA1): f9:cd:0e:2c:da:76:24:c1:8f:bd:f0:f0:ab:b6:45:b8:f7:fe:d5:7a
CKA_CLASS CK_OBJECT_CLASS
CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ComSign Secured CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\074\061\033\060\031\006\003\125\004\003\023\022\103\157\155
\123\151\147\156\040\123\145\143\165\162\145\144\040\103\101\061
\020\060\016\006\003\125\004\012\023\007\103\157\155\123\151\147
\156\061\013\060\011\006\003\125\004\006\023\002\111\114

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\033\060\031\006\003\125\004\003\023\022\103\157\155
\123\151\147\156\040\123\145\143\165\162\145\144\040\103\101\061
\020\060\016\006\003\125\004\012\023\007\103\157\155\123\151\147
\156\061\013\060\011\006\003\125\004\006\023\002\111\114
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\307\050\107\011\263\270\154\105\214\035\372\044\365
\066\116\351
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\253\060\202\002\223\240\003\002\001\002\002\021\000
\307\050\107\011\263\270\154\105\214\035\372\044\365\066\116\351
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\074\061\033\060\031\006\003\125\004\003\023\022\103\157\155\123
\151\147\156\040\123\145\143\165\162\145\144\040\103\101\061\020
\060\016\006\003\125\004\012\023\007\103\157\155\123\151\147\156
\061\013\060\011\006\003\125\004\006\023\002\111\114\060\036\027
\015\060\064\060\063\062\064\061\061\063\067\062\060\132\027\015
\062\071\060\063\061\066\061\065\060\064\065\066\132\060\074\061
\033\060\031\006\003\125\004\003\023\022\103\157\155\123\151\147
\156\040\123\145\143\165\162\145\144\040\103\101\061\020\060\016
\006\003\125\004\012\023\007\103\157\155\123\151\147\156\061\013
\060\011\006\003\125\004\006\023\002\111\114\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\306\265\150\137
\035\224\025\303\244\010\125\055\343\240\127\172\357\351\164\052
\273\271\174\127\111\032\021\136\117\051\207\014\110\326\152\347
\217\324\176\127\044\271\006\211\344\034\074\352\254\343\332\041
\200\163\041\012\357\171\230\154\037\010\377\241\120\175\362\230
\033\311\124\157\076\245\050\354\041\004\017\105\273\007\075\241
\300\372\052\230\035\116\006\223\373\365\210\073\253\137\313\026
\277\346\363\236\112\207\355\031\352\302\237\103\344\361\201\245
\177\020\117\076\321\112\142\255\123\033\313\203\377\007\145\245
\222\055\146\251\133\270\132\364\035\264\041\221\112\027\173\236
\062\376\126\044\071\262\124\204\103\365\204\302\330\274\101\220
\314\235\326\150\332\351\202\120\251\073\150\317\265\135\002\224
\140\026\261\103\331\103\135\335\135\207\156\352\273\263\311\153
\366\003\224\011\160\336\026\021\172\053\350\166\217\111\020\230
\167\271\143\134\213\063\227\165\366\013\214\262\253\133\336\164
\040\045\077\343\363\021\371\207\150\206\065\161\303\035\214\055
\353\345\032\254\017\163\325\202\131\100\200\323\002\003\001\000
\001\243\201\247\060\201\244\060\014\006\003\125\035\023\004\005
\060\003\001\001\377\060\104\006\003\125\035\037\004\075\060\073
\060\071\240\067\240\065\206\063\150\164\164\160\072\057\057\146
\145\144\151\162\056\143\157\155\163\151\147\156\056\143\157\056

\151\154\057\143\162\154\057\103\157\155\123\151\147\156\123\145
\143\165\162\145\144\103\101\056\143\162\154\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\037\006\003\125
\035\043\004\030\060\026\200\024\301\113\355\160\266\367\076\174
\000\073\000\217\307\076\016\105\237\036\135\354\060\035\006\003
\125\035\016\004\026\004\024\301\113\355\160\266\367\076\174\000
\073\000\217\307\076\016\105\237\036\135\354\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\001\001\000\026
\317\356\222\023\120\253\173\024\236\063\266\102\040\152\324\025
\275\011\253\374\162\350\357\107\172\220\254\121\301\144\116\351
\210\275\103\105\201\343\146\043\077\022\206\115\031\344\005\260
\346\067\302\215\332\006\050\311\017\211\244\123\251\165\077\260
\226\373\253\114\063\125\371\170\046\106\157\033\066\230\373\102
\166\301\202\271\216\336\373\105\371\143\033\142\073\071\006\312
\167\172\250\074\011\317\154\066\075\017\012\105\113\151\026\032
\105\175\063\003\145\371\122\161\220\046\225\254\114\014\365\213
\223\077\314\165\164\205\230\272\377\142\172\115\037\211\376\256
\275\224\000\231\277\021\245\334\340\171\305\026\013\175\002\141
\035\352\205\371\002\025\117\347\132\211\116\024\157\343\067\113
\205\365\301\074\141\340\375\005\101\262\222\177\303\035\240\320
\256\122\144\140\153\030\306\046\234\330\365\144\344\066\032\142
\237\212\017\076\377\155\116\031\126\116\040\221\154\237\064\063
\072\064\127\120\072\157\201\136\006\306\365\076\174\116\216\053
\316\145\006\056\135\322\052\123\164\136\323\156\047\236\217
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ComSign Secured CA"
Issuer: C=IL,O=ComSign,CN=ComSign
Secured CA
Serial Number:c7:28:47:09:b3:b8:6c:45:8c:1d:fa:24:f5:36:4e:e9
Subject: C=IL,O=ComSign,CN=ComSign Secured CA
Not Valid Before: Wed Mar 24 11:37:20 2004
Not Valid After: Fri Mar 16 15:04:56 2029
Fingerprint (MD5): 40:01:25:06:8d:21:43:6a:0e:43:00:9c:e7:43:f3:d5
Fingerprint (SHA1): f9:cd:0e:2c:da:76:24:c1:8f:bd:f0:f0:ab:b6:45:b8:f7:fe:d5:7a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ComSign Secured CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\371\315\016\054\332\166\044\301\217\275\360\360\253\266\105\270
\367\376\325\172

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\100\001\045\006\215\041\103\152\016\103\000\234\347\103\363\325
END
CKA_ISSUER MULTILINE_OCTAL
\060\074\061\033\060\031\006\003\125\004\003\023\022\103\157\155
\123\151\147\156\040\123\145\143\165\162\145\144\040\103\101\061
\020\060\016\006\003\125\004\012\023\007\103\157\155\123\151\147
\156\061\013\060\011\006\003\125\004\006\023\002\111\114
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\307\050\107\011\263\270\154\105\214\035\372\044\365
\066\116\351
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ComSign Advanced Security CA"
Issuer: CN=ComSign Advanced Security CA
Serial Number:7a:5d:e9:33:d0:04:9e:b3:4a:1a:17:74:cb:16:9b:6d
Subject: CN=ComSign Advanced Security CA
Not Valid Before: Wed Mar 24 21:52:04 2004
Not Valid After: Sat Mar 24 21:55:55 2029
Fingerprint (MD5): f0:9e:63:93:76:a5:95:bc:18:61:f1:9b:fb:d3:64:dd
Fingerprint (SHA1): 80:bf:3d:e9:a4:1d:76:8d:19:4b:29:3c:85:63:2c:db:c8:ea:8c:f7
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
 UTF8 "ComSign Advanced Security CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\047\061\045\060\043\006\003\125\004\003\023\034\103\157\155
\123\151\147\156\040\101\144\166\141\156\143\145\144\040\123\145
\143\165\162\151\164\171\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\047\061\045\060\043\006\003\125\004\003\023\034\103\157\155
\123\151\147\156\040\101\144\166\141\156\143\145\144\040\123\145
\143\165\162\151\164\171\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\172\135\351\063\320\004\236\263\112\032\027\164\313\026
\233\155
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\033\060\202\004\003\240\003\002\001\002\002\020\172
\135\351\063\320\004\236\263\112\032\027\164\313\026\233\155\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\047
\061\045\060\043\006\003\125\004\003\023\034\103\157\155\123\151
\147\156\040\101\144\166\141\156\143\145\144\040\123\145\143\165
\162\151\164\171\040\103\101\060\036\027\015\060\064\060\063\062
\064\062\061\065\062\060\064\132\027\015\062\071\060\063\062\064
\062\061\065\065\065\065\132\060\047\061\045\060\043\006\003\125
\004\003\023\034\103\157\155\123\151\147\156\040\101\144\166\141
\156\143\145\144\040\123\145\143\165\162\151\164\171\040\103\101
\060\202\002\040\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\015\000\060\202\002\010\002\202\002\001
\000\235\234\134\073\001\204\127\132\364\053\376\155\024\262\154
\267\355\220\327\373\127\103\240\317\140\033\131\057\115\121\140
\075\034\111\242\152\101\143\253\270\355\146\276\100\106\215\252
\222\133\075\056\053\301\141\230\124\154\274\114\253\151\372\215
\105\105\201\052\032\155\370\263\370\017\143\313\216\174\355\124
\051\243\024\030\374\341\311\261\330\124\272\234\312\052\033\320
\254\302\211\030\026\112\376\112\004\322\322\233\265\207\206\301
\311\173\037\066\026\105\271\360\272\206\302\167\212\063\061\102
\242\316\014\162\075\022\345\221\070\364\047\147\141\114\314\342
\365\115\054\022\360\315\263\204\301\011\165\237\000\117\370\167
\323\363\062\157\201\217\027\176\073\233\153\363\036\347\372\223
\117\014\056\227\335\160\130\023\175\363\221\203\215\242\075\061
\332\143\343\071\166\166\063\346\324\146\015\224\216\025\224\234
\070\173\334\161\037\332\265\340\327\227\132\202\164\336\073\006
\332\357\305\053\361\150\335\047\123\370\271\354\214\017\123\042
\344\071\202\344\371\256\141\374\030\050\176\307\151\351\150\364
\176\340\321\274\340\155\310\326\321\253\104\061\141\264\354\170
\065\054\106\336\350\363\266\074\230\263\251\034\007\112\230\315
\107\046\202\360\324\221\357\020\223\347\150\346\122\152\227\176
\271\040\227\027\372\031\062\224\043\236\307\163\262\110\350\230
\265\367\165\126\240\113\235\167\250\032\051\164\070\130\340\310
\315\261\063\033\057\376\230\223\170\005\001\164\253\256\102\305
\033\035\057\174\101\174\245\323\140\252\120\301\363\310\210\101
\130\366\265\222\030\375\256\146\216\234\347\073\232\321\267\333
\332\307\114\313\042\033\112\077\140\337\071\366\332\352\256\314
\207\225\270\122\233\132\235\121\105\014\166\357\051\101\245\012
\271\370\136\304\275\054\114\064\110\107\325\213\310\314\317\321
\073\130\345\172\306\375\041\354\167\051\257\363\132\124\016\251
\244\144\174\367\134\321\241\023\345\073\324\133\113\000\224\311
\313\015\335\004\117\333\150\262\267\147\043\366\141\245\254\017
\071\076\232\303\057\251\144\303\022\205\232\244\242\122\324\171
\374\272\043\253\011\032\355\075\231\235\331\347\050\370\017\120

\117\002\001\003\243\202\001\103\060\202\001\077\060\013\006\003
\125\035\017\004\004\003\002\001\206\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125\035
\016\004\026\004\024\351\372\047\345\355\113\041\160\144\326\161
\252\174\345\202\034\060\322\015\172\060\115\006\003\125\035\037
\004\106\060\104\060\102\240\100\240\076\206\074\150\164\164\160
\072\057\057\146\145\144\151\162\056\143\157\155\163\151\147\156
\056\143\157\056\151\154\057\143\162\154\057\103\157\155\123\151
\147\156\101\144\166\141\156\143\145\144\123\145\143\165\162\151
\164\171\103\101\056\143\162\154\060\020\006\011\053\006\001\004
\001\202\067\025\001\004\003\002\001\000\060\102\006\003\125\035
\040\004\073\060\071\060\067\006\011\052\003\004\005\006\007\010
\011\012\060\052\060\050\006\010\053\006\001\005\005\007\002\001
\026\034\150\164\164\160\072\057\057\167\167\167\056\143\157\155
\163\151\147\156\056\143\157\056\151\154\057\143\160\163\060\133
\006\010\053\006\001\005\005\007\001\001\004\117\060\115\060\113
\006\010\053\006\001\005\005\007\060\002\206\077\150\164\164\160
\072\057\057\146\145\144\151\162\056\143\157\155\163\151\147\156
\056\143\157\056\151\154\057\143\141\143\145\162\164\057\103\157
\155\123\151\147\156\101\144\166\141\156\143\145\144\123\145\143
\165\162\151\164\171\103\101\056\143\162\164\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\003\202\002\001\000\234
\215\135\232\006\021\241\156\026\030\117\313\262\002\073\222\217
\035\046\245\313\353\110\356\125\035\252\020\340\151\116\301\376
\062\000\336\017\316\015\264\143\274\340\142\032\340\367\365\251
\345\311\124\024\213\100\370\255\363\155\002\354\216\173\334\245
\171\222\001\265\377\241\131\143\071\021\265\276\122\256\164\332
\331\041\243\022\330\307\225\370\333\157\126\125\277\225\022\275
\062\043\307\311\154\145\001\357\373\164\216\273\044\206\117\175
\335\360\132\217\073\204\214\171\165\051\364\206\266\323\301\014
\131\025\302\003\127\253\075\110\327\054\105\224\100\334\340\251
\113\137\314\020\327\226\277\251\234\003\052\144\362\274\176\370
\245\247\231\221\047\005\376\111\247\330\255\012\206\066\074\016
\075\246\341\174\152\201\021\173\105\273\150\215\065\061\375\046
\123\101\076\074\156\153\036\330\253\055\211\201\231\306\037\227
\363\132\365\037\141\275\376\025\131\223\012\336\372\121\372\106
\337\106\364\374\142\154\130\243\014\336\311\031\036\300\034\133
\070\073\101\217\005\061\016\256\355\054\135\267\017\334\071\304
\137\042\263\245\262\130\060\044\277\371\011\255\360\226\033\067
\157\100\146\376\267\052\211\325\306\343\176\003\130\260\175\070
\346\212\253\077\365\201\363\012\101\167\002\163\355\247\124\335
\007\061\134\266\265\166\222\164\167\271\157\246\011\272\016\335
\014\347\166\304\113\276\313\073\325\105\300\211\343\053\167\172
\142\230\303\133\374\175\127\136\216\356\335\033\120\041\155\221
\277\031\134\217\227\171\052\301\213\141\157\252\136\122\365\351
\117\064\230\060\275\034\007\303\267\304\174\201\331\243\103\062
\146\306\055\274\071\133\251\135\211\353\004\053\104\225\107\371
\122\364\117\005\356\243\052\143\021\015\036\272\304\370\112\133

\120\100\121\167\056\364\344\337\361\003\024\346\171\151\332\130
\104\202\130\024\203\221\064\003\327\172\155\152\321\062\042\051
\221\033\032\344\013\275\062\025\047\040\277\032\157\122\202\323
\371\057\111\017\220\154\001\200\111\256\030\356\062\054\316\021
\307\376\240\004\230\150\224\360\374\213\305\054\157\207\375\331
\302\304\034\351\055\314\016\254\237\365\361\374\222\070\215
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ComSign Advanced Security CA"
Issuer: CN=ComSign Advanced Security CA
Serial Number:7a:5d:e9:33:d0:04:9e:b3:4a:1a:17:74:cb:16:9b:6d
Subject: CN=ComSign Advanced Security CA
Not Valid Before: Wed Mar 24 21:52:04 2004
Not Valid After: Sat Mar 24 21:55:55 2029
Fingerprint (MD5): f0:9e:63:93:76:a5:95:bc:18:61:f1:9b:fb:d3:64:dd
Fingerprint (SHA1): 80:bf:3d:e9:a4:1d:76:8d:19:4b:29:3c:85:63:2c:db:c8:ea:8c:f7
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ComSign Advanced Security CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\277\075\351\244\035\166\215\031\113\051\074\205\143\054\333
\310\352\214\367
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\360\236\143\223\166\245\225\274\030\141\361\233\373\323\144\335
END
CKA_ISSUER
MULTILINE_OCTAL
\060\047\061\045\060\043\006\003\125\004\003\023\034\103\157\155
\123\151\147\156\040\101\144\166\141\156\143\145\144\040\123\145
\143\165\162\151\164\171\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\172\135\351\063\320\004\236\263\112\032\027\164\313\026
\233\155
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Chambers of Commerce Root"
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After: Wed Sep 30 16:13:44 2037
Fingerprint (MD5): b0:01:ee:14:d9:af:29:18:94:76:8e:f1:69:33:2a:84
#
 Fingerprint (SHA1): 6e:3a:55:a4:19:0c:19:5c:93:84:3c:c0:db:72:2e:31:30:61:f0:b1
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\275\060\202\003\245\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060

\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060\040
\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163\040
\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157\164
\060\036\027\015\060\063\060\071\063\060\061\066\061\063\064\063
\132\027\015\063\067\060\071\063\060\061\066\061\063\064\064\132
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164\060\202\001\040\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\015\000\060\202\001\010\002\202\001
\001\000\267\066\125\345\245\135\030\060\340\332\211\124\221\374
\310\307\122\370\057\120\331\357\261\165\163\145\107\175\033\133
\272\165\305\374\241\210\044\372\057\355\312\010\112\071\124\304
\121\172\265\332\140\352\070\074\201\262\313\361\273\331\221\043
\077\110\001\160\165\251\005\052\255\037\161\363\311\124\075\035
\006\152\100\076\263\014\205\356\134\033\171\302\142\304\270\066
\216\065\135\001\014\043\004\107\065\252\233\140\116\240\146\075
\313\046\012\234\100\241\364\135\230\277\161\253\245\000\150\052
\355\203\172\017\242\024\265\324\042\263\200\260\074\014\132\121
\151\055\130\030\217\355\231\236\361\256\342\225\346\366\107\250
\326\014\017\260\130\130\333\303\146\067\236\233\221\124\063\067
\322\224\034\152\110\311\311\362\245\332\245\014\043\367\043\016
\234\062\125\136\161\234\204\005\121\232\055\375\346\116\052\064
\132\336\312\100\067\147\014\124\041\125\167\332\012\014\314\227
\256\200\334\224\066\112\364\076\316\066\023\036\123\344\254\116
\072\005\354\333\256\162\234\070\213\320\071\073\211\012\076\167
\376\165\002\001\003\243\202\001\104\060\202\001\100\060\022\006
\003\125\035\023\001\001\377\004\010\060\006\001\001\377\002\001
\014\060\074\006\003\125\035\037\004\065\060\063\060\061\240\057
\240\055\206\053\150\164\164\160\072\057\057\143\162\154\056\143
\150\141\155\142\145\162\163\151\147\156\056\157\162\147\057\143
\150\141\155\142\145\162\163\162\157\157\164\056\143\162\154\060
\035\006\003\125\035\016\004\026\004\024\343\224\365\261\115\351
\333\241\051\133\127\213\115\166\006\166\341\321\242\212\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021
\006\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000
\007\060\047\006\003\125\035\021\004\040\060\036\201\034\143\150
\141\155\142\145\162\163\162\157\157\164\100\143\150\141\155\142

\145\162\163\151\147\156\056\157\162\147\060\047\006\003\125\035
\022\004\040\060\036\201\034\143\150\141\155\142\145\162\163\162
\157\157\164\100\143\150\141\155\142\145\162\163\151\147\156\056
\157\162\147\060\130\006\003\125\035\040\004\121\060\117\060\115
\006\013\053\006\001\004\001\201\207\056\012\003\001\060\076\060
\074\006\010\053\006\001\005\005\007\002\001\026\060\150\164\164
\160\072\057\057\143\160\163\056\143\150\141\155\142\145\162\163
\151\147\156\056\157\162\147\057\143\160\163\057\143\150\141\155
\142\145\162\163\162\157\157\164\056\150\164\155\154\060\015\006
\011\052\206\110\206\367\015\001\001\005\005\000\003\202\001\001
\000\014\101\227\302\032\206\300\042\174\237\373\220\363\032\321
\003\261\357\023\371\041\137\004\234\332\311\245\215\047\154\226
\207\221\276\101\220\001\162\223\347\036\175\137\366\211\306\135
\247\100\011\075\254\111\105\105\334\056\215\060\150\262\011\272
\373\303\057\314\272\013\337\077\167\173\106\175\072\022\044\216
\226\217\074\005\012\157\322\224\050\035\155\014\300\056\210\042
\325\330\317\035\023\307\360\110\327\327\005\247\317\307\107\236
\073\074\064\310\200\117\324\024\273\374\015\120\367\372\263\354
\102\137\251\335\155\310\364\165\317\173\301\162\046\261\001\034
\134\054\375\172\116\264\001\305\005\127\271\347\074\252\005\331
\210\351\007\106\101\316\357\101\201\256\130\337\203\242\256\312
\327\167\037\347\000\074\235\157\216\344\062\011\035\115\170\064
\170\064\074\224\233\046\355\117\161\306\031\172\275\040\042\110
\132\376\113\175\003\267\347\130\276\306\062\116\164\036\150\335
\250\150\133\263\076\356\142\175\331\200\350\012\165\172\267\356
\264\145\232\041\220\340\252\320\230\274\070\265\163\074\213\370
\334
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Chambers of Commerce Root"
Issuer: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Chambers of Commerce Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF A82743287,C=EU
Not Valid Before: Tue Sep 30 16:13:43 2003
Not Valid After: Wed Sep 30 16:13:44 2037
Fingerprint (MD5): b0:01:ee:14:d9:af:29:18:94:76:8e:f1:69:33:2a:84
Fingerprint (SHA1): 6e:3a:55:a4:19:0c:19:5c:93:84:3c:c0:db:72:2e:31:30:61:f0:b1
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Chambers of Commerce Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\156\072\125\244\031\014\031\134\223\204\074\300\333\162\056\061
\060\141\360\261
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\260\001\356\024\331\257\051\030\224\166\216\361\151\063\052\204
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\042\060
\040\006\003\125\004\003\023\031\103\150\141\155\142\145\162\163
\040\157\146\040\103\157\155\155\145\162\143\145\040\122\157\157
\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Global Chambersign Root"
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF
A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF
A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After: Wed Sep 30 16:14:18 2037
Fingerprint (MD5): c5:e6:7b:bf:06:d0:4f:43:ed:c4:7a:65:8a:fb:6b:19
Fingerprint (SHA1): 33:9b:6b:14:50:24:9b:55:7a:01:87:72:84:d9:e0:2f:c3:d2:d8:e9
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\305\060\202\003\255\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047
\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145
\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070
\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013
\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036
\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150
\141\155\142\145\162\163\151\147\156\040\122\157\157\164\060\036
\027\015\060\063\060\071\063\060\061\066\061\064\061\070\132\027
\015\063\067\060\071\063\060\061\066\061\064\061\070\132\060\175
\061\013\060\011\006\003\125\004\006\023\002\105\125\061\047\060
\045\006\003\125\004\012\023\036\101\103\040\103\141\155\145\162
\146\151\162\155\141\040\123\101\040\103\111\106\040\101\070\062
\067\064\063\062\070\067\061\043\060\041\006\003\125\004\013\023
\032\150\164\164\160\072\057\057\167\167\167\056\143\150\141\155
\142\145\162\163\151\147\156\056\157\162\147\061\040\060\036\006
\003\125\004\003\023\027\107\154\157\142\141\154\040\103\150\141
\155\142\145\162\163\151\147\156\040\122\157\157\164\060\202\001
\040\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\015\000\060\202\001\010\002\202\001\001\000\242\160
\242\320\237\102\256\133\027\307\330\175\317\024\203\374\117\311

\241\267\023\257\212\327\236\076\004\012\222\213\140\126\372\264
\062\057\210\115\241\140\010\364\267\011\116\240\111\057\111\326
\323\337\235\227\132\237\224\004\160\354\077\131\331\267\314\146
\213\230\122\050\011\002\337\305\057\204\215\172\227\167\277\354
\100\235\045\162\253\265\077\062\230\373\267\267\374\162\204\345
\065\207\371\125\372\243\037\016\157\056\050\335\151\240\331\102
\020\306\370\265\104\302\320\103\177\333\274\344\242\074\152\125
\170\012\167\251\330\352\031\062\267\057\376\134\077\033\356\261
\230\354\312\255\172\151\105\343\226\017\125\366\346\355\165\352
\145\350\062\126\223\106\211\250\045\212\145\006\356\153\277\171
\007\320\361\267\257\355\054\115\222\273\300\250\137\247\147\175
\004\362\025\010\160\254\222\326\175\004\322\063\373\114\266\013
\013\373\032\311\304\215\003\251\176\134\362\120\253\022\245\241
\317\110\120\245\357\322\310\032\023\372\260\177\261\202\034\167
\152\017\137\334\013\225\217\357\103\176\346\105\011\045\002\001
\003\243\202\001\120\060\202\001\114\060\022\006\003\125\035\023
\001\001\377\004\010\060\006\001\001\377\002\001\014\060\077\006
\003\125\035\037\004\070\060\066\060\064\240\062\240\060\206\056
\150\164\164\160\072\057\057\143\162\154\056\143\150\141\155\142
\145\162\163\151\147\156\056\157\162\147\057\143\150\141\155\142
\145\162\163\151\147\156\162\157\157\164\056\143\162\154\060\035
\006\003\125\035\016\004\026\004\024\103\234\066\237\260\236\060
\115\306\316\137\255\020\253\345\003\245\372\251\024\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\006\060\021\006
\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007
\060\052\006\003\125\035\021\004\043\060\041\201\037\143\150\141
\155\142\145\162\163\151\147\156\162\157\157\164\100\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\060\052\006\003
\125\035\022\004\043\060\041\201\037\143\150\141\155\142\145\162
\163\151\147\156\162\157\157\164\100\143\150\141\155\142\145\162
\163\151\147\156\056\157\162\147\060\133\006\003\125\035\040\004
\124\060\122\060\120\006\013\053\006\001\004\001\201\207\056\012
\001\001\060\101\060\077\006\010\053\006\001\005\005\007\002\001
\026\063\150\164\164\160\072\057\057\143\160\163\056\143\150\141
\155\142\145\162\163\151\147\156\056\157\162\147\057\143\160\163
\057\143\150\141\155\142\145\162\163\151\147\156\162\157\157\164
\056\150\164\155\154\060\015\006\011\052\206\110\206\367\015\001
\001\005\005\000\003\202\001\001\000\074\073\160\221\371\004\124
\047\221\341\355\355\376\150\177\141\135\345\101\145\117\062\361
\030\005\224\152\034\336\037\160\333\076\173\062\002\064\265\014
\154\241\212\174\245\364\217\377\324\330\255\027\325\055\004\321
\077\130\200\342\201\131\210\276\300\343\106\223\044\376\220\275
\046\242\060\055\350\227\046\127\065\211\164\226\030\366\025\342
\257\044\031\126\002\002\262\272\017\024\352\306\212\146\301\206
\105\125\213\276\222\276\234\244\004\307\111\074\236\350\051\172
\211\327\376\257\377\150\365\245\027\220\275\254\231\314\245\206
\127\011\147\106\333\326\026\302\106\361\344\251\120\365\217\321
\222\025\323\137\076\306\000\111\072\156\130\262\321\321\047\015

\045\310\062\370\040\021\315\175\062\063\110\224\124\114\335\334
\171\304\060\237\353\216\270\125\265\327\210\134\305\152\044\075
\262\323\005\003\121\306\007\357\314\024\162\164\075\156\162\316
\030\050\214\112\240\167\345\011\053\105\104\107\254\267\147\177
\001\212\005\132\223\276\241\301\377\370\347\016\147\244\107\111
\166\135\165\220\032\365\046\217\360
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Global Chambersign Root"
Issuer: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF
A82743287,C=EU
Serial Number: 0 (0x0)
Subject: CN=Global Chambersign Root,OU=http://www.chambersign.org,O=AC Camerfirma SA CIF
A82743287,C=EU
Not Valid Before: Tue Sep 30 16:14:18 2003
Not Valid After: Wed Sep 30 16:14:18 2037
Fingerprint (MD5): c5:e6:7b:bf:06:d0:4f:43:ed:c4:7a:65:8a:fb:6b:19
#
Fingerprint (SHA1): 33:9b:6b:14:50:24:9b:55:7a:01:87:72:84:d9:e0:2f:c3:d2:d8:e9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Global Chambersign Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\063\233\153\024\120\044\233\125\172\001\207\162\204\331\340\057
\303\322\330\351
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\346\173\277\006\320\117\103\355\304\172\145\212\373\153\031
END
CKA_ISSUER MULTILINE_OCTAL
\060\175\061\013\060\011\006\003\125\004\006\023\002\105\125\061
\047\060\045\006\003\125\004\012\023\036\101\103\040\103\141\155
\145\162\146\151\162\155\141\040\123\101\040\103\111\106\040\101
\070\062\067\064\063\062\070\067\061\043\060\041\006\003\125\004
\013\023\032\150\164\164\160\072\057\057\167\167\167\056\143\150
\141\155\142\145\162\163\151\147\156\056\157\162\147\061\040\060
\036\006\003\125\004\003\023\027\107\154\157\142\141\154\040\103
\150\141\155\142\145\162\163\151\147\156\040\122\157\157\164
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Global CA"
Issuer: CN=GeoTrust Global CA,O=GeoTrust Inc.,C=US
Serial Number: 144470 (0x23456)
Subject: CN=GeoTrust Global CA,O=GeoTrust Inc.,C=US
Not Valid Before: Tue May 21 04:00:00 2002
Not Valid After: Sat May 21 04:00:00 2022
Fingerprint (MD5): f7:75:ab:29:fb:51:4e:b7:77:5e:ff:05:3c:99:8e:f5
Fingerprint (SHA1): de:28:f4:a4:ff:e5:b9:2f:a3:c5:03:d1:a3:49:a7:f9:96:2a:82:12
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Global CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\102\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\033\060\031\006\003\125\004\003
\023\022\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\102\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\033\060\031\006\003\125\004\003
\023\022\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\002\064\126
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\124\060\202\002\074\240\003\002\001\002\002\003\002
\064\126\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\060\102\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162
\165\163\164\040\111\156\143\056\061\033\060\031\006\003\125\004

\003\023\022\107\145\157\124\162\165\163\164\040\107\154\157\142
\141\154\040\103\101\060\036\027\015\060\062\060\065\062\061\060
\064\060\060\060\060\132\027\015\062\062\060\065\062\061\060\064
\060\060\060\060\132\060\102\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015\107
\145\157\124\162\165\163\164\040\111\156\143\056\061\033\060\031
\006\003\125\004\003\023\022\107\145\157\124\162\165\163\164\040
\107\154\157\142\141\154\040\103\101\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017
\000\060\202\001\012\002\202\001\001\000\332\314\030\143\060\375
\364\027\043\032\126\176\133\337\074\154\070\344\161\267\170\221
\324\274\241\330\114\370\250\103\266\003\351\115\041\007\010\210
\332\130\057\146\071\051\275\005\170\213\235\070\350\005\267\152
\176\161\244\346\304\140\246\260\357\200\344\211\050\017\236\045
\326\355\203\363\255\246\221\307\230\311\102\030\065\024\235\255
\230\106\222\056\117\312\361\207\103\301\026\225\127\055\120\357
\211\055\200\172\127\255\362\356\137\153\322\000\215\271\024\370
\024\025\065\331\300\106\243\173\162\310\221\277\311\125\053\315
\320\227\076\234\046\144\314\337\316\203\031\161\312\116\346\324
\325\173\251\031\315\125\336\310\354\322\136\070\123\345\134\117
\214\055\376\120\043\066\374\146\346\313\216\244\071\031\000\267
\225\002\071\221\013\016\376\070\056\321\035\005\232\366\115\076
\157\017\007\035\257\054\036\217\140\071\342\372\066\123\023\071
\324\136\046\053\333\075\250\024\275\062\353\030\003\050\122\004
\161\345\253\063\075\341\070\273\007\066\204\142\234\171\352\026
\060\364\137\300\053\350\161\153\344\371\002\003\001\000\001\243
\123\060\121\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\300
\172\230\150\215\211\373\253\005\144\014\021\175\252\175\145\270
\312\314\116\060\037\006\003\125\035\043\004\030\060\026\200\024
\300\172\230\150\215\211\373\253\005\144\014\021\175\252\175\145
\270\312\314\116\060\015\006\011\052\206\110\206\367\015\001\001
\005\005\000\003\202\001\001\000\065\343\051\152\345\057\135\124
\216\051\120\224\237\231\032\024\344\217\170\052\142\224\242\047
\147\236\320\317\032\136\107\351\301\262\244\317\335\101\032\005
\116\233\113\356\112\157\125\122\263\044\241\067\012\353\144\166
\052\056\054\363\375\073\165\220\277\372\161\330\307\075\067\322
\265\005\225\142\271\246\336\211\075\066\173\070\167\110\227\254
\246\040\217\056\246\311\014\302\262\231\105\000\307\316\021\121
\042\042\340\245\352\266\025\110\011\144\352\136\117\164\367\005
\076\307\212\122\014\333\025\264\275\155\233\345\306\261\124\150
\251\343\151\220\266\232\245\017\270\271\077\040\175\256\112\265
\270\234\344\035\266\253\346\224\245\301\307\203\255\333\365\047
\207\016\004\154\325\377\335\240\135\355\207\122\267\053\025\002
\256\071\246\152\164\351\332\304\347\274\115\064\036\251\134\115
\063\137\222\011\057\210\146\135\167\227\307\035\166\023\251\325
\345\361\026\011\021\065\325\254\333\044\161\160\054\230\126\013
\331\027\264\321\343\121\053\136\165\350\325\320\334\117\064\355

\302\005\146\200\241\313\346\063
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Global CA"
Issuer: CN=GeoTrust Global CA,O=GeoTrust Inc.,C=US
Serial Number: 144470 (0x23456)
Subject: CN=GeoTrust Global CA,O=GeoTrust Inc.,C=US
Not Valid Before: Tue May 21 04:00:00 2002
Not Valid After: Sat May 21 04:00:00 2022
Fingerprint (MD5): f7:75:ab:29:fb:51:4e:b7:77:5e:ff:05:3c:99:8e:f5
Fingerprint (SHA1): de:28:f4:a4:ff:e5:b9:2f:a3:c5:03:d1:a3:49:a7:f9:96:2a:82:12
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Global CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\336\050\364\244\377\345\271\057\243\305\003\321\243\111\247\371
\226\052\202\022
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\367\165\253\051\373\121\116\267\167\136\377\005\074\231\216\365
END
CKA_ISSUER MULTILINE_OCTAL
\060\102\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\033\060\031\006\003\125\004\003
\023\022\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\003\002\064\126
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Global CA 2"
Issuer: CN=GeoTrust Global CA 2,O=GeoTrust Inc.,C=US
Serial Number: 1 (0x1)

Subject: CN=GeoTrust Global CA 2,O=GeoTrust Inc.,C=US
Not Valid Before: Thu Mar 04
05:00:00 2004
Not Valid After: Mon Mar 04 05:00:00 2019
Fingerprint (MD5): 0e:40:a7:6c:de:03:5d:8f:d1:0f:e4:d1:8d:f9:6c:a9
Fingerprint (SHA1): a9:e9:78:08:14:37:58:88:f2:05:19:b0:6d:2b:0d:2b:60:16:90:7d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Global CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\035\060\033\006\003\125\004\003
\023\024\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\035\060\033\006\003\125\004\003
\023\024\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101\040\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\146\060\202\002\116\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061\026
\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165\163
\164\040\111\156\143\056\061\035\060\033\006\003\125\004\003\023
\024\107\145\157\124\162\165\163\164\040\107\154\157\142\141\154
\040\103\101\040\062\060\036\027\015\060\064\060\063\060\064\060
\065\060\060\060\060\132\027\015\061\071\060\063\060\064\060\065
\060\060\060\060\132\060\104\061\013\060\011\006\003\125\004\006
\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015\107
\145\157\124\162\165\163\164\040\111\156\143\056\061\035\060\033
\006\003\125\004\003\023\024\107\145\157\124\162\165\163\164\040
\107\154\157\142\141\154\040\103\101\040\062\060\202\001\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\001\017\000\060\202\001\012\002\202\001\001\000\357\074\115\100
\075\020\337\073\123\000\341\147\376\224\140\025\076\205\210\361

\211\015\220\310\050\043\231\005\350\053\040\235\306\363\140\106
\330\301\262\325\214\061\331\334\040\171\044\201\277\065\062\374
\143\151\333\261\052\153\356\041\130\362\010\351\170\313\157\313
\374\026\122\310\221\304\377\075\163\336\261\076\247\302\175\146
\301\365\176\122\044\032\342\325\147\221\320\202\020\327\170\113
\117\053\102\071\275\144\055\100\240\260\020\323\070\110\106\210
\241\014\273\072\063\052\142\230\373\000\235\023\131\177\157\073
\162\252\356\246\017\206\371\005\141\352\147\177\014\067\226\213
\346\151\026\107\021\302\047\131\003\263\246\140\302\041\100\126
\372\240\307\175\072\023\343\354\127\307\263\326\256\235\211\200
\367\001\347\054\366\226\053\023\015\171\054\331\300\344\206\173
\113\214\014\162\202\212\373\027\315\000\154\072\023\074\260\204
\207\113\026\172\051\262\117\333\035\324\013\363\146\067\275\330
\366\127\273\136\044\172\270\074\213\271\372\222\032\032\204\236
\330\164\217\252\033\177\136\364\376\105\042\041\002\003\001\000
\001\243\143\060\141\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\161\070\066\362\002\061\123\107\053\156\272\145\106\251\020
\025\130\040\005\011\060\037\006\003\125\035\043\004\030\060\026
\200\024\161\070\066\362\002\061\123\107\053\156\272\145\106\251
\020\025\130\040\005\011\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\003\367\265\053\253\135
\020\374\173\262\262\136\254\233\016\176\123\170\131\076\102\004
\376\165\243\255\254\201\116\327\002\213\136\304\055\310\122\166
\307\054\037\374\201\062\230\321\113\306\222\223\063\065\061\057
\374\330\035\104\335\340\201\177\235\351\213\341\144\221\142\013
\071\010\214\254\164\235\131\331\172\131\122\227\021\271\026\173
\157\105\323\226\331\061\175\002\066\017\234\073\156\317\054\015
\003\106\105\353\240\364\177\110\104\306\010\100\314\336\033\160
\265\051\255\272\213\073\064\145\165\033\161\041\035\054\024\012
\260\226\225\270\326\352\362\145\373\051\272\117\352\221\223\164
\151\266\362\377\341\032\320\014\321\166\205\313\212\045\275\227
\136\054\157\025\231\046\347\266\051\377\042\354\311\002\307\126
\000\315\111\271\263\154\173\123\004\032\342\250\311\252\022\005
\043\302\316\347\273\004\002\314\300\107\242\344\304\051\057\133
\105\127\211\121\356\074\353\122\010\377\007\065\036\237\065\152
\107\112\126\230\321\132\205\037\214\365\042\277\253\316\203\363
\342\042\051\256\175\203\100\250\272\154
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Global CA 2"
Issuer: CN=GeoTrust Global CA 2,O=GeoTrust Inc.,C=US

```
# Serial Number:
 1 (0x1)
# Subject: CN=GeoTrust Global CA 2,O=GeoTrust Inc.,C=US
# Not Valid Before: Thu Mar 04 05:00:00 2004
# Not Valid After: Mon Mar 04 05:00:00 2019
# Fingerprint (MD5): 0e:40:a7:6c:de:03:5d:8f:d1:0f:e4:d1:8d:f9:6c:a9
# Fingerprint (SHA1): a9:e9:78:08:14:37:58:88:f2:05:19:b0:6d:2b:0d:2b:60:16:90:7d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Global CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\251\351\170\010\024\067\130\210\362\005\031\260\155\053\015\053
\140\026\220\175
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\016\100\247\154\336\003\135\217\321\017\344\321\215\371\154\251
END
CKA_ISSUER MULTILINE_OCTAL
\060\104\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\035\060\033\006\003\125\004\003
\023\024\107\145\157\124\162\165\163\164\040\107\154\157\142\141
\154\040\103\101\040\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "GeoTrust Universal CA"
# Issuer: CN=GeoTrust Universal CA,O=GeoTrust Inc.,C=US
# Serial Number: 1 (0x1)
# Subject: CN=GeoTrust Universal CA,O=GeoTrust Inc.,C=US
# Not Valid Before: Thu Mar 04 05:00:00 2004
# Not Valid After: Sun Mar 04 05:00:00 2029
# Fingerprint (MD5): 92:65:58:8b:a2:1a:31:72:73:68:5c:b4:a5:7a:07:48
# Fingerprint (SHA1): e6:21:f3:35:43:79:05:9a:4b:68:30:9d:8a:2f:74:22:15:87:ec:79
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
```

CKA_LABEL UTF8 "GeoTrust Universal CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\036\060\034\006\003\125\004\003
\023\025\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\036\060\034\006\003\125\004\003
\023\025\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\150\060\202\003\120\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061\026
\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165\163
\164\040\111\156\143\056\061\036\060\034\006\003\125\004\003\023
\025\107\145\157\124\162\165\163\164\040\125\156\151\166\145\162
\163\141\154\040\103\101\060\036\027\015\060\064\060\063\060\064
\060\065\060\060\060\060\132\027\015\062\071\060\063\060\064\060
\065\060\060\060\060\132\060\105\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\026\060\024\006\003\125\004\012\023\015
\107\145\157\124\162\165\163\164\040\111\156\143\056\061\036\060
\034\006\003\125\004\003\023\025\107\145\157\124\162\165\163\164
\040\125\156\151\166\145\162\163\141\154\040\103\101\060\202\002
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\002\017\000\060\202\002\012\002\202\002\001\000\246\025
\125\240\243\306\340\037\214\235\041\120\327\301\276\053\133\265
\244\236\241\331\162\130\275\000\033\114\277\141\311\024\035\105
\202\253\306\035\200\326\075\353\020\234\072\257\155\044\370\274
\161\001\236\006\365\174\137\036\301\016\125\312\203\232\131\060
\256\031\313\060\110\225\355\042\067\215\364\112\232\162\146\076
\255\225\300\340\026\000\340\020\037\053\061\016\327\224\124\323
\102\063\240\064\035\036\105\166\335\117\312\030\067\354\205\025
\172\031\010\374\325\307\234\360\362\251\056\020\251\222\346\075
\130\075\251\026\150\074\057\165\041\030\177\050\167\245\341\141
\027\267\246\351\370\036\231\333\163\156\364\012\242\041\154\356
\332\252\205\222\146\257\366\172\153\202\332\272\042\010\065\017

\317\102\361\065\372\152\356\176\053\045\314\072\021\344\155\257
\163\262\166\035\255\320\262\170\147\032\244\071\034\121\013\147
\126\203\375\070\135\015\316\335\360\273\053\226\037\336\173\062
\122\375\035\273\265\006\241\262\041\136\245\326\225\150\177\360
\231\236\334\105\010\076\347\322\011\015\065\224\335\200\116\123
\227\327\265\011\104\040\144\026\027\003\002\114\123\015\150\336
\325\252\162\115\223\155\202\016\333\234\275\317\264\363\134\135
\124\172\151\011\226\326\333\021\301\215\165\250\264\317\071\310
\316\074\274\044\174\346\142\312\341\275\175\247\275\127\145\013
\344\376\045\355\266\151\020\334\050\032\106\275\001\035\320\227
\265\341\230\073\300\067\144\326\075\224\356\013\341\365\050\256
\013\126\277\161\213\043\051\101\216\206\305\113\122\173\330\161
\253\037\212\025\246\073\203\132\327\130\001\121\306\114\101\331
\177\330\101\147\162\242\050\337\140\203\251\236\310\173\374\123
\163\162\131\365\223\172\027\166\016\316\367\345\134\331\013\125
\064\242\252\133\265\152\124\347\023\312\127\354\227\155\364\136
\006\057\105\213\130\324\043\026\222\344\026\156\050\143\131\060
\337\120\001\234\143\211\032\237\333\027\224\202\160\067\303\044
\236\232\107\326\132\312\116\250\151\211\162\037\221\154\333\176
\236\033\255\307\037\163\335\054\117\031\145\375\177\223\100\020
\056\322\360\355\074\236\056\050\076\151\046\063\305\173\002\003
\001\000\001\243\143\060\141\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\332\273\056\252\260\014\270\210\046\121\164\134\155
\003\323\300\330\217\172\326\060\037\006\003\125\035\043\004\030
\060\026\200\024\332\273\056\252\260\014\270\210\046\121\164\134
\155\003\323\300\330\217\172\326\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\206\060\015\006\011\052\206\110\206
\367\015\001\001\005\005\000\003\202\002\001\000\061\170\346\307
\265\337\270\224\100\311\161\304\250\065\354\106\035\302\205\363
\050\130\206\260\013\374\216\262\071\217\104\125\253\144\204\134
\151\251\320\232\070\074\372\345\037\065\345\104\343\200\171\224
\150\244\273\304\237\075\341\064\315\060\106\213\124\053\225\245
\357\367\077\231\204\375\065\346\317\061\306\334\152\277\247\327
\043\010\341\230\136\303\132\010\166\251\246\257\167\057\267\140
\275\104\106\152\357\227\377\163\225\301\216\350\223\373\375\061
\267\354\127\021\021\105\233\060\361\032\210\071\301\117\074\247
\000\325\307\374\253\155\200\042\160\245\014\340\135\004\051\002
\373\313\240\221\321\174\326\303\176\120\325\235\130\276\101\070
\353\271\165\074\025\331\233\311\112\203\131\300\332\123\375\063
\273\066\030\233\205\017\025\335\356\055\254\166\223\271\331\001
\215\110\020\250\373\365\070\206\361\333\012\306\275\204\243\043
\101\336\326\167\157\205\324\205\034\120\340\256\121\212\272\215
\076\166\342\271\312\047\362\137\237\357\156\131\015\006\330\053
\027\244\322\174\153\273\137\024\032\110\217\032\114\347\263\107
\034\216\114\105\053\040\356\110\337\347\335\011\216\030\250\332
\100\215\222\046\021\123\141\163\135\353\275\347\304\115\051\067
\141\353\254\071\055\147\056\026\326\365\000\203\205\241\314\177

\166\304\175\344\267\113\146\357\003\105\140\151\266\014\122\226
\222\204\136\246\243\265\244\076\053\331\314\330\033\107\252\362
\104\332\117\371\003\350\360\024\313\077\363\203\336\320\301\124
\343\267\350\012\067\115\213\040\131\003\060\031\241\054\310\275
\021\037\337\256\311\112\305\363\047\146\146\206\254\150\221\377
\331\346\123\034\017\213\134\151\145\012\046\310\036\064\303\135
\121\173\327\251\234\006\241\066\335\325\211\224\274\331\344\055
\014\136\011\154\010\227\174\243\075\174\223\377\077\241\024\247
\317\265\135\353\333\333\034\304\166\337\210\271\275\105\005\225
\033\256\374\106\152\114\257\110\343\316\256\017\322\176\353\346
\154\234\117\201\152\172\144\254\273\076\325\347\313\166\056\305
\247\110\301\134\220\017\313\310\077\372\346\062\341\215\033\157
\244\346\216\330\371\051\110\212\316\163\376\054
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Universal CA"
Issuer: CN=GeoTrust Universal CA,O=GeoTrust Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=GeoTrust Universal CA,O=GeoTrust Inc.,C=US
Not Valid Before: Thu Mar 04 05:00:00 2004
Not Valid After: Sun Mar 04 05:00:00 2029
Fingerprint (MD5): 92:65:58:8b:a2:1a:31:72:73:68:5c:b4:a5:7a:07:48
Fingerprint (SHA1): e6:21:f3:35:43:79:05:9a:4b:68:30:9d:8a:2f:74:22:15:87:ec:79
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Universal CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\346\041\363\065\103\171\005\232\113\150\060\235\212\057\164\042
\025\207\354\171
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\222\145\130\213\242\032\061\162\163\150\134\264\245\172\007\110
END
CKA_ISSUER MULTILINE_OCTAL
\060\105\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\036\060\034\006\003\125\004\003
\023\025\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GeoTrust Universal
 CA 2"
Issuer: CN=GeoTrust Universal CA 2,O=GeoTrust Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=GeoTrust Universal CA 2,O=GeoTrust Inc.,C=US
Not Valid Before: Thu Mar 04 05:00:00 2004
Not Valid After: Sun Mar 04 05:00:00 2029
Fingerprint (MD5): 34:fc:b8:d0:36:db:9e:14:b3:c2:f2:db:8f:e4:94:c7
Fingerprint (SHA1): 37:9a:19:7b:41:85:45:35:0c:a6:03:69:f3:3c:2e:af:47:4f:20:79
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Universal CA 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\040\060\036\006\003\125\004\003
\023\027\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101\040\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\040\060\036\006\003\125\004\003
\023\027\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101\040\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\154\060\202\003\124\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061\026
\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165\163

\164\040\111\156\143\056\061\040\060\036\006\003\125\004\003\023
\027\107\145\157\124\162\165\163\164\040\125\156\151\166\145\162
\163\141\154\040\103\101\040\062\060\036\027\015\060\064\060\063
\060\064\060\065\060\060\060\060\132\027\015\062\071\060\063\060
\064\060\065\060\060\060\060\132\060\107\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\026\060\024\006\003\125\004\012
\023\015\107\145\157\124\162\165\163\164\040\111\156\143\056\061
\040\060\036\006\003\125\004\003\023\027\107\145\157\124\162\165
\163\164\040\125\156\151\166\145\162\163\141\154\040\103\101\040
\062\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002
\001\000\263\124\122\301\311\076\362\331\334\261\123\032\131\051
\347\261\303\105\050\345\327\321\355\305\305\113\241\252\164\173
\127\257\112\046\374\330\365\136\247\156\031\333\164\014\117\065
\133\062\013\001\343\333\353\172\167\065\352\252\132\340\326\350
\241\127\224\360\220\243\164\126\224\104\060\003\036\134\116\053
\205\046\164\202\172\014\166\240\157\115\316\101\055\240\025\006
\024\137\267\102\315\173\217\130\141\064\334\052\010\371\056\303
\001\246\042\104\034\114\007\202\346\133\316\320\112\174\004\323
\031\163\047\360\252\230\177\056\257\116\353\207\036\044\167\152
\135\266\350\133\105\272\334\303\241\005\157\126\216\217\020\046
\245\111\303\056\327\101\207\042\340\117\206\312\140\265\352\241
\143\300\001\227\020\171\275\000\074\022\155\053\025\261\254\113
\261\356\030\271\116\226\334\334\166\377\073\276\317\137\003\300
\374\073\350\276\106\033\377\332\100\302\122\367\376\343\072\367
\152\167\065\320\332\215\353\136\030\152\061\307\036\272\074\033
\050\326\153\124\306\252\133\327\242\054\033\031\314\242\002\366
\233\131\275\067\153\206\265\155\202\272\330\352\311\126\274\251
\066\130\375\076\031\363\355\014\046\251\223\070\370\117\301\135
\042\006\320\227\352\341\255\306\125\340\201\053\050\203\072\372
\364\173\041\121\000\276\122\070\316\315\146\171\250\364\201\126
\342\320\203\011\107\121\133\120\152\317\333\110\032\135\076\367
\313\366\145\367\154\361\225\370\002\073\062\126\202\071\172\133
\275\057\211\033\277\241\264\350\377\177\215\214\337\003\361\140
\116\130\021\114\353\243\077\020\053\203\232\001\163\331\224\155
\204\000\047\146\254\360\160\100\011\102\222\255\117\223\015\141
\011\121\044\330\222\325\013\224\141\262\207\262\355\377\232\065
\377\205\124\312\355\104\103\254\033\074\026\153\110\112\012\034
\100\210\037\222\302\013\000\005\377\362\310\002\112\244\252\251
\314\231\226\234\057\130\340\175\341\276\273\007\334\137\004\162
\134\061\064\303\354\137\055\340\075\144\220\042\346\321\354\270
\056\335\131\256\331\241\067\277\124\065\334\163\062\117\214\004
\036\063\262\311\106\361\330\134\310\125\120\311\150\275\250\272
\066\011\002\003\001\000\001\243\143\060\141\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\166\363\125\341\372\244\066\373\360
\237\134\142\161\355\074\364\107\070\020\053\060\037\006\003\125
\035\043\004\030\060\026\200\024\166\363\125\341\372\244\066\373

\360\237\134\142\161\355\074\364\107\070\020\053\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\206\060\015\006\011
\052\206\110\206\367\015\001\001\005\005\000\003\202\002\001\000
\146\301\306\043\363\331\340\056\156\137\350\317\256\260\260\045
\115\053\370\073\130\233\100\044\067\132\313\253\026\111\377\263
\165\171\063\241\057\155\160\027\064\221\376\147\176\217\354\233
\345\136\202\251\125\037\057\334\324\121\007\022\376\254\026\076
\054\065\306\143\374\334\020\353\015\243\252\320\174\314\321\320
\057\121\056\304\024\132\336\350\031\341\076\306\314\244\051\347
\056\204\252\006\060\170\166\124\163\050\230\131\070\340\000\015
\142\323\102\175\041\237\256\075\072\214\325\372\167\015\030\053
\026\016\137\066\341\374\052\265\060\044\317\340\143\014\173\130
\032\376\231\272\102\022\261\221\364\174\150\342\310\350\257\054
\352\311\176\256\273\052\075\015\025\334\064\225\266\030\164\250
\152\017\307\264\364\023\304\344\133\355\012\322\244\227\114\052
\355\057\154\022\211\075\361\047\160\252\152\003\122\041\237\100
\250\147\120\362\363\132\037\337\337\043\366\334\170\116\346\230
\117\125\072\123\343\357\362\364\237\307\174\330\130\257\051\042
\227\270\340\275\221\056\260\166\354\127\021\317\357\051\104\363
\351\205\172\140\143\344\135\063\211\027\331\061\252\332\326\363
\030\065\162\317\207\053\057\143\043\204\135\204\214\077\127\240
\210\374\231\221\050\046\151\231\324\217\227\104\276\216\325\110
\261\244\050\051\361\025\264\341\345\236\335\370\217\246\157\046
\327\011\074\072\034\021\016\246\154\067\367\255\104\207\054\050
\307\330\164\202\263\320\157\112\127\273\065\051\047\240\213\350
\041\247\207\144\066\135\314\330\026\254\307\262\047\100\222\125
\070\050\215\121\156\335\024\147\123\154\161\134\046\204\115\165
\132\266\176\140\126\251\115\255\373\233\036\227\363\015\331\322
\227\124\167\332\075\022\267\340\036\357\010\006\254\371\205\207
\351\242\334\257\176\030\022\203\375\126\027\101\056\325\051\202
\175\231\364\061\366\161\251\317\054\001\047\245\005\271\252\262
\110\116\052\357\237\223\122\121\225\074\122\163\216\126\114\027
\100\300\011\050\344\213\152\110\123\333\354\315\125\125\361\306
\370\351\242\054\114\246\321\046\137\176\257\132\114\332\037\246
\362\034\054\176\256\002\026\322\126\320\057\127\123\107\350\222
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GeoTrust Universal CA 2"
Issuer: CN=GeoTrust Universal CA 2,O=GeoTrust Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=GeoTrust Universal CA 2,O=GeoTrust Inc.,C=US
Not Valid Before: Thu Mar 04 05:00:00 2004
Not Valid After: Sun Mar 04 05:00:00 2029

Fingerprint (MD5): 34:fc:b8:d0:36:db:9e:14:b3:c2:f2:db:8f:e4:94:c7
Fingerprint (SHA1): 37:9a:19:7b:41:85:45:35:0c:a6:03:69:f3:3c:2e:af:47:4f:20:79
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GeoTrust Universal CA 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\067\232\031\173\101\205\105\065\014\246\003\151\363\074\056\257
\107\117\040\171
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\064\374\270\320\066\333\236\024\263\302\362\333\217\344\224\307
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\107\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\023\015\107\145\157\124\162\165
\163\164\040\111\156\143\056\061\040\060\036\006\003\125\004\003
\023\027\107\145\157\124\162\165\163\164\040\125\156\151\166\145
\162\163\141\154\040\103\101\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "QuoVadis Root Certification Authority"
Issuer: CN=QuoVadis Root Certification Authority,OU=Root Certification Authority,O=QuoVadis
Limited,C=BM
Serial Number:3a:b6:50:8b
Subject: CN=QuoVadis Root Certification Authority,OU=Root Certification Authority,O=QuoVadis
Limited,C=BM
Not Valid Before: Mon Mar 19 18:33:33
 2001
Not Valid After: Wed Mar 17 18:33:33 2021
Fingerprint (MD5): 27:de:36:fe:72:b7:00:03:00:9d:f4:f0:1e:6c:04:24
Fingerprint (SHA1): de:3f:40:bd:50:93:d3:9b:6c:60:f6:da:bc:07:62:01:00:89:76:c9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root Certification Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509

CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\045\060\043\006\003
\125\004\013\023\034\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\056\060\054\006\003\125\004\003\023\045\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\045\060\043\006\003
\125\004\013\023\034\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\056\060\054\006\003\125\004\003\023\045\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\072\266\120\213
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\320\060\202\004\270\240\003\002\001\002\002\004\072
\266\120\213\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\177\061\013\060\011\006\003\125\004\006\023\002\102
\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157\126
\141\144\151\163\040\114\151\155\151\164\145\144\061\045\060\043
\006\003\125\004\013\023\034\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\061\056\060\054\006\003\125\004\003\023\045\121\165
\157\126\141\144\151\163\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\060\036\027\015\060\061\060\063\061\071\061\070\063
\063\063\063\132\027\015\062\061\060\063\061\067\061\070\063\063
\063\063\132\060\177\061\013\060\011\006\003\125\004\006\023\002
\102\115\061\031\060\027\006\003\125\004\012\023\020\121\165\157
\126\141\144\151\163\040\114\151\155\151\164\145\144\061\045\060
\043\006\003\125\004\013\023\034\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\061\056\060\054\006\003\125\004\003\023\045\121
\165\157\126\141\144\151\163\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157

\162\151\164\171\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\277\141\265\225\123\272\127\374\372\362\147
\013\072\032\337\021\200\144\225\264\321\274\315\172\317\366\051
\226\056\044\124\100\044\070\367\032\205\334\130\114\313\244\047
\102\227\320\237\203\212\303\344\006\003\133\000\245\121\036\160
\004\164\342\301\324\072\253\327\255\073\007\030\005\216\375\203
\254\352\146\331\030\033\150\212\365\127\032\230\272\365\355\166
\075\174\331\336\224\152\073\113\027\301\325\217\275\145\070\072
\225\320\075\125\066\116\337\171\127\061\052\036\330\131\145\111
\130\040\230\176\253\137\176\237\351\326\115\354\203\164\251\307
\154\330\356\051\112\205\052\006\024\371\124\346\323\332\145\007
\213\143\067\022\327\320\354\303\173\040\101\104\243\355\313\240
\027\341\161\145\316\035\146\061\367\166\001\031\310\175\003\130
\266\225\111\035\246\022\046\350\306\014\166\340\343\146\313\352
\135\246\046\356\345\314\137\275\147\247\001\047\016\242\312\124
\305\261\172\225\035\161\036\112\051\212\003\334\152\105\301\244
\031\136\157\066\315\303\242\260\267\376\134\070\342\122\274\370
\104\103\346\220\273\002\003\001\000\001\243\202\002\122\060\202
\002\116\060\075\006\010\053\006\001\005\005\007\001\001\004\061
\060\057\060\055\006\010\053\006\001\005\005\007\060\001\206\041
\150\164\164\160\163\072\057\057\157\143\163\160\056\161\165\157
\166\141\144\151\163\157\146\146\163\150\157\162\145\056\143\157
\155\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\202\001\032\006\003\125\035\040\004\202\001\021\060
\202\001\015\060\202\001\011\006\011\053\006\001\004\001\276\130
\000\001\060\201\373\060\201\324\006\010\053\006\001\005\005\007
\002\002\060\201\307\032\201\304\122\145\154\151\141\156\143\145
\040\157\156\040\164\150\145\040\121\165\157\126\141\144\151\163
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\145\040\142\171\040\141\156\171\040\160\141\162\164\171\040\141
\163\163\165\155\145\163\040\141\143\143\145\160\164\141\156\143
\145\040\157\146\040\164\150\145\040\164\150\145\156\040\141\160
\160\154\151\143\141\142\154\145\040\163\164\141\156\144\141\162
\144\040\164\145\162\155\163\040\141\156\144\040\143\157\156\144
\151\164\151\157\156\163\040\157\146\040\165\163\145\054\040\143
\145\162\164\151\146\151\143\141\164\151\157\156\040\160\162\141
\143\164\151\143\145\163\054\040\141\156\144\040\164\150\145\040
\121\165\157\126\141\144\151\163\040\103\145\162\164\151\146\151
\143\141\164\145\040\120\157\154\151\143\171\056\060\042\006\010
\053\006\001\005\005\007\002\001\026\026\150\164\164\160\072\057
\057\167\167\167\056\161\165\157\166\141\144\151\163\056\142\155
\060\035\006\003\125\035\016\004\026\004\024\213\113\155\355\323
\051\271\006\031\354\071\071\251\360\227\204\152\313\357\337\060
\201\256\006\003\125\035\043\004\201\246\060\201\243\200\024\213
\113\155\355\323\051\271\006\031\354\071\071\251\360\227\204\152
\313\357\337\241\201\204\244\201\201\060\177\061\013\060\011\006
\003\125\004\006\023\002\102\115\061\031\060\027\006\003\125\004

\012\023\020\121\165\157\126\141\144\151\163\040\114\151\155\151
\164\145\144\061\045\060\043\006\003\125\004\013\023\034\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\061\056\060\054\006\003
\125\004\003\023\045\121\165\157\126\141\144\151\163\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\202\004\072\266\120\213
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\212\324\024\265\376\364\232\222\247\031\324\244
\176\162\030\217\331\150\174\122\044\335\147\157\071\172\304\252
\136\075\342\130\260\115\160\230\204\141\350\033\343\151\030\016
\316\373\107\120\240\116\377\360\044\037\275\262\316\365\047\374
\354\057\123\252\163\173\003\075\164\156\346\026\236\353\245\056
\304\277\126\047\120\053\142\272\276\113\034\074\125\134\101\035
\044\276\202\040\107\135\325\104\176\172\026\150\337\175\115\121
\160\170\127\035\063\036\375\002\231\234\014\315\012\005\117\307
\273\216\244\165\372\112\155\261\200\216\011\126\271\234\032\140
\376\135\301\327\172\334\021\170\320\326\135\301\267\325\255\062
\231\003\072\212\314\124\045\071\061\201\173\023\042\121\272\106
\154\241\273\236\372\004\154\111\046\164\217\322\163\353\314\060
\242\346\352\131\042\207\370\227\365\016\375\352\314\222\244\026
\304\122\030\352\041\316\261\361\346\204\201\345\272\251\206\050
\362\103\132\135\022\235\254\036\331\250\345\012\152\247\177\240
\207\051\317\362\211\115\324\354\305\342\346\172\320\066\043\212
\112\164\066\371
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "QuoVadis Root Certification Authority"
Issuer: CN=QuoVadis Root Certification Authority,OU=Root
Certification Authority,O=QuoVadis Limited,C=BM
Serial Number:3a:b6:50:8b
Subject: CN=QuoVadis Root Certification Authority,OU=Root Certification Authority,O=QuoVadis
Limited,C=BM
Not Valid Before: Mon Mar 19 18:33:33 2001
Not Valid After: Wed Mar 17 18:33:33 2021
Fingerprint (MD5): 27:de:36:fe:72:b7:00:03:00:9d:f4:f0:1e:6c:04:24
Fingerprint (SHA1): de:3f:40:bd:50:93:d3:9b:6c:60:f6:da:bc:07:62:01:00:89:76:c9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "QuoVadis Root Certification Authority"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\336\077\100\275\120\223\323\233\154\140\366\332\274\007\142\001
\000\211\166\311
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\047\336\066\376\162\267\000\003\000\235\364\360\036\154\004\044
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\102\115\061
\031\060\027\006\003\125\004\012\023\020\121\165\157\126\141\144
\151\163\040\114\151\155\151\164\145\144\061\045\060\043\006\003
\125\004\013\023\034\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\061\056\060\054\006\003\125\004\003\023\045\121\165\157\126
\141\144\151\163\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\004\072\266\120\213
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Sonera Class2 CA"
Issuer: CN=Sonera Class2 CA,O=Sonera,C=FI
Serial Number: 29 (0x1d)
Subject: CN=Sonera Class2 CA,O=Sonera,C=FI
Not Valid Before: Fri Apr 06 07:29:40 2001
Not Valid After: Tue Apr 06 07:29:40 2021
Fingerprint (MD5): a3:ec:75:0f:2e:88:df:fa:48:01:4e:0b:5c:48:6f:fb
#
Fingerprint (SHA1): 37:f7:6d:e6:07:7c:90:c5:b1:3e:93:1a:b7:41:10:b4:f2:e4:9a:27
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sonera Class2 CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\017\060\015\006\003\125\004\012\023\006\123\157\156\145\162\141
\061\031\060\027\006\003\125\004\003\023\020\123\157\156\145\162
\141\040\103\154\141\163\163\062\040\103\101

END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\017\060\015\006\003\125\004\012\023\006\123\157\156\145\162\141
\061\031\060\027\006\003\125\004\003\023\020\123\157\156\145\162
\141\040\103\154\141\163\163\062\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\035
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\040\060\202\002\010\240\003\002\001\002\002\001\035
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\071\061\013\060\011\006\003\125\004\006\023\002\106\111\061\017
\060\015\006\003\125\004\012\023\006\123\157\156\145\162\141\061
\031\060\027\006\003\125\004\003\023\020\123\157\156\145\162\141
\040\103\154\141\163\163\062\040\103\101\060\036\027\015\060\061
\060\064\060\066\060\067\062\071\064\060\132\027\015\062\061\060
\064\060\066\060\067\062\071\064\060\132\060\071\061\013\060\011
\006\003\125\004\006\023\002\106\111\061\017\060\015\006\003\125
\004\012\023\006\123\157\156\145\162\141\061\031\060\027\006\003
\125\004\003\023\020\123\157\156\145\162\141\040\103\154\141\163
\163\062\040\103\101\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\220\027\112\065\235\312\360\015\226\307
\104\372\026\067\374\110\275\275\177\200\055\065\073\341\157\250
\147\251\277\003\034\115\214\157\062\107\325\101\150\244\023\004
\301\065\014\232\204\103\374\134\035\377\211\263\350\027\030\315
\221\137\373\211\343\352\277\116\135\174\033\046\323\165\171\355
\346\204\343\127\345\255\051\304\364\072\050\347\245\173\204\066
\151\263\375\136\166\275\243\055\231\323\220\116\043\050\175\030
\143\361\124\073\046\235\166\133\227\102\262\377\256\360\116\354
\335\071\225\116\203\006\177\347\111\100\310\305\001\262\124\132
\146\035\075\374\371\351\074\012\236\201\270\160\360\001\213\344
\043\124\174\310\256\370\220\036\000\226\162\324\124\317\141\043
\274\352\373\235\002\225\321\266\271\161\072\151\010\077\017\264
\341\102\307\210\365\077\230\250\247\272\034\340\161\161\357\130
\127\201\120\172\134\153\164\106\016\203\003\230\303\216\250\156
\362\166\062\156\047\203\302\163\363\334\030\350\264\223\352\165
\104\153\004\140\040\161\127\207\235\363\276\240\220\043\075\212
\044\341\332\041\333\303\002\003\001\000\001\243\063\060\061\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\021\006\003\125\035\016\004\012\004\010\112\240\252\130\204
\323\136\074\060\013\006\003\125\035\017\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\003
\202\001\001\000\132\316\207\371\026\162\025\127\113\035\331\233
\347\242\046\060\354\223\147\337\326\055\322\064\257\367\070\245

\316\253\026\271\253\057\174\065\313\254\320\017\264\114\053\374
\200\357\153\214\221\137\066\166\367\333\263\033\031\352\364\262
\021\375\141\161\104\277\050\263\072\035\277\263\103\350\237\277
\334\061\010\161\260\235\215\326\064\107\062\220\306\145\044\367
\240\112\174\004\163\217\071\157\027\214\162\265\275\113\310\172
\370\173\203\303\050\116\234\011\352\147\077\262\147\004\033\303
\024\332\370\347\111\044\221\320\035\152\372\141\071\357\153\347
\041\165\006\007\330\022\264\041\040\160\102\161\201\332\074\232
\066\276\246\133\015\152\154\232\037\221\173\371\371\357\102\272
\116\116\236\314\014\215\224\334\331\105\234\136\354\102\120\143
\256\364\135\304\261\022\334\312\073\250\056\235\024\132\005\165
\267\354\327\143\342\272\065\266\004\010\221\350\332\235\234\366
\146\265\030\254\012\246\124\046\064\063\322\033\301\324\177\032
\072\216\013\252\062\156\333\374\117\045\237\331\062\307\226\132
\160\254\337\114
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Sonera Class2 CA"
Issuer: CN=Sonera Class2 CA,O=Sonera,C=FI
Serial Number: 29 (0x1d)
Subject: CN=Sonera Class2 CA,O=Sonera,C=FI
Not Valid Before: Fri Apr 06 07:29:40 2001
Not Valid After: Tue Apr 06 07:29:40 2021
Fingerprint (MD5): a3:ec:75:0f:2e:88:df:fa:48:01:4e:0b:5c:48:6f:fb
Fingerprint (SHA1): 37:f7:6d:e6:07:7c:90:c5:b1:3e:93:1a:b7:41:10:b4:f2:e4:9a:27
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Sonera Class2 CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\067\367\155\346\007\174\220\305\261\076\223\032\267\101\020\264
\362\344\232\047
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\243\354\165\017\056\210\337\372\110\001\116\013\134\110\157\373
END
CKA_ISSUER MULTILINE_OCTAL
\060\071\061\013\060\011\006\003\125\004\006\023\002\106\111\061
\017\060\015\006\003\125\004\012\023\006\123\157\156\145\162\141
\061\031\060\027\006\003\125\004\003\023\020\123\157\156\145\162
\141\040\103\154\141\163\163\062\040\103\101

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\035
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign Class 2 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign
Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): f8:be:c4:63:22:c9:a8:46:74:8b:b8:1d:1e:4a:2b:f6
Fingerprint (SHA1): 61:ef:43:d7:7f:ca:d4:61:51:bc:98:e0:c3:59:12:af:9f:eb:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 2 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125

\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\031\060\202\003\001\002\020\141\160\313\111\214\137
\230\105\051\347\260\246\331\120\133\172\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125
\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145\162
\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164\167
\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050\143
\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156\054
\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164\150
\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171\061
\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123\151
\147\156\040\103\154\141\163\163\040\062\040\120\165\142\154\151
\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164
\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060\061
\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066\062
\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012\023
\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061
\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123\151
\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162\153
\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040\061
\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111\156
\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162\151
\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060\103
\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156\040
\103\154\141\163\163\040\062\040\120\165\142\154\151\143\040\120
\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\055
\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206\367

\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012\002
\202\001\001\000\257\012\015\302\325\054\333\147\271\055\345\224
\047\335\245\276\340\260\115\217\263\141\126\074\326\174\303\364
\315\076\206\313\242\210\342\341\330\244\151\305\265\342\277\301
\246\107\120\136\106\071\213\325\226\272\265\157\024\277\020\316
\047\023\236\005\107\233\061\172\023\330\037\331\323\002\067\213
\255\054\107\360\216\201\006\247\015\060\014\353\367\074\017\040
\035\334\162\106\356\245\002\310\133\303\311\126\151\114\305\030
\301\221\173\013\325\023\000\233\274\357\303\110\076\106\140\040
\205\052\325\220\266\315\213\240\314\062\335\267\375\100\125\262
\120\034\126\256\314\215\167\115\307\040\115\247\061\166\357\150
\222\212\220\036\010\201\126\262\255\151\243\122\320\313\034\304
\043\075\037\231\376\114\350\026\143\216\306\010\216\366\061\366
\322\372\345\166\335\265\034\222\243\111\315\315\001\315\150\315
\251\151\272\243\353\035\015\234\244\040\246\301\240\305\321\106
\114\027\155\322\254\146\077\226\214\340\204\324\066\377\042\131
\305\371\021\140\250\137\004\175\362\032\366\045\102\141\017\304
\112\270\076\211\002\003\001\000\001\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\001\001\000\064\046\025
\074\300\215\115\103\111\035\275\351\041\222\327\146\234\267\336
\305\270\320\344\135\137\166\042\300\046\371\204\072\072\371\214
\265\373\354\140\361\350\316\004\260\310\335\247\003\217\060\363
\230\337\244\346\244\061\337\323\034\013\106\334\162\040\077\256
\356\005\074\244\063\077\013\071\254\160\170\163\113\231\053\337
\060\302\124\260\250\073\125\241\376\026\050\315\102\275\164\156
\200\333\047\104\247\316\104\135\324\033\220\230\015\036\102\224
\261\000\054\004\320\164\243\002\005\042\143\143\315\203\265\373
\301\155\142\153\151\165\375\135\160\101\271\365\277\174\337\276
\301\062\163\042\041\213\130\201\173\025\221\172\272\343\144\110
\260\177\373\066\045\332\225\320\361\044\024\027\335\030\200\153
\106\043\071\124\365\216\142\011\004\035\224\220\246\233\346\045
\342\102\105\252\270\220\255\276\010\217\251\013\102\030\224\317
\162\071\341\261\103\340\050\317\267\347\132\154\023\153\111\263
\377\343\030\174\211\213\063\135\254\063\327\247\371\332\072\125
\311\130\020\371\252\357\132\266\317\113\113\337\052
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER
CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign Class 2 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:61:70:cb:49:8c:5f:98:45:29:e7:b0:a6:d9:50:5b:7a
Subject: CN=VeriSign Class 2 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For

authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): f8:be:c4:63:22:c9:a8:46:74:8b:b8:1d:1e:4a:2b:f6
Fingerprint (SHA1): 61:ef:43:d7:7f:ca:d4:61:51:bc:98:e0:c3:59:12:af:9f:eb:63:11
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "VeriSign Class 2 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\141\357\103\327\177\312\324\141\121\274\230\340\303\131\022\257
\237\353\143\021
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\370\276\304\143\042\311\250\106\164\213\270\035\036\112\053\366
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\062\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\141\160\313\111\214\137\230\105\051\347\260\246\331\120
\133\172
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign Class 3 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 3 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:9b:7e:06:49:a3:3e:62:b9:d5:ee:90:48:71:29:ef:57

Subject: CN=VeriSign Class 3 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign
Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): cd:68:b6:a7:c7:c4:ce:75:e0:1d:4f:57:44:61:92:09
Fingerprint (SHA1): 13:2d:0d:45:53:4b:69:97:cd:b2:d5:c3:39:e2:55:76:60:9b:5c:c6
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\233\176\006\111\243\076\142\271\325\356\220\110\161

\051\357\127
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\032\060\202\003\002\002\021\000\233\176\006\111\243
\076\142\271\325\356\220\110\161\051\357\127\060\015\006\011\052
\206\110\206\367\015\001\001\005\005\000\060\201\312\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\061\037\060\035\006\003\125\004\013\023\026\126\145
\162\151\123\151\147\156\040\124\162\165\163\164\040\116\145\164
\167\157\162\153\061\072\060\070\006\003\125\004\013\023\061\050
\143\051\040\061\071\071\071\040\126\145\162\151\123\151\147\156
\054\040\111\156\143\056\040\055\040\106\157\162\040\141\165\164
\150\157\162\151\172\145\144\040\165\163\145\040\157\156\154\171
\061\105\060\103\006\003\125\004\003\023\074\126\145\162\151\123
\151\147\156\040\103\154\141\163\163\040\063\040\120\165\142\154
\151\143\040\120\162\151\155\141\162\171\040\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\171\040\055\040\107\063\060\036\027\015\071\071\061\060\060
\061\060\060\060\060\060\060\132\027\015\063\066\060\067\061\066
\062\063\065\071\065\071\132\060\201\312\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012
\023\016\126\145\162\151\123\151\147\156\054\040\111\156\143\056
\061\037\060\035\006\003\125\004\013\023\026\126\145\162\151\123
\151\147\156\040\124\162\165\163\164\040\116\145\164\167\157\162
\153\061\072\060\070\006\003\125\004\013\023\061\050\143\051\040
\061\071\071\071\040\126\145\162\151\123\151\147\156\054\040\111
\156\143\056\040\055\040\106\157\162\040\141\165\164\150\157\162
\151\172\145\144\040\165\163\145\040\157\156\154\171\061\105\060
\103\006\003\125\004\003\023\074\126\145\162\151\123\151\147\156
\040\103\154\141\163\163\040\063\040\120\165\142\154\151\143\040
\120\162\151\155\141\162\171\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\063\060\202\001\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001\012
\002\202\001\001\000\313\272\234\122\374\170\037\032\036\157\033
\067\163\275\370\311\153\224\022\060\117\360\066\107\365\320\221
\012\365\027\310\245\141\301\026\100\115\373\212\141\220\345\166
\040\301\021\006\175\253\054\156\246\365\021\101\216\372\055\255
\052\141\131\244\147\046\114\320\350\274\122\133\160\040\004\130
\321\172\311\244\151\274\203\027\144\255\005\213\274\320\130\316
\215\214\365\353\360\102\111\013\235\227\047\147\062\156\341\256
\223\025\034\160\274\040\115\057\030\336\222\210\350\154\205\127
\021\032\351\176\343\046\021\124\242\105\226\125\203\312\060\211
\350\334\330\243\355\052\200\077\177\171\145\127\076\025\040\146
\010\057\225\223\277\252\107\057\250\106\227\360\022\342\376\302
\012\053\121\346\166\346\267\106\267\342\015\246\314\250\303\114
\131\125\211\346\350\123\134\034\352\235\360\142\026\013\247\311

\137\014\360\336\302\166\316\257\367\152\362\372\101\246\242\063
\024\311\345\172\143\323\236\142\067\325\205\145\236\016\346\123
\044\164\033\136\035\022\123\133\307\054\347\203\111\073\025\256
\212\150\271\127\227\002\003\001\000\001\060\015\006\011\052\206
\110\206\367\015\001\001\005\005\000\003\202\001\001\000\021\024
\226\301\253\222\010\367\077\057\311\262\376\344\132\237\144\336
\333\041\117\206\231\064\166\066\127\335\320\025\057\305\255\177
\025\037\067\142\163\076\324\347\137\316\027\003\333\065\372\053
\333\256\140\011\137\036\137\217\156\273\013\075\352\132\023\036
\014\140\157\265\300\265\043\042\056\007\013\313\251\164\313\107
\273\035\301\327\245\153\314\057\322\102\375\111\335\247\211\317
\123\272\332\000\132\050\277\202\337\370\272\023\035\120\206\202
\375\216\060\217\051\106\260\036\075\065\332\070\142\026\030\112
\255\346\266\121\154\336\257\142\353\001\320\036\044\376\172\217
\022\032\022\150\270\373\146\231\024\024\105\134\256\347\256\151
\027\201\053\132\067\311\136\052\364\306\342\241\134\124\233\246
\124\000\317\360\361\301\307\230\060\032\073\066\026\333\243\156
\352\375\255\262\302\332\357\002\107\023\212\300\361\263\061\255
\117\034\341\117\234\257\017\014\235\367\170\015\330\364\065\126
\200\332\267\155\027\217\235\036\201\144\341\376\305\105\272\255
\153\271\012\172\116\117\113\204\356\113\361\175\335\021
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign Class 3 Public Primary Certification Authority - G3"
Issuer: CN=VeriSign Class 3 Public
Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Serial Number:9b:7e:06:49:a3:3e:62:b9:d5:ee:90:48:71:29:ef:57
Subject: CN=VeriSign Class 3 Public Primary Certification Authority - G3,OU=(c) 1999 VeriSign\, Inc. - For authorized use only,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
Not Valid Before: Fri Oct 01 00:00:00 1999
Not Valid After: Wed Jul 16 23:59:59 2036
Fingerprint (MD5): cd:68:b6:a7:c7:c4:ce:75:e0:1d:4f:57:44:61:92:09
Fingerprint (SHA1): 13:2d:0d:45:53:4b:69:97:cd:b2:d5:c3:39:e2:55:76:60:9b:5c:c6
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign Class 3 Public Primary Certification Authority - G3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\023\055\015\105\123\113\151\227\315\262\325\303\071\342\125\166
\140\233\134\306
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\315\150\266\247\307\304\316\165\340\035\117\127\104\141\222\011
END
CKA_ISSUER
 MULTILINE_OCTAL
\060\201\312\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151\123
\151\147\156\054\040\111\156\143\056\061\037\060\035\006\003\125
\004\013\023\026\126\145\162\151\123\151\147\156\040\124\162\165
\163\164\040\116\145\164\167\157\162\153\061\072\060\070\006\003
\125\004\013\023\061\050\143\051\040\061\071\071\071\040\126\145
\162\151\123\151\147\156\054\040\111\156\143\056\040\055\040\106
\157\162\040\141\165\164\150\157\162\151\172\145\144\040\165\163
\145\040\157\156\154\171\061\105\060\103\006\003\125\004\003\023
\074\126\145\162\151\123\151\147\156\040\103\154\141\163\163\040
\063\040\120\165\142\154\151\143\040\120\162\151\155\141\162\171
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\055\040\107\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\233\176\006\111\243\076\142\271\325\356\220\110\161
\051\357\127
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "VeriSign, Inc."
Issuer: OU=VeriSign Commercial Software Publishers CA,O=VeriSign\, Inc.,L=Internet
Serial Number:03:c7:8f:37:db:92:28:df:3c:bb:1a:ad:82:fa:67:10
Subject: OU=VeriSign Commercial Software Publishers CA,O=VeriSign\, Inc.,L=Internet
Not Valid Before: Tue Apr 09 00:00:00 1996
Not Valid After: Wed Jan 07 23:59:59 2004
Fingerprint (MD5): dd:75:3f:56:bf:bb:c5:a1:7a:15:53:c6:90:f9:fb:cc
Fingerprint (SHA1): 24:a4:0a:1f:57:36:43:a6:7f:0a:4b:07:49:f6:a2:2b:f2:8a:bb:6b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign, Inc."
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE
 CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\141\061\021\060\017\006\003\125\004\007\023\010\111\156\164
\145\162\156\145\164\061\027\060\025\006\003\125\004\012\023\016

\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061\063
\060\061\006\003\125\004\013\023\052\126\145\162\151\123\151\147
\156\040\103\157\155\155\145\162\143\151\141\154\040\123\157\146
\164\167\141\162\145\040\120\165\142\154\151\163\150\145\162\163
\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\021\060\017\006\003\125\004\007\023\010\111\156\164
\145\162\156\145\164\061\027\060\025\006\003\125\004\012\023\016
\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061\063
\060\061\006\003\125\004\013\023\052\126\145\162\151\123\151\147
\156\040\103\157\155\155\145\162\143\151\141\154\040\123\157\146
\164\167\141\162\145\040\120\165\142\154\151\163\150\145\162\163
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\307\217\067\333\222\050\337\074\273\032\255\202\372
\147\020
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\002\100\060\202\001\251\002\020\003\307\217\067\333\222
\050\337\074\273\032\255\202\372\147\020\060\015\006\011\052\206
\110\206\367\015\001\001\002\005\000\060\141\061\021\060\017\006
\003\125\004\007\023\010\111\156\164\145\162\156\145\164\061\027
\060\025\006\003\125\004\012\023\016\126\145\162\151\123\151\147
\156\054\040\111\156\143\056\061\063\060\061\006\003\125\004\013
\023\052\126\145\162\151\123\151\147\156\040\103\157\155\155\145
\162\143\151\141\154\040\123\157\146\164\167\141\162\145\040\120
\165\142\154\151\163\150\145\162\163\040\103\101\060\036\027\015
\071\066\060\064\060\071\060\060\060\060\060\060\132\027\015\060
\064\060\061\060\067\062\063\065\071\065\071\132\060\141\061\021
\060\017\006\003\125\004\007\023\010\111\156\164\145\162\156\145
\164\061\027\060\025\006\003\125\004\012\023\016\126\145\162\151
\123\151\147\156\054\040\111\156\143\056\061\063\060\061\006\003
\125\004\013\023\052\126\145\162\151\123\151\147\156\040\103\157
\155\155\145\162\143\151\141\154\040\123\157\146\164\167\141\162
\145\040\120\165\142\154\151\163\150\145\162\163\040\103\101\060
\201\237\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\201\215\000\060\201\211\002\201\201\000\303\323\151\145
\122\001\224\124\253\050\306\142\030\263\124\125\305\104\207\105
\112\073\302\176\330\323\327\310\200\206\215\330\014\361\026\234
\314\153\251\051\262\217\166\163\222\310\305\142\246\074\355\036
\005\165\360\023\000\154\024\115\324\230\220\007\276\151\163\201
\270\142\116\061\036\321\374\311\014\353\175\220\277\256\264\107
\121\354\157\316\144\065\002\326\175\147\005\167\342\217\331\121
\327\373\227\031\274\076\327\167\201\306\103\335\362\335\337\312

\243\203\213\313\101\301\075\042\110\110\246\031\002\003\001\000
\001\060\015\006\011\052\206\110\206\367\015\001\001\002\005\000
\003\201\201\000\265\274\260\165\152\211\242\206\275\144\170\303
\247\062\165\162\021\252\046\002\027\140\060\114\343\110\064\031
\271\122\112\121\030\200\376\123\055\173\325\061\214\305\145\231
\101\101\057\362\256\143\172\350\163\231\025\220\032\037\172\213
\101\320\216\072\320\315\070\064\104\320\165\370\352\161\304\201
\031\070\027\065\112\256\305\076\062\346\041\270\005\300\223\341
\307\070\134\330\367\223\070\144\220\355\124\316\312\323\323\320
\137\357\004\233\336\002\202\335\210\051\261\303\117\245\315\161
\144\061\074\074
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "VeriSign, Inc."
Issuer: OU=VeriSign Commercial Software Publishers CA,O=VeriSign\, Inc.,L=Internet
Serial Number:03:c7:8f:37:db:92:28:df:3c:bb:1a:ad:82:fa:67:10
Subject: OU=VeriSign Commercial Software Publishers CA,O=VeriSign\, Inc.,L=Internet
Not Valid Before: Tue Apr 09 00:00:00 1996
Not Valid After: Wed Jan 07 23:59:59 2004
Fingerprint (MD5): dd:75:3f:56:bf:bb:c5:a1:7a:15:53:c6:90:f9:fb:cc
#
 Fingerprint (SHA1): 24:a4:0a:1f:57:36:43:a6:7f:0a:4b:07:49:f6:a2:2b:f2:8a:bb:6b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "VeriSign, Inc."
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\044\244\012\037\127\066\103\246\177\012\113\007\111\366\242\053
\362\212\273\153
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\335\165\077\126\277\273\305\241\172\025\123\306\220\371\373\314
END
CKA_ISSUER MULTILINE_OCTAL
\060\141\061\021\060\017\006\003\125\004\007\023\010\111\156\164
\145\162\156\145\164\061\027\060\025\006\003\125\004\012\023\016
\126\145\162\151\123\151\147\156\054\040\111\156\143\056\061\063
\060\061\006\003\125\004\013\023\052\126\145\162\151\123\151\147
\156\040\103\157\155\155\145\162\143\151\141\154\040\123\157\146
\164\167\141\162\145\040\120\165\142\154\151\163\150\145\162\163
\040\103\101
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\307\217\067\333\222\050\337\074\273\032\255\202\372
\147\020
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft Root Authority"
Issuer: CN=Microsoft Root Authority,OU=Microsoft Corporation,OU=Copyright (c) 1997 Microsoft Corp.
Serial Number:c1:00:8b:3c:3c:88:11:d1:3e:f6:63:ec:df:40
Subject: CN=Microsoft Root Authority,OU=Microsoft Corporation,OU=Copyright (c) 1997 Microsoft Corp.
Not Valid Before: Fri Jan 10 07:00:00 1997
Not Valid After: Thu Dec 31 07:00:00 2020
Fingerprint (MD5): 2a:95:4e:ca:79:b2:87:45:73:d9:2d:90:ba:f9:9f:b6
Fingerprint (SHA1): a4:34:89:15:9a:52:0f:0d:93:d0:32:cc:af:37:e7:fe:20:a8:b4:19
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Authority"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\160\061\053\060\051\006\003\125\004\013\023\042\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\061\071\071\067\040
\115\151\143\162\157\163\157\146\164\040\103\157\162\160\056\061
\036\060\034\006\003\125\004\013\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\041\060\037\006\003\125\004\003\023\030\115\151\143\162\157\163
\157\146\164\040\122\157\157\164\040\101\165\164\150\157\162\151
\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\053\060\051\006\003\125\004\013\023\042\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\061\071\071\067\040
\115\151\143\162\157\163\157\146\164\040\103\157\162\160\056\061
\036\060\034\006\003\125\004\013\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\041\060\037\006\003\125\004\003\023\030\115\151\143\162\157\163
\157\146\164\040\122\157\157\164\040\101\165\164\150\157\162\151
\164\171
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\017\000\301\000\213\074\074\210\021\321\076\366\143\354\337
\100
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\022\060\202\002\372\240\003\002\001\002\002\017\000
\301\000\213\074\074\210\021\321\076\366\143\354\337\100\060\015
\006\011\052\206\110\206\367\015\001\001\004\005\000\060\160\061
\053\060\051\006\003\125\004\013\023\042\103\157\160\171\162\151
\147\150\164\040\050\143\051\040\061\071\071\067\040\115\151\143
\162\157\163\157\146\164\040\103\157\162\160\056\061\036\060\034
\006\003\125\004\013\023\025\115\151\143\162\157\163\157\146\164
\040\103\157\162\160\157\162\141\164\151\157\156\061\041\060\037
\006\003\125\004\003\023\030\115\151\143\162\157\163\157\146\164
\040\122\157\157\164\040\101\165\164\150\157\162\151\164\171\060
\036\027\015\071\067\060\061\061\060\060\067\060\060\060\060\132
\027\015\062\060\061\062\063\061\060\067\060\060\060\060\132\060
\160\061\053\060\051\006\003\125\004\013\023\042\103\157\160\171
\162\151\147\150\164\040\050\143\051\040\061\071\071\067\040\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\056\061\036
\060\034\006\003\125\004\013\023\025\115\151\143\162\157\163\157
\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061\041
\060\037\006\003\125\004\003\023\030\115\151\143\162\157\163\157
\146\164\040\122\157\157\164\040\101\165\164\150\157\162\151\164
\171\060\202\001\042\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\202\001\017\000\060\202\001\012\002\202\001
\001\000\251\002\275\301\160\346\073\362\116\033\050\237\227\170
\136\060\352\242\251\215\045\137\370\376\225\114\243\267\376\235
\242\040\076\174\121\242\233\242\217\140\062\153\321\102\144\171
\356\254\166\311\124\332\362\353\234\206\034\217\237\204\146\263
\305\153\172\142\043\326\035\074\336\017\001\222\350\226\304\277
\055\146\232\232\150\046\231\320\072\054\277\014\265\130\046\301
\106\347\012\076\070\226\054\251\050\071\250\354\111\203\102\343
\204\017\273\232\154\125\141\254\202\174\241\140\055\167\114\351
\231\264\144\073\232\120\034\061\010\044\024\237\251\347\221\053
\030\346\075\230\143\024\140\130\005\145\237\035\067\122\207\367
\247\357\224\002\306\033\323\277\125\105\263\211\200\277\072\354
\124\224\116\256\375\247\172\155\164\116\257\030\314\226\011\050
\041\000\127\220\140\151\067\273\113\022\007\074\126\377\133\373
\244\146\012\010\246\322\201\126\127\357\266\073\136\026\201\167
\004\332\366\276\256\200\225\376\260\315\177\326\247\032\162\134
\074\312\274\360\010\243\042\060\263\006\205\311\263\040\167\023
\205\337\002\003\001\000\001\243\201\250\060\201\245\060\201\242
\006\003\125\035\001\004\201\232\060\201\227\200\020\133\320\160
\357\151\162\236\043\121\176\024\262\115\216\377\313\241\162\060
\160\061\053\060\051\006\003\125\004\013\023\042\103\157\160\171
\162\151\147\150\164\040\050\143\051\040\061\071\071\067\040\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\056\061\036

\060\034\006\003\125\004\013\023\025\115\151\143\162\157\163\157
\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061\041
\060\037\006\003\125\004\003\023\030\115\151\143\162\157\163\157
\146\164\040\122\157\157\164\040\101\165\164\150\157\162\151\164
\171\202\017\000\301\000\213\074\074\210\021\321\076\366\143\354
\337\100\060\015\006\011\052\206\110\206\367\015\001\001\004\005
\000\003\202\001\001\000\225\350\013\300\215\363\227\030\065\355
\270\001\044\330\167\021\363\134\140\062\237\236\013\313\076\005
\221\210\217\311\072\346\041\362\360\127\223\054\265\240\107\310
\142\357\374\327\314\073\073\132\251\066\124\151\376\044\155\077
\311\314\252\336\005\174\335\061\215\075\237\020\160\152\273\376
\022\117\030\151\300\374\320\103\343\021\132\040\117\352\142\173
\257\252\031\310\053\067\045\055\276\145\241\022\212\045\017\143
\243\367\124\034\371\041\311\326\025\363\122\254\156\103\062\007
\375\202\027\370\345\147\154\015\121\366\275\361\122\307\275\347
\304\060\374\040\061\011\210\035\225\051\032\115\325\035\002\245
\361\200\340\003\264\133\364\261\335\310\127\356\145\111\307\122
\124\266\264\003\050\022\377\220\326\360\010\217\176\270\227\305
\253\067\054\344\172\344\250\167\343\166\240\000\320\152\077\301
\322\066\212\340\101\022\250\065\152\033\152\333\065\341\324\034
\004\344\250\105\004\310\132\063\070\156\115\034\015\142\267\012
\242\214\323\325\124\077\106\315\034\125\246\160\333\022\072\207
\223\165\237\247\322\240
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft Root Authority"
Issuer: CN=Microsoft Root Authority,OU=Microsoft Corporation,OU=Copyright (c) 1997 Microsoft Corp.
Serial Number:c1:00:8b:3c:3c:88:11:d1:3e:f6:63:ec:df:40
Subject: CN=Microsoft Root Authority,OU=Microsoft Corporation,OU=Copyright (c) 1997 Microsoft Corp.
Not Valid Before: Fri Jan 10 07:00:00 1997
Not Valid After:
Thu Dec 31 07:00:00 2020
Fingerprint (MD5): 2a:95:4e:ca:79:b2:87:45:73:d9:2d:90:ba:f9:9f:b6
Fingerprint (SHA1): a4:34:89:15:9a:52:0f:0d:93:d0:32:cc:af:37:e7:fe:20:a8:b4:19
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\244\064\211\025\232\122\017\015\223\320\062\314\257\067\347\376
\040\250\264\031
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\052\225\116\312\171\262\207\105\163\331\055\220\272\371\237\266
END
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\053\060\051\006\003\125\004\013\023\042\103\157\160
\171\162\151\147\150\164\040\050\143\051\040\061\071\071\067\040
\115\151\143\162\157\163\157\146\164\040\103\157\162\160\056\061
\036\060\034\006\003\125\004\013\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\041\060\037\006\003\125\004\003\023\030\115\151\143\162\157\163
\157\146\164\040\122\157\157\164\040\101\165\164\150\157\162\151
\164\171
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\017\000\301\000\213\074\074\210\021\321\076\366\143\354\337
\100
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft Root Certificate Authority"
Issuer: CN=Microsoft Root Certificate Authority,DC=microsoft,DC=com
Serial Number:79:ad:16:a1:4a:a0:a5:ad:4c:73:58:f4:07:13:2e:65
Subject: CN=Microsoft Root Certificate Authority,DC=microsoft,DC=com
Not Valid Before: Wed May 09 23:19:22 2001
Not Valid After: Sun May 09 23:28:13 2021
Fingerprint (MD5): e1:c0:7e:a0:aa:bb:d4:b7:7b:84:c2:28:11:78:08:a7
Fingerprint (SHA1): cd:d4:ee:ae:60:00:ac:7f:40:c3:80:2c:17:1e:30:14:80:30:c0:72
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL
CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\137\061\023\060\021\006\012\011\222\046\211\223\362\054\144
\001\031\026\003\143\157\155\061\031\060\027\006\012\011\222\046
\211\223\362\054\144\001\031\026\011\155\151\143\162\157\163\157
\146\164\061\055\060\053\006\003\125\004\003\023\044\115\151\143
\162\157\163\157\146\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\023\060\021\006\012\011\222\046\211\223\362\054\144
\001\031\026\003\143\157\155\061\031\060\027\006\012\011\222\046
\211\223\362\054\144\001\031\026\011\155\151\143\162\157\163\157
\146\164\061\055\060\053\006\003\125\004\003\023\044\115\151\143
\162\157\163\157\146\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\171\255\026\241\112\240\245\255\114\163\130\364\007\023
\056\145
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\231\060\202\003\201\240\003\002\001\002\002\020\171
\255\026\241\112\240\245\255\114\163\130\364\007\023\056\145\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\137
\061\023\060\021\006\012\011\222\046\211\223\362\054\144\001\031
\026\003\143\157\155\061\031\060\027\006\012\011\222\046\211\223
\362\054\144\001\031\026\011\155\151\143\162\157\163\157\146\164
\061\055\060\053\006\003\125\004\003\023\044\115\151\143\162\157
\163\157\146\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171\060
\036\027\015\060\061\060\065\060\071\062\063\061\071\062\062\132
\027\015\062\061\060\065\060\071\062\063\062\070\061\063\132\060
\137\061\023\060\021\006\012\011\222\046\211\223\362\054\144\001
\031\026\003\143\157\155\061\031\060\027\006\012\011\222\046\211
\223\362\054\144\001\031\026\011\155\151\143\162\157\163\157\146
\164\061\055\060\053\006\003\125\004\003\023\044\115\151\143\162
\157\163\157\146\164\040\122\157\157\164\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\363\135\372\200\147\324\132\247\251\014\054\220\040\320\065
\010\074\165\204\315\267\007\211\234\211\332\336\316\303\140\372
\221\150\132\236\224\161\051\030\166\174\302\340\310\045\166\224
\016\130\372\004\064\066\346\337\257\367\200\272\351\130\013\053
\223\345\235\005\343\167\042\221\367\064\144\074\042\221\035\136
\341\011\220\274\024\376\374\165\130\031\341\171\267\007\222\243
\256\210\131\010\330\237\007\312\003\130\374\150\051\155\062\327
\322\250\313\113\374\341\013\110\062\117\346\353\270\255\117\344
\134\157\023\224\231\333\225\325\165\333\250\032\267\224\221\264
\167\133\365\110\014\217\152\171\175\024\160\004\175\155\257\220
\365\332\160\330\107\267\277\233\057\154\347\005\267\341\021\140
\254\171\221\024\174\305\326\246\344\341\176\325\303\176\345\222
\322\074\000\265\066\202\336\171\341\155\363\265\156\370\237\063

\311\313\122\175\163\230\066\333\213\241\153\242\225\227\233\243
\336\302\115\046\377\006\226\147\045\006\310\347\254\344\356\022
\063\225\061\231\310\065\010\116\064\312\171\123\325\265\276\143
\062\131\100\066\300\245\116\004\115\075\333\133\007\063\344\130
\277\357\077\123\144\330\102\131\065\127\375\017\105\174\044\004
\115\236\326\070\164\021\227\042\220\316\150\104\164\222\157\325
\113\157\260\206\343\307\066\102\240\320\374\301\300\132\371\243
\141\271\060\107\161\226\012\026\260\221\300\102\225\357\020\177
\050\152\343\052\037\261\344\315\003\077\167\161\004\307\040\374
\111\017\035\105\210\244\327\313\176\210\255\216\055\354\105\333
\304\121\004\311\052\374\354\206\236\232\021\227\133\336\316\123
\210\346\342\267\375\254\225\302\050\100\333\357\004\220\337\201
\063\071\331\262\105\245\043\207\006\245\125\211\061\273\006\055
\140\016\101\030\175\037\056\265\227\313\021\353\025\325\044\245
\224\357\025\024\211\375\113\163\372\062\133\374\321\063\000\371
\131\142\160\007\062\352\056\253\100\055\173\312\335\041\147\033
\060\231\217\026\252\043\250\101\321\260\156\021\233\066\304\336
\100\164\234\341\130\145\301\140\036\172\133\070\310\217\273\004
\046\174\324\026\100\345\266\153\154\252\206\375\000\277\316\301
\065\002\003\001\000\001\243\121\060\117\060\013\006\003\125\035
\017\004\004\003\002\001\306\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\016\254\202\140\100\126\047\227\345\045\023\374\052
\341\012\123\225\131\344\244\060\020\006\011\053\006\001\004\001
\202\067\025\001\004\003\002\001\000\060\015\006\011\052\206\110
\206\367\015\001\001\005\005\000\003\202\002\001\000\305\021\115
\003\072\140\335\135\122\021\167\217\262\273\066\310\262\005\277
\264\267\250\330\040\235\134\023\003\266\034\042\372\006\023\065
\266\310\143\324\232\107\157\046\127\322\125\361\004\261\046\137
\326\251\120\150\240\274\322\270\156\314\303\351\254\337\031\315
\170\254\131\164\254\146\064\066\304\033\076\154\070\114\063\016
\060\022\015\243\046\376\121\123\000\377\257\132\116\204\015\017
\037\344\155\005\056\116\205\113\215\154\063\157\124\322\144\253
\277\120\257\175\172\071\240\067\355\143\003\017\374\023\006\316
\026\066\324\124\073\225\033\121\142\072\345\115\027\324\005\071
\222\232\047\250\133\252\275\354\273\276\343\040\211\140\161\154
\126\263\245\023\320\155\016\043\176\225\003\355\150\075\362\330
\143\270\153\115\266\350\060\265\341\312\224\113\367\242\252\135
\231\060\262\075\247\302\121\154\050\040\001\044\047\053\113\000
\267\235\021\153\160\276\262\020\202\274\014\233\150\320\215\073
\044\207\252\231\050\162\235\063\137\131\220\275\365\336\223\236
\072\142\132\064\071\342\210\125\035\271\006\260\301\211\153\055
\327\151\303\031\022\066\204\320\311\240\332\377\057\151\170\262
\345\172\332\353\327\014\300\367\275\143\027\270\071\023\070\242
\066\133\173\362\205\126\152\035\144\142\301\070\342\252\277\121
\146\242\224\365\022\234\146\042\020\153\362\267\060\222\055\362
\051\360\075\073\024\103\150\242\361\234\051\067\313\316\070\040
\045\155\174\147\363\176\044\022\044\003\010\201\107\354\245\236

\227\365\030\327\317\273\325\357\166\226\357\375\316\333\126\235
\225\240\102\371\227\130\341\327\061\042\323\137\131\346\076\156
\042\000\352\103\204\266\045\333\331\363\010\126\150\300\144\153
\035\174\354\266\223\242\142\127\156\056\330\347\130\217\304\061
\111\046\335\336\051\065\207\365\060\161\160\133\024\074\151\275
\211\022\175\353\056\243\376\330\177\236\202\132\122\012\053\301
\103\053\331\060\210\237\310\020\373\211\215\346\241\205\165\063
\176\154\236\333\163\023\144\142\151\245\057\175\312\226\155\237
\370\004\115\060\222\075\156\041\024\041\311\075\340\303\375\212
\153\235\112\375\321\241\235\231\103\167\077\260\332
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft Root Certificate Authority"
Issuer: CN=Microsoft Root Certificate Authority,DC=microsoft,DC=com
Serial Number:79:ad:16:a1:4a:a0:a5:ad:4c:73:58:f4:07:13:2e:65
Subject: CN=Microsoft Root Certificate Authority,DC=microsoft,DC=com
Not Valid Before: Wed May 09 23:19:22 2001
Not Valid After: Sun May 09 23:28:13 2021
Fingerprint (MD5): e1:c0:7e:a0:aa:bb:d4:b7:7b:84:c2:28:11:78:08:a7
Fingerprint (SHA1): cd:d4:ee:ae:60:00:ac:7f:40:c3:80:2c:17:1e:30:14:80:30:c0:72
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\315\324\356\256\140\000\254\177\100\303\200\054\027\036\060\024
\200\060\300\162
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\341\300\176\240\252\273\324\267\173\204\302\050\021\170\010\247
END
CKA_ISSUER MULTILINE_OCTAL
\060\137\061\023\060\021\006\012\011\222\046\211\223\362\054\144
\001\031\026\003\143\157\155\061\031\060\027\006\012\011\222\046
\211\223\362\054\144\001\031\026\011\155\151\143\162\157\163\157
\146\164\061\055\060\053\006\003\125\004\003\023\044\115\151\143
\162\157\163\157\146\164\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164
\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL

\002\020\171\255\026\241\112\240\245\255\114\163\130\364\007\023
\056\145
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft Root Certificate Authority 2010"
Issuer: CN=Microsoft Root
 Certificate Authority 2010,O=Microsoft Corporation,L=Redmond,ST=Washington,C=US
Serial Number:28:cc:3a:25:bf:ba:44:ac:44:9a:9b:58:6b:43:39:aa
Subject: CN=Microsoft Root Certificate Authority 2010,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Wed Jun 23 21:57:24 2010
Not Valid After: Sat Jun 23 22:04:01 2035
Fingerprint (MD5): a2:66:bb:7d:cc:38:a5:62:63:13:61:bb:f6:1d:d1:1b
Fingerprint (SHA1): 3b:1e:fd:3a:66:ea:28:b1:66:97:39:47:03:a7:2c:a3:40:a0:5b:d5
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority 2010"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\062\060\061\060
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\062\060\061\060

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\050\314\072\045\277\272\104\254\104\232\233\130\153\103
\071\252
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\005\355\060\202\003\325\240\003\002\001\002\002\020\050
\314\072\045\277\272\104\254\104\232\233\130\153\103\071\252\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\201
\210\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023
\060\021\006\003\125\004\010\023\012\127\141\163\150\151\156\147
\164\157\156\061\020\060\016\006\003\125\004\007\023\007\122\145
\144\155\157\156\144\061\036\060\034\006\003\125\004\012\023\025
\115\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162
\141\164\151\157\156\061\062\060\060\006\003\125\004\003\023\051
\115\151\143\162\157\163\157\146\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\060\060\036\027\015\061\060\060
\066\062\063\062\061\065\067\062\064\132\027\015\063\065\060\066
\062\063\062\062\060\064\060\061\132\060\201\210\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\023\060\021\006\003\125
\004\010\023\012\127\141\163\150\151\156\147\164\157\156\061\020
\060\016\006\003\125\004\007\023\007\122\145\144\155\157\156\144
\061\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157
\163\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156
\061\062\060\060\006\003\125\004\003\023\051\115\151\143\162\157
\163\157\146\164\040\122\157\157\164\040\103\145\162\164\151\146
\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171\040
\062\060\061\060\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\271\010\236\050\344\344\354\006\116\120\150
\263\101\305\173\353\256\266\216\257\201\272\042\104\037\145\064
\151\114\276\160\100\027\362\026\173\342\171\375\206\355\015\071
\364\033\250\255\222\220\036\313\075\166\217\132\331\265\221\020
\056\074\005\215\212\155\044\124\347\037\355\126\255\203\264\120
\234\025\245\027\164\210\131\040\374\010\305\204\166\323\150\324
\157\050\170\316\134\270\363\120\220\104\377\343\143\137\276\241
\232\054\226\025\004\326\007\376\036\204\041\340\102\061\021\304
\050\066\224\317\120\244\142\236\311\326\253\161\000\262\133\014
\346\226\324\012\044\226\365\377\306\325\267\033\327\313\267\041
\142\257\022\334\241\135\067\343\032\373\032\106\230\300\233\300
\347\143\037\052\010\223\002\176\036\152\216\362\237\030\211\344
\042\205\242\261\204\127\100\377\365\016\330\157\234\355\342\105
\061\001\315\027\351\177\260\201\105\343\252\041\100\046\241\162
\252\247\117\074\001\005\176\356\203\130\261\136\006\143\231\142
\221\170\202\267\015\223\014\044\152\264\033\333\047\354\137\225
\004\077\223\112\060\365\227\030\263\247\371\031\247\223\063\035

\001\310\333\042\122\134\327\045\311\106\371\242\373\207\131\103
\276\233\142\261\215\055\206\104\032\106\254\170\141\176\060\011
\372\256\211\304\101\052\042\146\003\221\071\105\234\307\213\014
\250\312\015\057\373\122\352\014\367\143\063\043\235\376\260\037
\255\147\326\247\120\003\306\004\160\143\265\054\261\206\132\103
\267\373\256\371\156\051\156\041\041\101\046\006\214\311\303\356
\260\302\205\223\241\271\205\331\346\062\154\113\114\077\326\135
\243\345\265\235\167\303\234\300\125\267\164\000\343\270\070\253
\203\227\120\341\232\102\044\035\306\300\243\060\321\032\132\310
\122\064\367\163\361\307\030\037\063\255\172\354\313\101\140\363
\043\224\040\302\110\105\254\134\121\306\056\200\302\342\167\025
\275\205\207\355\066\235\226\221\356\000\265\243\160\354\237\343
\215\200\150\203\166\272\257\135\160\122\042\026\342\146\373\272
\263\305\302\367\076\057\167\246\312\336\301\246\306\110\114\303
\067\121\043\323\047\327\270\116\160\226\360\241\104\166\257\170
\317\232\341\146\023\002\003\001\000\001\243\121\060\117\060\013
\006\003\125\035\017\004\004\003\002\001\206\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\325\366\126\313\217\350\242\134\142
\150\321\075\224\220\133\327\316\232\030\304\060\020\006\011\053
\006\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006
\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001
\000\254\245\226\214\277\273\256\246\366\327\161\207\103\061\126
\210\375\034\062\161\133\065\267\324\360\221\362\257\067\342\024
\361\363\002\046\005\076\026\024\177\024\272\270\117\373\211\262
\262\347\324\011\314\155\271\133\073\144\145\160\146\267\362\261
\132\337\032\002\363\365\121\270\147\155\171\363\277\126\173\344
\204\271\053\036\233\100\234\046\064\371\107\030\230\151\330\034
\327\266\321\277\217\141\302\147\304\265\357\140\103\216\020\033
\066\111\344\040\312\255\247\301\261\047\145\011\370\315\365\133
\052\320\204\063\363\357\037\362\365\234\013\130\223\067\240\165
\240\336\162\336\154\165\052\146\042\365\214\006\060\126\237\100
\271\060\252\100\167\025\202\327\213\354\300\323\262\275\203\305
\167\014\036\256\257\031\123\240\115\171\161\237\017\257\060\316
\147\371\326\054\314\042\101\172\007\362\227\102\030\316\131\171
\020\125\336\157\020\344\270\332\203\146\100\026\011\150\043\133
\227\056\046\232\002\273\127\214\305\270\272\151\142\062\200\211
\236\241\375\300\222\174\173\053\063\031\204\052\143\305\000\150
\142\372\237\107\215\231\172\105\072\247\351\355\356\151\102\265
\363\201\233\107\126\020\173\374\160\066\204\030\163\352\357\371
\227\115\236\063\043\335\046\013\272\052\267\077\104\334\203\047
\377\275\141\131\053\021\267\312\117\333\305\213\014\034\061\256
\062\370\370\271\102\367\177\334\141\232\166\261\132\004\341\021
\075\146\105\267\030\161\276\311\044\205\326\363\324\272\101\064
\135\022\055\045\271\215\246\023\110\155\113\260\007\175\231\223
\011\141\201\164\127\046\212\253\151\343\344\331\307\210\314\044
\330\354\122\044\134\036\274\221\024\342\226\336\353\012\332\236
\335\137\263\133\333\324\202\354\306\040\120\207\045\100\072\373

\307\356\315\376\063\345\156\303\204\011\125\003\045\071\300\351
\065\135\145\061\250\366\277\240\011\315\051\307\263\066\062\056
\334\225\363\203\301\132\317\213\215\366\352\263\041\370\244\355
\036\061\016\266\114\021\253\140\013\244\022\043\042\027\243\066
\144\202\221\004\022\340\253\157\036\313\120\005\141\264\100\377
\131\206\161\321\325\063\151\174\251\163\212\070\327\144\014\361
\151
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft Root Certificate Authority 2010"
Issuer: CN=Microsoft Root Certificate Authority 2010,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Serial Number:28:cc:3a:25:bf:ba:44:ac:44:9a:9b:58:6b:43:39:aa
Subject: CN=Microsoft Root Certificate Authority 2010,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Wed Jun 23 21:57:24 2010
Not Valid After: Sat Jun 23 22:04:01 2035
Fingerprint (MD5): a2:66:bb:7d:cc:38:a5:62:63:13:61:bb:f6:1d:d1:1b
Fingerprint (SHA1): 3b:1e:fd:3a:66:ea:28:b1:66:97:39:47:03:a7:2c:a3:40:a0:5b:d5
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Root Certificate Authority 2010"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\073\036\375\072\146\352\050\261\146\227\071\107\003\247\054\243
\100\240\133\325
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\242\146\273\175\314\070\245\142\143\023\141\273\366\035\321\033
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\210\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\062\060\060\006\003\125\004\003
\023\051\115\151\143\162\157\163\157\146\164\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164
\150\157\162\151\164\171\040\062\060\061\060
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\050\314\072\045\277\272\104\254\104\232\233\130\153\103
\071\252
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GTE CyberTrust Global Root"
Issuer: CN=GTE CyberTrust Global Root,OU=GTE CyberTrust Solutions\, Inc.,O=GTE Corporation,C=US
Serial Number: 421 (0x1a5)
Subject: CN=GTE CyberTrust Global Root,OU=GTE CyberTrust Solutions\, Inc.,O=GTE Corporation,C=US
Not Valid Before: Thu Aug 13 00:29:00 1998
Not Valid After: Mon Aug 13 23:59:00 2018
Fingerprint (MD5): ca:3d:d3:68:f1:03:5c:d0:32:fa:b8:2b:59:e8:5a:db
Fingerprint (SHA1): 97:81:79:50:d8:1c:96:70:cc:34:d8:09:cf:79:44:31:36:7e:f4:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTE CyberTrust Global Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\023\017\107\124\105\040\103\157
\162\160\157\162\141\164\151\157\156\061\047\060\045\006\003\125
\004\013\023\036\107\124\105\040\103\171\142\145\162\124\162\165
\163\164\040\123\157\154\165\164\151\157\156\163\054\040\111\156
\143\056\061\043\060\041\006\003\125\004\003\023\032\107\124\105
\040\103\171\142\145\162\124\162\165\163\164\040\107\154\157\142
\141\154\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\023\017\107\124\105\040\103\157
\162\160\157\162\141\164\151\157\156\061\047\060\045\006\003\125
\004\013\023\036\107\124\105\040\103\171\142\145\162\124\162\165
\163\164\040\123\157\154\165\164\151\157\156\163\054\040\111\156
\143\056\061\043\060\041\006\003\125\004\003\023\032\107\124\105
\040\103\171\142\145\162\124\162\165\163\164\040\107\154\157\142
\141\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\002\001\245
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\132\060\202\001\303\002\002\001\245\060\015\006\011
\052\206\110\206\367\015\001\001\004\005\000\060\165\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\030\060\026\006\003
\125\004\012\023\017\107\124\105\040\103\157\162\160\157\162\141
\164\151\157\156\061\047\060\045\006\003\125\004\013\023\036\107
\124\105\040\103\171\142\145\162\124\162\165\163\164\040\123\157
\154\165\164\151\157\156\163\054\040\111\156\143\056\061\043\060
\041\006\003\125\004\003\023\032\107\124\105\040\103\171\142\145
\162\124\162\165\163\164\040\107\154\157\142\141\154\040\122\157
\157\164\060\036\027\015\071\070\060\070\061\063\060\060\062\071
\060\060\132\027\015\061\070\060\070\061\063\062\063\065\071\060
\060\132\060\165\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\030\060\026\006\003\125\004\012\023\017\107\124\105\040
\103\157\162\160\157\162\141\164\151\157\156\061\047\060\045\006
\003\125\004\013\023\036\107\124\105\040\103\171\142\145\162\124
\162\165\163\164\040\123\157\154\165\164\151\157\156\163\054\040
\111\156\143\056\061\043\060\041\006\003\125\004\003\023\032\107
\124\105\040\103\171\142\145\162\124\162\165\163\164\040\107\154
\157\142\141\154\040\122\157\157\164\060\201\237\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\201\215\000\060
\201\211\002\201\201\000\225\017\240\266\360\120\234\350\172\307
\210\315\335\027\016\056\260\224\320\033\075\016\366\224\300\212
\224\307\006\310\220\227\310\270\144\032\172\176\154\074\123\341
\067\050\163\140\177\262\227\123\007\237\123\371\155\130\224\322
\257\215\155\210\147\200\346\355\262\225\317\162\061\312\245\034
\162\272\134\002\347\144\102\347\371\251\054\326\072\015\254\215
\102\252\044\001\071\346\234\077\001\205\127\015\130\207\105\370
\323\205\252\223\151\046\205\160\110\200\077\022\025\307\171\264
\037\005\057\073\142\231\002\003\001\000\001\060\015\006\011\052
\206\110\206\367\015\001\001\004\005\000\003\201\201\000\155\353
\033\011\351\136\331\121\333\147\042\141\244\052\074\110\167\343
\240\174\246\336\163\242\024\003\205\075\373\253\016\060\305\203
\026\063\201\023\010\236\173\064\116\337\100\310\164\327\271\175
\334\364\166\125\175\233\143\124\030\351\360\352\363\134\261\331
\213\102\036\271\300\225\116\272\372\325\342\174\365\150\141\277
\216\354\005\227\137\133\260\327\243\205\064\304\044\247\015\017
\225\223\357\313\224\330\236\037\235\134\205\155\307\252\256\117
\037\042\265\315\225\255\272\247\314\371\253\013\172\177
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

```
# Microsoft Code Signing Only Certificate
# Trust for "GTE CyberTrust Global Root"
# Issuer: CN=GTE CyberTrust Global Root,OU=GTE
 CyberTrust Solutions\, Inc.,O=GTE Corporation,C=US
# Serial Number: 421 (0x1a5)
# Subject: CN=GTE CyberTrust Global Root,OU=GTE CyberTrust Solutions\, Inc.,O=GTE Corporation,C=US
# Not Valid Before: Thu Aug 13 00:29:00 1998
# Not Valid After: Mon Aug 13 23:59:00 2018
# Fingerprint (MD5): ca:3d:d3:68:f1:03:5c:d0:32:fa:b8:2b:59:e8:5a:db
# Fingerprint (SHA1): 97:81:79:50:d8:1c:96:70:cc:34:d8:09:cf:79:44:31:36:7e:f4:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GTE CyberTrust Global Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\227\201\171\120\330\034\226\160\314\064\330\011\317\171\104\061
\066\176\364\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\312\075\323\150\361\003\134\320\062\372\270\053\131\350\132\333
END
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\023\017\107\124\105\040\103\157
\162\160\157\162\141\164\151\157\156\061\047\060\045\006\003\125
\004\013\023\036\107\124\105\040\103\171\142\145\162\124\162\165
\163\164\040\123\157\154\165\164\151\157\156\163\054\040\111\156
\143\056\061\043\060\041\006\003\125\004\003\023\032\107\124\105
\040\103\171\142\145\162\124\162\165\163\164\040\107\154\157\142
\141\154\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\002\001\245
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Thawte Server CA"
# Issuer: 1.2.840.113549.1.9.1=server-certs@thawte.com,CN=Thawte Server CA,OU=Certification Services
Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
# Serial Number: 1 (0x1)
# Subject: 1.2.840.113549.1.9.1=server-certs@thawte.com,CN=Thawte Server CA,OU=Certification Services
Division,O=Thawte
```

Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Not Valid Before: Thu Aug 01 00:00:00 1996
Not Valid After: Thu Dec 31 23:59:59 2020
Fingerprint (MD5): c5:70:c4:a2:ed:53:78:0c:c8:10:53:81:64:cb:d0:1d
Fingerprint (SHA1): 23:e5:94:94:51:95:f2:41:48:03:b4:d5:64:d2:a3:a3:f5:d8:8b:8c
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thawte Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\304\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\031\060\027\006\003\125\004\003\023\020\124
\150\141\167\164\145\040\123\145\162\166\145\162\040\103\101\061
\046\060\044\006\011\052\206\110\206\367\015\001\011\001\026\027
\163\145\162\166\145\162\055\143\145\162\164\163\100\164\150\141
\167\164\145\056\143\157\155
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\304\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\031\060\027\006\003\125\004\003\023\020\124
\150\141\167\164\145\040\123\145\162\166\145\162\040\103\101\061
\046\060\044\006\011\052\206\110\206\367\015\001\011\001\026\027
\163\145\162\166\145\162\055\143\145\162\164\163\100\164\150\141
\167\164\145\056\143\157\155
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL

\060\202\003\023\060\202\002\174\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\004\005\000\060
\201\304\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145\162
\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007\023
\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006\003
\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156\163
\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003\125
\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151\163
\151\157\156\061\031\060\027\006\003\125\004\003\023\020\124\150
\141\167\164\145\040\123\145\162\166\145\162\040\103\101\061\046
\060\044\006\011\052\206\110\206\367\015\001\011\001\026\027\163
\145\162\166\145\162\055\143\145\162\164\163\100\164\150\141\167
\164\145\056\143\157\155\060\036\027\015\071\066\060\070\060\061
\060\060\060\060\060\060\132\027\015\062\060\061\062\063\061\062
\063\065\071\065\071\132\060\201\304\061\013\060\011\006\003\125
\004\006\023\002\132\101\061\025\060\023\006\003\125\004\010\023
\014\127\145\163\164\145\162\156\040\103\141\160\145\061\022\060
\020\006\003\125\004\007\023\011\103\141\160\145\040\124\157\167
\156\061\035\060\033\006\003\125\004\012\023\024\124\150\141\167
\164\145\040\103\157\156\163\165\154\164\151\156\147\040\143\143
\061\050\060\046\006\003\125\004\013\023\037\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145
\163\040\104\151\166\151\163\151\157\156\061\031\060\027\006\003
\125\004\003\023\020\124\150\141\167\164\145\040\123\145\162\166
\145\162\040\103\101\061\046\060\044\006\011\052\206\110\206\367
\015\001\011\001\026\027\163\145\162\166\145\162\055\143\145\162
\164\163\100\164\150\141\167\164\145\056\143\157\155\060\201\237
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\201\215\000\060\201\211\002\201\201\000\323\244\120\156\310\377
\126\153\346\317\135\266\352\014\150\165\107\242\252\302\332\204
\045\374\250\364\107\121\332\205\265\040\164\224\206\036\017\165
\311\351\010\141\365\006\155\060\156\025\031\002\351\122\300\142
\333\115\231\236\342\152\014\104\070\315\376\276\343\144\011\160
\305\376\261\153\051\266\057\111\310\073\324\047\004\045\020\227
\057\347\220\155\300\050\102\231\327\114\103\336\303\365\041\155
\124\237\135\303\130\341\300\344\331\133\260\270\334\264\173\337
\066\072\302\265\146\042\022\326\207\015\002\003\001\000\001\243
\023\060\021\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\004\005\000\003\201\201\000\007\372\114\151\134\373\225\314\106
\356\205\203\115\041\060\216\312\331\250\157\111\032\346\332\121
\343\140\160\154\204\141\021\241\032\310\110\076\131\103\175\117
\225\075\241\213\267\013\142\230\172\165\212\335\210\116\116\236
\100\333\250\314\062\164\271\157\015\306\343\263\104\013\331\212
\157\232\051\233\231\030\050\073\321\343\100\050\232\132\074\325
\265\347\040\033\213\312\244\253\215\351\121\331\342\114\054\131

\251\332\271\262\165\033\366\102\362\357\307\362\030\371\211\274
\243\377\212\043\056\160\107
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Thawte Server CA"
Issuer: 1.2.840.113549.1.9.1=server-certs@thawte.com,CN=Thawte Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=server-certs@thawte.com,CN=Thawte Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Not Valid Before: Thu Aug 01 00:00:00 1996
Not Valid After: Thu Dec 31 23:59:59 2020
Fingerprint (MD5): c5:70:c4:a2:ed:53:78:0c:c8:10:53:81:64:cb:d0:1d
Fingerprint (SHA1): 23:e5:94:94:51:95:f2:41:48:03:b4:d5:64:d2:a3:a3:f5:d8:8b:8c
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thawte Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\043\345\224\224\121\225\362\101\110\003\264\325\144\322\243\243
\365\330\213\214
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\305\160\304\242\355\123\170\014\310\020\123\201\144\313\320\035
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\304\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\031\060\027\006\003\125\004\003\023\020\124
\150\141\167\164\145\040\123\145\162\166\145\162\040\103\101\061
\046\060\044\006\011\052\206\110\206\367\015\001\011\001\026\027
\163\145\162\166\145\162\055\143\145\162\164\163\100\164\150\141
\167\164\145\056\143\157\155
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Thawte Premium Server CA"
Issuer: 1.2.840.113549.1.9.1=premium-server@thawte.com,CN=Thawte Premium Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=premium-server@thawte.com,CN=Thawte Premium Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Not Valid Before: Thu Aug 01 00:00:00 1996
Not Valid After: Thu Dec 31 23:59:59 2020
Fingerprint (MD5): 06:9f:69:79:16:66:90:02:1b:8c:8c:a2:c3:07:6f:3a
Fingerprint (SHA1): 62:7f:8d:78:27:65:63:99:d2:7d:7f:90:44:c9:fe:b3:f3:3e:fa:9a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thawte Premium Server CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\041\060\037\006\003\125\004\003\023\030\124
\150\141\167\164\145\040\120\162\145\155\151\165\155\040\123\145
\162\166\145\162\040\103\101\061\050\060\046\006\011\052\206\110
\206\367\015\001\011\001\026\031\160\162\145\155\151\165\155\055
\163\145\162\166\145\162\100\164\150\141\167\164\145\056\143\157
\155
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006

\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\041\060\037\006\003\125\004\003\023\030\124
\150\141\167\164\145\040\120\162\145\155\151\165\155\040\123\145
\162\166\145\162\040\103\101\061\050\060\046\006\011\052\206\110
\206\367\015\001\011\001\026\031\160\162\145\155\151\165\155\055
\163\145\162\166\145\162\100\164\150\141\167\164\145\056\143\157
\155
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\047\060\202\002\220\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\004\005\000\060
\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101\061
\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145\162
\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007\023
\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006\003
\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156\163
\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003\125
\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151\157
\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151\163
\151\157\156\061\041\060\037\006\003\125\004\003\023\030\124\150
\141\167\164\145\040\120\162\145\155\151\165\155\040\123\145\162
\166\145\162\040\103\101\061\050\060\046\006\011\052\206\110\206
\367\015\001\011\001\026\031\160\162\145\155\151\165\155\055\163
\145\162\166\145\162\100\164\150\141\167\164\145\056\143\157\155
\060\036\027\015\071\066\060\070\060\061\060\060\060\060\060\060
\132\027\015\062\060\061\062\063\061\062\063\065\071\065\071\132
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\041\060\037\006\003\125\004\003\023\030\124
\150\141\167\164\145\040\120\162\145\155\151\165\155\040\123\145
\162\166\145\162\040\103\101\061\050\060\046\006\011\052\206\110
\206\367\015\001\011\001\026\031\160\162\145\155\151\165\155\055
\163\145\162\166\145\162\100\164\150\141\167\164\145\056\143\157
\155\060\201\237\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\201\215\000\060\201\211\002\201\201\000\322\066

\066\152\213\327\302\133\236\332\201\101\142\217\070\356\111\004
\125\326\320\357\034\033\225\026\107\357\030\110\065\072\122\364
\053\152\006\217\073\057\352\126\343\257\206\215\236\027\367\236
\264\145\165\002\115\357\313\011\242\041\121\330\233\320\147\320
\272\015\222\006\024\163\324\223\313\227\052\000\234\134\116\014
\274\372\025\122\374\362\104\156\332\021\112\156\010\237\057\055
\343\371\252\072\206\163\266\106\123\130\310\211\005\275\203\021
\270\163\077\252\007\215\364\102\115\347\100\235\034\067\002\003
\001\000\001\243\023\060\021\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\015\006\011\052\206\110\206
\367\015\001\001\004\005\000\003\201\201\000\046\110\054\026\302
\130\372\350\026\164\014\252\252\137\124\077\362\327\311\170\140
\136\136\156\067\143\042\167\066\176\262\027\304\064\271\365\010
\205\374\311\001\070\377\115\276\362\026\102\103\347\273\132\106
\373\301\306\021\037\361\112\260\050\106\311\303\304\102\175\274
\372\253\131\156\325\267\121\210\021\343\244\205\031\153\202\114
\244\014\022\255\351\244\256\077\361\303\111\145\232\214\305\310
\076\045\267\224\231\273\222\062\161\007\360\206\136\355\120\047
\246\015\246\043\371\273\313\246\007\024\102
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Thawte Premium Server CA"
Issuer: 1.2.840.113549.1.9.1=premium-server@thawte.com,CN=Thawte Premium Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Serial Number: 1 (0x1)
Subject: 1.2.840.113549.1.9.1=premium-server@thawte.com,CN=Thawte Premium Server CA,OU=Certification Services Division,O=Thawte Consulting cc,L=Cape Town,ST=Western Cape,C=ZA
Not Valid Before: Thu Aug 01 00:00:00 1996
Not Valid After: Thu Dec 31 23:59:59 2020
Fingerprint (MD5): 06:9f:69:79:16:66:90:02:1b:8c:8c:a2:c3:07:6f:3a
Fingerprint (SHA1): 62:7f:8d:78:27:65:63:99:d2:7d:7f:90:44:c9:fe:b3:f3:3e:fa:9a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Thawte Premium Server CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\142\177\215\170\047\145\143\231\322\175\177\220\104\311\376\263
\363\076\372\232
END
CKA_CERT_MD5_HASH

MULTILINE_OCTAL
\006\237\151\171\026\146\220\002\033\214\214\242\303\007\157\072
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\316\061\013\060\011\006\003\125\004\006\023\002\132\101
\061\025\060\023\006\003\125\004\010\023\014\127\145\163\164\145
\162\156\040\103\141\160\145\061\022\060\020\006\003\125\004\007
\023\011\103\141\160\145\040\124\157\167\156\061\035\060\033\006
\003\125\004\012\023\024\124\150\141\167\164\145\040\103\157\156
\163\165\154\164\151\156\147\040\143\143\061\050\060\046\006\003
\125\004\013\023\037\103\145\162\164\151\146\151\143\141\164\151
\157\156\040\123\145\162\166\151\143\145\163\040\104\151\166\151
\163\151\157\156\061\041\060\037\006\003\125\004\003\023\030\124
\150\141\167\164\145\040\120\162\145\155\151\165\155\040\123\145
\162\166\145\162\040\103\101\061\050\060\046\006\011\052\206\110
\206\367\015\001\011\001\026\031\160\162\145\155\151\165\155\055
\163\145\162\166\145\162\100\164\150\141\167\164\145\056\143\157
\155
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Equifax Secure Global eBusiness CA-1"
Issuer: CN=Equifax Secure Global eBusiness CA-1,O=Equifax Secure Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=Equifax Secure Global eBusiness CA-1,O=Equifax Secure Inc.,C=US
Not Valid Before: Mon Jun 21 04:00:00 1999
Not Valid After: Sun Jun 21 04:00:00 2020
Fingerprint (MD5): 8f:5d:77:06:27:c4:98:3c:5b:93:78:e7:d7:7d:9b:cc
Fingerprint (SHA1): 7e:78:4a:10:1c:82:65:cc:2d:e1:f1:6d:47:b4:40:ca:d9:0a:19:45
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Equifax Secure Global eBusiness CA-1"
CKA_CERTIFICATE_TYPE
CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\105\161\165\151\146\141
\170\040\123\145\143\165\162\145\040\111\156\143\056\061\055\060

\053\006\003\125\004\003\023\044\105\161\165\151\146\141\170\040
\123\145\143\165\162\145\040\107\154\157\142\141\154\040\145\102
\165\163\151\156\145\163\163\040\103\101\055\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\105\161\165\151\146\141
\170\040\123\145\143\165\162\145\040\111\156\143\056\061\055\060
\053\006\003\125\004\003\023\044\105\161\165\151\146\141\170\040
\123\145\143\165\162\145\040\107\154\157\142\141\154\040\145\102
\165\163\151\156\145\163\163\040\103\101\055\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\001
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\220\060\202\001\371\240\003\002\001\002\002\001\001
\060\015\006\011\052\206\110\206\367\015\001\001\004\005\000\060
\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061\034
\060\032\006\003\125\004\012\023\023\105\161\165\151\146\141\170
\040\123\145\143\165\162\145\040\111\156\143\056\061\055\060\053
\006\003\125\004\003\023\044\105\161\165\151\146\141\170\040\123
\145\143\165\162\145\040\107\154\157\142\141\154\040\145\102\165
\163\151\156\145\163\163\040\103\101\055\061\060\036\027\015\071
\071\060\066\062\061\060\064\060\060\060\060\132\027\015\062\060
\060\066\062\061\060\064\060\060\060\060\132\060\132\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\034\060\032\006\003
\125\004\012\023\023\105\161\165\151\146\141\170\040\123\145\143
\165\162\145\040\111\156\143\056\061\055\060\053\006\003\125\004
\003\023\044\105\161\165\151\146\141\170\040\123\145\143\165\162
\145\040\107\154\157\142\141\154\040\145\102\165\163\151\156\145
\163\163\040\103\101\055\061\060\201\237\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\201\215\000\060\201\211
\002\201\201\000\272\347\027\220\002\145\261\064\125\074\111\302
\121\325\337\247\321\067\217\321\347\201\163\101\122\140\233\235
\241\027\046\170\255\307\261\350\046\224\062\265\336\063\215\072
\057\333\362\232\172\132\163\230\243\134\351\373\212\163\033\134
\347\303\277\200\154\315\251\364\326\053\300\367\371\231\252\143
\242\261\107\002\017\324\344\121\072\022\074\154\212\132\124\204
\160\333\301\305\220\317\162\105\313\250\131\300\315\063\235\077
\243\226\353\205\063\041\034\076\036\076\140\156\166\234\147\205
\305\310\303\141\002\003\001\000\001\243\146\060\144\060\021\006
\011\140\206\110\001\206\370\102\001\001\004\004\003\002\000\007
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\037\006\003\125\035\043\004\030\060\026\200\024\276\250
\240\164\162\120\153\104\267\311\043\330\373\250\377\263\127\153
\150\154\060\035\006\003\125\035\016\004\026\004\024\276\250\240

\164\162\120\153\104\267\311\043\330\373\250\377\263\127\153\150
\154\060\015\006\011\052\206\110\206\367\015\001\001\004\005\000
\003\201\201\000\060\342\001\121\252\307\352\137\332\271\320\145
\017\060\326\076\332\015\024\111\156\221\223\047\024\061\357\304
\367\055\105\370\354\307\277\242\101\015\043\264\222\371\031\000
\147\275\001\257\315\340\161\374\132\317\144\304\340\226\230\320
\243\100\342\001\212\357\047\007\361\145\001\212\104\055\006\145
\165\122\300\206\020\040\041\137\154\153\017\154\256\011\034\257
\362\242\030\064\304\165\244\163\034\361\215\334\357\255\371\263
\166\264\222\277\334\225\020\036\276\313\310\073\132\204\140\031
\126\224\251\125
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Equifax Secure Global eBusiness CA-1"
Issuer: CN=Equifax Secure Global eBusiness CA-1,O=Equifax Secure Inc.,C=US
Serial Number: 1 (0x1)
Subject: CN=Equifax Secure Global
 eBusiness CA-1,O=Equifax Secure Inc.,C=US
Not Valid Before: Mon Jun 21 04:00:00 1999
Not Valid After: Sun Jun 21 04:00:00 2020
Fingerprint (MD5): 8f:5d:77:06:27:c4:98:3c:5b:93:78:e7:d7:7d:9b:cc
Fingerprint (SHA1): 7e:78:4a:10:1c:82:65:cc:2d:e1:f1:6d:47:b4:40:ca:d9:0a:19:45
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Equifax Secure Global eBusiness CA-1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\176\170\112\020\034\202\145\314\055\341\361\155\107\264\100\312
\331\012\031\105
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\217\135\167\006\047\304\230\074\133\223\170\347\327\175\233\314
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\034\060\032\006\003\125\004\012\023\023\105\161\165\151\146\141
\170\040\123\145\143\165\162\145\040\111\156\143\056\061\055\060
\053\006\003\125\004\003\023\044\105\161\165\151\146\141\170\040
\123\145\143\165\162\145\040\107\154\157\142\141\154\040\145\102
\165\163\151\156\145\163\163\040\103\101\055\061
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\001\001
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Equifax"
Issuer: OU=Equifax Secure Certificate Authority,O=Equifax,C=US
Serial Number:35:de:f4:cf
Subject: OU=Equifax Secure Certificate Authority,O=Equifax,C=US
Not Valid Before: Sat Aug 22 16:41:51 1998
Not Valid After: Wed Aug 22 16:41:51 2018
Fingerprint (MD5): 67:cb:9d:c0:13:24:8a:82:9b:b2:17:1e:d1:1b:ec:d4
Fingerprint (SHA1): d2:32:09:ad:23:d3:14:23:21:74:e4:0d:7f:9d:62:13:97:86:63:3a
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Equifax"
CKA_CERTIFICATE_TYPE
CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\012\023\007\105\161\165\151\146\141
\170\061\055\060\053\006\003\125\004\013\023\044\105\161\165\151
\146\141\170\040\123\145\143\165\162\145\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\012\023\007\105\161\165\151\146\141
\170\061\055\060\053\006\003\125\004\013\023\044\105\161\165\151
\146\141\170\040\123\145\143\165\162\145\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\065\336\364\317
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\040\060\202\002\211\240\003\002\001\002\002\004\065
\336\364\317\060\015\006\011\052\206\110\206\367\015\001\001\005
\005\000\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\012\023\007\105\161\165\151
\146\141\170\061\055\060\053\006\003\125\004\013\023\044\105\161

\165\151\146\141\170\040\123\145\143\165\162\145\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\060\036\027\015\071\070\060\070\062\062\061\066\064\061
\065\061\132\027\015\061\070\060\070\062\062\061\066\064\061\065
\061\132\060\116\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\020\060\016\006\003\125\004\012\023\007\105\161\165\151
\146\141\170\061\055\060\053\006\003\125\004\013\023\044\105\161
\165\151\146\141\170\040\123\145\143\165\162\145\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\060\201\237\060\015\006\011\052\206\110\206\367\015\001
\001\001\005\000\003\201\215\000\060\201\211\002\201\201\000\301
\135\261\130\147\010\142\356\240\232\055\037\010\155\221\024\150
\230\012\036\376\332\004\157\023\204\142\041\303\321\174\316\237
\005\340\270\001\360\116\064\354\342\212\225\004\144\254\361\153
\123\137\005\263\313\147\200\277\102\002\216\376\335\001\011\354
\341\000\024\117\374\373\360\014\335\103\272\133\053\341\037\200
\160\231\025\127\223\026\361\017\227\152\267\302\150\043\034\314
\115\131\060\254\121\036\073\257\053\326\356\143\105\173\305\331
\137\120\322\343\120\017\072\210\347\277\024\375\340\307\271\002
\003\001\000\001\243\202\001\011\060\202\001\005\060\160\006\003
\125\035\037\004\151\060\147\060\145\240\143\240\141\244\137\060
\135\061\013\060\011\006\003\125\004\006\023\002\125\123\061\020
\060\016\006\003\125\004\012\023\007\105\161\165\151\146\141\170
\061\055\060\053\006\003\125\004\013\023\044\105\161\165\151\146
\141\170\040\123\145\143\165\162\145\040\103\145\162\164\151\146
\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171\061
\015\060\013\006\003\125\004\003\023\004\103\122\114\061\060\032
\006\003\125\035\020\004\023\060\021\201\017\062\060\061\070\060
\070\062\062\061\066\064\061\065\061\132\060\013\006\003\125\035
\017\004\004\003\002\001\006\060\037\006\003\125\035\043\004\030
\060\026\200\024\110\346\150\371\053\322\262\225\327\107\330\043
\040\020\117\063\230\220\237\324\060\035\006\003\125\035\016\004
\026\004\024\110\346\150\371\053\322\262\225\327\107\330\043\040
\020\117\063\230\220\237\324\060\014\006\003\125\035\023\004\005
\060\003\001\001\377\060\032\006\011\052\206\110\206\366\175\007
\101\000\004\015\060\013\033\005\126\063\056\060\143\003\002\006
\300\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000
\003\201\201\000\130\316\051\352\374\367\336\265\316\002\271\027
\265\205\321\271\343\340\225\314\045\061\015\000\246\222\156\177
\266\222\143\236\120\225\321\232\157\344\021\336\143\205\156\230
\356\250\377\132\310\323\125\262\146\161\127\336\300\041\353\075
\052\247\043\111\001\004\206\102\173\374\356\177\242\026\122\265
\147\147\323\100\333\073\046\130\262\050\167\075\256\024\167\141
\326\372\052\146\047\240\015\372\247\163\134\352\160\361\224\041
\145\104\137\372\374\357\051\150\251\242\207\171\357\171\357\117
\254\007\167\070
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Equifax"
Issuer: OU=Equifax Secure Certificate Authority,O=Equifax,C=US
Serial Number:35:de:f4:cf
Subject: OU=Equifax Secure Certificate Authority,O=Equifax,C=US
Not Valid Before: Sat Aug 22 16:41:51 1998
Not Valid After: Wed Aug 22 16:41:51 2018
Fingerprint (MD5): 67:cb:9d:c0:13:24:8a:82:9b:b2:17:1e:d1:1b:ec:d4
Fingerprint (SHA1): d2:32:09:ad:23:d3:14:23:21:74:e4:0d:7f:9d:62:13:97:86:63:3a
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Equifax"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\322\062\011\255\043\323\024\043\041\164\344\015\177\235\142\023
\227\206\143\072
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\147\313\235\300\023\044\212\202\233\262\027\036\321\033\354\324
END
CKA_ISSUER MULTILINE_OCTAL
\060\116\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\020\060\016\006\003\125\004\012\023\007\105\161\165\151\146\141
\170\061\055\060\053\006\003\125\004\013\023\044\105\161\165\151
\146\141\170\040\123\145\143\165\162\145\040\103\145\162\164\151
\146\151\143\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\004\065\336\364\317
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Class 1 Primary CA"
Issuer: CN=Class 1 Primary CA,O=Certplus,C=FR
Serial Number:86:fe:1d:5f:c3:81:f8:47:d7:33:2c:73:94:75:7b:37
Subject: CN=Class 1 Primary CA,O=Certplus,C=FR
Not Valid

Before: Wed Jul 07 17:01:00 1999
Not Valid After: Mon Jul 06 23:59:59 2020
Fingerprint (MD5): 21:24:a6:81:c1:d8:f2:19:af:49:98:e3:9d:fe:0b:f4
Fingerprint (SHA1): 6a:17:45:70:a9:16:fb:e8:44:53:ee:d3:d0:70:a1:d8:da:44:28:29
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Class 1 Primary CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\023\010\103\145\162\164\160\154
\165\163\061\033\060\031\006\003\125\004\003\023\022\103\154\141
\163\163\040\061\040\120\162\151\155\141\162\171\040\103\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\023\010\103\145\162\164\160\154
\165\163\061\033\060\031\006\003\125\004\003\023\022\103\154\141
\163\163\040\061\040\120\162\151\155\141\162\171\040\103\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\021\000\206\376\035\137\303\201\370\107\327\063\054\163\224
\165\173\067
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\222\060\202\002\172\240\003\002\001\002\002\021\000
\206\376\035\137\303\201\370\107\327\063\054\163\224\165\173\067
\060\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060
\075\061\013\060\011\006\003\125\004\006\023\002\106\122\061\021
\060\017\006\003\125\004\012\023\010\103\145\162\164\160\154\165
\163\061\033\060\031\006\003\125\004\003\023\022\103\154\141\163
\163\040\061\040\120\162\151\155\141\162\171\040\103\101\060\036
\027\015\071\071\060\067\060\067\061\067\060\061\060\060\132\027
\015\062\060\060\067\060\066\062\063\065\071\065\071\132\060\075
\061\013\060\011\006\003\125\004\006\023\002\106\122\061\021\060
\017\006\003\125\004\012\023\010\103\145\162\164\160\154\165\163
\061\033\060\031\006\003\125\004\003\023\022\103\154\141\163\163
\040\061\040\120\162\151\155\141\162\171\040\103\101\060\202\001
\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000
\003\202\001\017\000\060\202\001\012\002\202\001\001\000\303\153
\051\310\056\307\256\174\122\005\351\223\211\126\012\132\171\311
\314\334\045\357\207\212\055\005\330\201\027\004\033\072\105\370
\171\016\015\111\324\201\101\310\253\105\373\165\310\025\362\342
\320\274\331\141\154\204\244\023\031\247\331\371\362\111\334\114

\017\306\175\127\264\023\334\036\011\161\051\066\235\200\130\364
\033\330\211\024\353\323\322\223\113\052\361\167\347\152\145\275
\031\345\252\375\014\112\143\341\302\231\264\017\004\266\132\033
\066\074\067\074\277\305\345\136\361\137\127\016\037\307\375\054
\347\344\157\152\233\142\226\071\021\233\146\360\054\266\122\334
\341\047\377\333\155\376\353\253\143\024\035\143\210\143\342\026
\014\371\040\124\017\233\335\025\152\166\203\117\275\047\213\123
\246\067\322\207\362\107\120\122\073\146\351\321\170\032\033\262
\073\151\360\131\074\070\133\321\052\114\063\136\016\312\126\245
\355\055\133\202\203\115\326\070\116\212\126\266\152\057\044\153
\022\060\246\052\336\257\014\273\252\104\022\034\023\305\145\017
\343\375\330\032\061\113\344\077\014\174\105\350\026\063\002\003
\001\000\001\243\201\214\060\201\211\060\017\006\003\125\035\023
\004\010\060\006\001\001\377\002\001\012\060\013\006\003\125\035
\017\004\004\003\002\001\006\060\035\006\003\125\035\016\004\026
\004\024\043\056\337\351\201\264\320\204\375\216\273\251\335\371
\014\243\343\363\111\123\060\021\006\011\140\206\110\001\206\370
\102\001\001\004\004\003\002\001\006\060\067\006\003\125\035\037
\004\060\060\056\060\054\240\052\240\050\206\046\150\164\164\160
\072\057\057\167\167\167\056\143\145\162\164\160\154\165\163\056
\143\157\155\057\103\122\114\057\143\154\141\163\163\061\056\143
\162\154\060\015\006\011\052\206\110\206\367\015\001\001\005\005
\000\003\202\001\001\000\276\046\123\326\136\237\220\077\001\224
\002\354\010\301\210\232\320\247\372\120\015\332\374\224\035\250
\324\120\043\320\237\034\213\141\261\262\252\104\017\254\330\023
\015\325\326\241\350\061\170\320\357\036\203\100\232\345\375\101
\351\222\375\356\243\225\220\363\300\270\157\176\367\064\245\241
\337\074\363\336\126\262\307\337\207\046\104\307\342\203\271\023
\157\060\105\161\051\042\025\253\304\333\077\117\363\167\371\231
\030\064\365\163\222\175\067\146\147\111\156\063\232\115\051\224
\213\275\120\071\143\145\017\020\347\173\020\152\321\107\371\236
\045\014\047\051\302\333\010\210\347\252\211\072\105\252\237\111
\262\175\352\150\212\100\376\221\301\302\111\377\041\321\147\016
\032\022\035\112\056\034\373\224\371\155\073\171\062\371\036\051
\221\012\102\226\105\361\357\312\130\017\162\235\014\251\203\274
\062\335\230\004\321\131\341\144\027\275\314\201\243\003\136\226
\140\345\177\026\070\012\153\321\372\263\204\235\052\312\076\373
\102\370\117\350\247\133\050\031\030\255\340\246\146\036\260\051
\041\362\270\231\217\377
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL
 CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Class 1 Primary CA"

```
# Issuer: CN=Class 1 Primary CA,O=Certplus,C=FR
# Serial Number:86:fe:1d:5f:c3:81:f8:47:d7:33:2c:73:94:75:7b:37
# Subject: CN=Class 1 Primary CA,O=Certplus,C=FR
# Not Valid Before: Wed Jul 07 17:01:00 1999
# Not Valid After: Mon Jul 06 23:59:59 2020
# Fingerprint (MD5): 21:24:a6:81:c1:d8:f2:19:af:49:98:e3:9d:fe:0b:f4
# Fingerprint (SHA1): 6a:17:45:70:a9:16:fb:e8:44:53:ee:d3:d0:70:a1:d8:da:44:28:29
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Class 1 Primary CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\152\027\105\160\251\026\373\350\104\123\356\323\320\160\241\330
\332\104\050\051
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\041\044\246\201\301\330\362\031\257\111\230\343\235\376\013\364
END
CKA_ISSUER MULTILINE_OCTAL
\060\075\061\013\060\011\006\003\125\004\006\023\002\106\122\061
\021\060\017\006\003\125\004\012\023\010\103\145\162\164\160\154
\165\163\061\033\060\031\006\003\125\004\003\023\022\103\154\141
\163\163\040\061\040\120\162\151\155\141\162\171\040\103\101
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\206\376\035\137\303\201\370\107\327\063\054\163\224
\165\173\067
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "UTN-USERFirst-Object"
# Issuer: CN=UTN-USERFirst-Object,OU=http://www.usertrust.com,O=The USERTRUST Network,L=Salt Lake
City,ST=UT,C=US
# Serial Number:44:be:0c:8b:50:00:24:b4:11:d3:36:2d:e0:b3:5f:1b
# Subject: CN=UTN-USERFirst-Object,OU=http://www.usertrust.com,O=The USERTRUST Network,L=Salt Lake
City,ST=UT,C=US
# Not Valid Before: Fri Jul 09 18:31:20 1999
# Not Valid After: Tue Jul 09 18:40:36
 2019
# Fingerprint (MD5): a7:f2:e4:16:06:41:11:50:30:6b:9c:e3:b4:9c:b0:c9
# Fingerprint (SHA1): e1:2d:fb:4b:41:d7:d9:c3:2b:30:51:4b:ac:1d:81:d8:38:5e:2d:46
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
```

CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UTN-USERFirst-Object"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\125\124\061\027\060
\025\006\003\125\004\007\023\016\123\141\154\164\040\114\141\153
\145\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116
\145\164\167\157\162\153\061\041\060\037\006\003\125\004\013\023
\030\150\164\164\160\072\057\057\167\167\167\056\165\163\145\162
\164\162\165\163\164\056\143\157\155\061\035\060\033\006\003\125
\004\003\023\024\125\124\116\055\125\123\105\122\106\151\162\163
\164\055\117\142\152\145\143\164
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\125\124\061\027\060
\025\006\003\125\004\007\023\016\123\141\154\164\040\114\141\153
\145\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116
\145\164\167\157\162\153\061\041\060\037\006\003\125\004\013\023
\030\150\164\164\160\072\057\057\167\167\167\056\165\163\145\162
\164\162\165\163\164\056\143\157\155\061\035\060\033\006\003\125
\004\003\023\024\125\124\116\055\125\123\105\122\106\151\162\163
\164\055\117\142\152\145\143\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\104\276\014\213\120\000\044\264\021\323\066\055\340\263
\137\033
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\146\060\202\003\116\240\003\002\001\002\002\020\104
\276\014\213\120\000\044\264\021\323\066\055\340\263\137\033\060
\015\006\011\052\206\110\206\367\015\001\001\005\005\000\060\201
\225\061\013\060\011\006\003\125\004\006\023\002\125\123\061\013
\060\011\006\003\125\004\010\023\002\125\124\061\027\060\025\006
\003\125\004\007\023\016\123\141\154\164\040\114\141\153\145\040
\103\151\164\171\061\036\060\034\006\003\125\004\012\023\025\124
\150\145\040\125\123\105\122\124\122\125\123\124\040\116\145\164
\167\157\162\153\061\041\060\037\006\003\125\004\013\023\030\150
\164\164\160\072\057\057\167\167\167\056\165\163\145\162\164\162
\165\163\164\056\143\157\155\061\035\060\033\006\003\125\004\003
\023\024\125\124\116\055\125\123\105\122\106\151\162\163\164\055

\117\142\152\145\143\164\060\036\027\015\071\071\060\067\060\071
\061\070\063\061\062\060\132\027\015\061\071\060\067\060\071\061
\070\064\060\063\066\132\060\201\225\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\013\060\011\006\003\125\004\010\023
\002\125\124\061\027\060\025\006\003\125\004\007\023\016\123\141
\154\164\040\114\141\153\145\040\103\151\164\171\061\036\060\034
\006\003\125\004\012\023\025\124\150\145\040\125\123\105\122\124
\122\125\123\124\040\116\145\164\167\157\162\153\061\041\060\037
\006\003\125\004\013\023\030\150\164\164\160\072\057\057\167\167
\167\056\165\163\145\162\164\162\165\163\164\056\143\157\155\061
\035\060\033\006\003\125\004\003\023\024\125\124\116\055\125\123
\105\122\106\151\162\163\164\055\117\142\152\145\143\164\060\202
\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000\316
\252\201\077\243\243\141\170\252\061\000\125\225\021\236\047\017
\037\034\337\072\233\202\150\060\300\112\141\035\361\057\016\372
\276\171\367\245\043\357\125\121\226\204\315\333\343\271\156\076
\061\330\012\040\147\307\364\331\277\224\353\107\004\076\002\316
\052\242\135\207\004\011\366\060\235\030\212\227\262\252\034\374
\101\322\241\066\313\373\075\221\272\347\331\160\065\372\344\347
\220\303\233\243\233\323\074\365\022\231\167\261\267\011\340\150
\346\034\270\363\224\143\210\152\152\376\013\166\311\276\364\042
\344\147\271\253\032\136\167\301\205\007\335\015\154\277\356\006
\307\167\152\101\236\247\017\327\373\356\224\027\267\374\205\276
\244\253\304\034\061\335\327\266\321\344\360\357\337\026\217\262
\122\223\327\241\324\211\241\007\056\277\341\001\022\102\036\032
\341\330\225\064\333\144\171\050\377\272\056\021\302\345\350\133
\222\110\373\107\013\302\154\332\255\062\203\101\363\245\345\101
\160\375\145\220\155\372\372\121\304\371\275\226\053\031\004\054
\323\155\247\334\360\177\157\203\145\342\152\253\207\206\165\002
\003\001\000\001\243\201\257\060\201\254\060\013\006\003\125\035
\017\004\004\003\002\001\306\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\332\355\144\164\024\234\024\074\253\335\231\251\275
\133\050\115\213\074\311\330\060\102\006\003\125\035\037\004\073
\060\071\060\067\240\065\240\063\206\061\150\164\164\160\072\057
\057\143\162\154\056\165\163\145\162\164\162\165\163\164\056\143
\157\155\057\125\124\116\055\125\123\105\122\106\151\162\163\164
\055\117\142\152\145\143\164\056\143\162\154\060\051\006\003\125
\035\045\004\042\060\040\006\010\053\006\001\005\005\007\003\003
\006\010\053\006\001\005\005\007\003\010\006\012\053\006\001\004
\001\202\067\012\003\004\060\015\006\011\052\206\110\206\367\015
\001\001\005\005\000\003\202\001\001\000\010\037\122\261\067\104
\170\333\375\316\271\332\225\226\230\252\125\144\200\265\132\100
\335\041\245\305\301\363\137\054\114\310\107\132\151\352\350\360
\065\065\364\320\045\363\310\246\244\207\112\275\033\261\163\010
\275\324\303\312\266\065\273\131\206\167\061\315\247\200\024\256
\023\357\374\261\110\371\153\045\045\055\121\266\054\155\105\301

\230\310\212\126\135\076\356\103\116\076\153\047\216\320\072\113
\205\013\137\323\355\152\247\165\313\321\132\207\057\071\165\023
\132\162\260\002\201\237\276\360\017\204\124\040\142\154\151\324
\341\115\306\015\231\103\001\015\022\226\214\170\235\277\120\242
\261\104\252\152\317\027\172\317\157\017\324\370\044\125\137\360
\064\026\111\146\076\120\106\311\143\161\070\061\142\270\142\271
\363\123\255\154\265\053\242\022\252\031\117\011\332\136\347\223
\306\216\024\010\376\360\060\200\030\240\206\205\115\310\175\327
\213\003\376\156\325\367\235\026\254\222\054\240\043\345\234\221
\122\037\224\337\027\224\163\303\263\301\301\161\005\040\000\170
\275\023\122\035\250\076\315\000\037\310
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "UTN-USERFirst-Object"
Issuer: CN=UTN-USERFirst-Object,OU=http://www.usertrust.com,O=The USERTRUST Network,L=Salt Lake City,ST=UT,C=US
Serial Number:44:be:0c:8b:50:00:24:b4:11:d3:36:2d:e0:b3:5f:1b
Subject: CN=UTN-USERFirst-Object,OU=http://www.usertrust.com,O=The USERTRUST Network,L=Salt Lake City,ST=UT,C=US
Not Valid Before: Fri Jul 09 18:31:20 1999
Not Valid After:
Tue Jul 09 18:40:36 2019
Fingerprint (MD5): a7:f2:e4:16:06:41:11:50:30:6b:9c:e3:b4:9c:b0:c9
Fingerprint (SHA1): e1:2d:fb:4b:41:d7:d9:c3:2b:30:51:4b:ac:1d:81:d8:38:5e:2d:46
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "UTN-USERFirst-Object"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\341\055\373\113\101\327\331\303\053\060\121\113\254\035\201\330
\070\136\055\106
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\247\362\344\026\006\101\021\120\060\153\234\343\264\234\260\311
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\225\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\125\124\061\027\060
\025\006\003\125\004\007\023\016\123\141\154\164\040\114\141\153
\145\040\103\151\164\171\061\036\060\034\006\003\125\004\012\023
\025\124\150\145\040\125\123\105\122\124\122\125\123\124\040\116
\145\164\167\157\162\153\061\041\060\037\006\003\125\004\013\023

\030\150\164\164\160\072\057\057\167\167\167\056\165\163\145\162
\164\162\165\163\164\056\143\157\155\061\035\060\033\006\003\125
\004\003\023\024\125\124\116\055\125\123\105\122\106\151\162\163
\164\055\117\142\152\145\143\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\104\276\014\213\120\000\044\264\021\323\066\055\340\263
\137\033
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "BYTE Root Certification Authority 001"
Issuer: CN=BYTE Root Certification Authority 001,O=BYTE Computer S.A.,C=GR
Serial Number:71:8c:2f:39:7c:40:74:40
Subject: CN=BYTE Root Certification Authority 001,O=BYTE Computer S.A.,C=GR
Not Valid Before: Wed Sep 10 22:01:54 2014
Not Valid After: Sat Sep 10 22:01:54 2039
Fingerprint (MD5): fa:fb:82:6a:e5:b3:a2:83:50:9b:83:28:b6:41:42:03
#
Fingerprint (SHA1): 3f:0f:eb:17:a7:ef:58:04:cf:d9:0a:77:b7:bb:02:1e:a6:9c:64:18
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "BYTE Root Certification Authority 001"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\033\060\031\006\003\125\004\012\014\022\102\131\124\105\040\103
\157\155\160\165\164\145\162\040\123\056\101\056\061\056\060\054
\006\003\125\004\003\014\045\102\131\124\105\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\060\060\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\033\060\031\006\003\125\004\012\014\022\102\131\124\105\040\103
\157\155\160\165\164\145\162\040\123\056\101\056\061\056\060\054
\006\003\125\004\003\014\045\102\131\124\105\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\060\060\061
END

CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\161\214\057\071\174\100\164\100
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\231\060\202\003\201\240\003\002\001\002\002\010\161
\214\057\071\174\100\164\100\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\132\061\013\060\011\006\003\125\004
\006\023\002\107\122\061\033\060\031\006\003\125\004\012\014\022
\102\131\124\105\040\103\157\155\160\165\164\145\162\040\123\056
\101\056\061\056\060\054\006\003\125\004\003\014\045\102\131\124
\105\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040\060
\060\061\060\036\027\015\061\064\060\071\061\060\062\062\060\061
\065\064\132\027\015\063\071\060\071\061\060\062\062\060\061\065
\064\132\060\132\061\013\060\011\006\003\125\004\006\023\002\107
\122\061\033\060\031\006\003\125\004\012\014\022\102\131\124\105
\040\103\157\155\160\165\164\145\162\040\123\056\101\056\061\056
\060\054\006\003\125\004\003\014\045\102\131\124\105\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\101\165\164\150\157\162\151\164\171\040\060\060\061\060\202
\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001\005
\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000\355
\022\056\027\163\236\157\364\363\231\350\236\010\127\011\064\044
\021\100\037\214\041\176\033\257\070\303\321\307\346\024\345\372
\033\272\136\146\365\045\151\367\355\315\156\202\160\257\272\102
\360\261\031\134\053\374\105\204\030\054\172\027\117\141\205\106
\031\174\316\301\215\237\124\236\167\045\146\017\340\366\370\222
\312\051\316\047\127\025\052\154\202\070\155\047\346\276\115\163
\016\163\257\343\161\075\274\011\102\017\325\015\241\355\175\153
\256\367\301\360\154\315\302\227\241\130\375\065\025\226\027\114
\237\277\365\361\071\113\160\267\347\112\154\034\077\301\160\133
\317\326\213\353\357\157\060\350\137\310\106\167\041\142\026\136
\306\124\105\071\365\164\272\147\044\150\245\161\133\076\301\373
\011\223\353\042\231\370\322\365\173\002\154\217\130\342\253\357
\335\164\041\344\044\151\224\100\326\301\004\030\016\330\102\360
\375\327\212\005\300\137\033\212\353\056\300\015\007\006\163\001
\205\216\037\301\300\212\241\130\246\121\271\130\221\102\017\156
\341\274\012\350\273\050\203\025\165\345\015\376\111\060\051\051
\102\302\302\066\377\244\074\175\056\367\332\362\242\057\026\274
\141\250\231\130\030\244\111\306\152\007\022\353\033\174\264\316
\347\373\041\200\053\160\246\310\316\255\125\036\037\035\204\320
\375\124\152\114\126\143\310\335\176\240\371\071\333\357\174\132
\367\214\065\245\156\052\126\372\376\343\137\223\124\162\016\150
\343\111\053\223\115\065\042\227\024\225\146\117\247\167\072\056
\045\114\366\011\213\022\033\161\305\162\247\233\271\274\353\034
\240\245\311\124\203\141\334\127\125\255\265\346\332\170\053\166
\247\376\370\333\376\214\063\244\212\243\106\134\255\262\012\022

\016\212\344\120\236\360\270\313\231\123\114\144\041\153\212\070
\052\340\210\206\000\324\027\254\146\262\347\276\055\073\051\345
\370\247\224\333\214\130\370\322\113\060\237\362\304\142\145\120
\107\162\200\317\244\160\100\266\275\104\376\331\277\050\053\056
\067\307\263\121\016\202\051\265\261\157\255\176\054\223\300\251
\177\221\372\307\037\065\360\273\227\311\117\141\050\220\204\101
\350\175\041\100\305\311\206\074\355\232\255\205\234\242\123\002
\003\001\000\001\243\143\060\141\060\035\006\003\125\035\016\004
\026\004\024\264\115\146\267\323\263\310\231\174\001\062\320\221
\072\367\326\250\022\061\336\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043\004
\030\060\026\200\024\264\115\146\267\323\263\310\231\174\001\062
\320\221\072\367\326\250\022\061\336\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\015\006\011\052\206\110
\206\367\015\001\001\013\005\000\003\202\002\001\000\034\032\353
\006\256\125\275\073\077\066\054\141\236\352\307\123\374\160\252
\062\157\344\102\252\353\275\205\354\033\212\132\362\225\226\051
\241\004\006\222\316\044\127\377\100\043\170\116\311\370\060\115
\102\125\104\116\067\242\175\153\216\150\376\016\376\177\337\260
\237\143\121\363\341\305\245\224\237\212\043\050\110\363\101\213
\322\376\170\355\331\320\010\017\155\175\325\235\225\254\325\376
\022\146\032\344\276\165\124\363\321\115\234\116\023\324\236\160
\064\155\250\272\012\063\210\215\255\005\067\376\113\171\177\175
\003\101\171\023\015\237\075\367\070\234\065\132\104\117\076\074
\242\345\201\305\177\137\166\117\033\073\156\157\232\155\267\355
\017\313\062\037\210\264\105\014\234\021\322\370\004\132\023\067
\131\230\201\316\114\364\345\224\050\004\304\265\123\311\124\215
\160\077\150\001\333\314\023\012\344\045\243\154\231\355\020\263
\172\040\251\111\274\005\364\370\033\150\326\272\040\035\202\147
\146\340\260\237\134\312\065\322\105\256\325\210\031\333\172\006
\233\214\240\067\207\121\043\276\105\332\134\263\177\153\317\306
\250\034\063\212\173\035\221\372\236\274\354\175\073\105\025\117
\033\247\073\065\264\171\363\133\202\120\340\234\247\355\026\165
\333\143\200\142\241\332\030\002\152\200\336\202\252\104\115\104
\070\050\252\156\372\030\143\071\140\367\103\051\111\132\272\044
\300\277\263\012\227\035\147\111\132\042\262\147\004\234\130\251
\370\014\064\134\100\226\264\207\265\105\141\031\345\216\357\006
\336\221\025\300\270\212\312\224\311\012\165\175\161\073\130\201
\063\310\367\007\101\125\230\051\103\265\313\232\103\351\162\372
\317\360\213\061\274\347\357\271\152\343\101\235\041\076\015\025
\250\205\275\033\116\207\216\107\262\020\376\067\030\152\204\345
\211\034\024\143\350\271\203\251\265\273\350\143\232\172\031\214
\313\164\367\370\027\010\361\213\031\330\264\354\036\156\111\163
\077\134\040\335\065\052\226\167\351\106\157\026\073\313\251\357
\233\012\041\021\310\303\244\311\043\105\155\077\142\225\235\323
\050\307\235\017\263\376\067\215\035\110\262\120\346\045\271\116
\063\141\066\326\026\034\312\062\067\040\166\034\054
END

CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "BYTE Root Certification Authority 001"
Issuer: CN=BYTE Root Certification Authority 001,O=BYTE Computer S.A.,C=GR
Serial Number:71:8c:2f:39:7c:40:74:40
Subject: CN=BYTE Root Certification Authority 001,O=BYTE Computer S.A.,C=GR
Not Valid Before: Wed Sep 10 22:01:54 2014
Not Valid After: Sat Sep 10 22:01:54 2039
Fingerprint (MD5): fa:fb:82:6a:e5:b3:a2:83:50:9b:83:28:b6:41:42:03
Fingerprint (SHA1): 3f:0f:eb:17:a7:ef:58:04:cf:d9:0a:77:b7:bb:02:1e:a6:9c:64:18
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "BYTE Root Certification Authority 001"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\077\017\353\027\247\357\130\004\317\331\012\167\267\273\002\036
\246\234\144\030
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\372\373\202\152\345\263\242\203\120\233\203\050\266\101\102\003
END
CKA_ISSUER MULTILINE_OCTAL
\060\132\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\033\060\031\006\003\125\004\012\014\022\102\131\124\105\040\103
\157\155\160\165\164\145\162\040\123\056\101\056\061\056\060\054
\006\003\125\004\003\014\045\102\131\124\105\040\122\157\157\164
\040\103\145\162\164\151\146\151\143\141\164\151\157\156\040\101
\165\164\150\157\162\151\164\171\040\060\060\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\161\214\057\071\174\100\164\100
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CISRCA1"
Issuer: CN=CISRCA1,OU=Certification Authorities,O=Carillon
Information Security Inc.,C=CA
Serial Number:0b:82:dc:94:33:76

```
# Subject: CN=CISRCA1,OU=Certification Authorities,O=Carillon Information Security Inc.,C=CA
# Not Valid Before: Tue Oct 16 18:28:33 2012
# Not Valid After: Sat Oct 16 18:28:33 2032
# Fingerprint (MD5): 21:48:4b:8f:d5:50:78:27:86:80:c9:86:93:ad:b1:38
# Fingerprint (SHA1): a6:9e:03:36:c4:e5:90:23:ff:65:3c:71:f9:28:eb:73:f2:1c:00:f0
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CISRCA1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\101\061
\053\060\051\006\003\125\004\012\023\042\103\141\162\151\154\154
\157\156\040\111\156\146\157\162\155\141\164\151\157\156\040\123
\145\143\165\162\151\164\171\040\111\156\143\056\061\042\060\040
\006\003\125\004\013\023\031\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\151\145\163
\061\020\060\016\006\003\125\004\003\023\007\103\111\123\122\103
\101\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\101\061
\053\060\051\006\003\125\004\012\023\042\103\141\162\151\154\154
\157\156\040\111\156\146\157\162\155\141\164\151\157\156\040\123
\145\143\165\162\151\164\171\040\111\156\143\056\061\042\060\040
\006\003\125\004\013\023\031\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\151\145\163
\061\020\060\016\006\003\125\004\003\023\007\103\111\123\122\103
\101\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\006\013\202\334\224\063\166
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\242\060\202\003\212\240\003\002\001\002\002\006\013
\202\334\224\063\166\060\015\006\011\052\206\110\206\367\015\001
\001\013\005\000\060\160\061\013\060\011\006\003\125\004\006\023
\002\103\101\061\053\060\051\006\003\125\004\012\023\042\103\141
\162\151\154\154\157\156\040\111\156\146\157\162\155\141\164\151
\157\156\040\123\145\143\165\162\151\164\171\040\111\156\143\056
\061\042\060\040\006\003\125\004\013\023\031\103\145\162\164\151
\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162\151
\164\151\145\163\061\020\060\016\006\003\125\004\003\023\007\103
\111\123\122\103\101\061\060\036\027\015\061\062\061\060\061\066
\061\070\062\070\063\063\132\027\015\063\062\061\060\061\066\061
```

\070\062\070\063\063\132\060\160\061\013\060\011\006\003\125\004
\006\023\002\103\101\061\053\060\051\006\003\125\004\012\023\042
\103\141\162\151\154\154\157\156\040\111\156\146\157\162\155\141
\164\151\157\156\040\123\145\143\165\162\151\164\171\040\111\156
\143\056\061\042\060\040\006\003\125\004\013\023\031\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\151\145\163\061\020\060\016\006\003\125\004\003\023
\007\103\111\123\122\103\101\061\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\304\166\361\142\152\137\315
\051\315\004\066\177\156\141\176\163\364\235\146\337\042\132\232
\203\104\201\146\375\116\021\260\076\254\350\210\262\123\071\377
\343\272\276\324\377\323\205\330\275\133\257\150\117\063\254\270
\024\175\022\133\172\225\153\307\066\376\053\217\364\210\140\211
\072\252\131\070\114\301\135\125\201\245\337\330\037\061\172\323
\243\116\360\121\313\303\061\207\256\013\336\312\136\033\241\164
\070\360\222\167\161\074\313\023\176\240\301\012\230\275\330\270
\370\124\064\230\116\147\026\232\127\113\046\206\137\033\146\162
\252\301\362\150\202\235\130\101\174\161\042\342\317\001\061\376
\342\340\126\251\150\340\255\063\257\065\071\056\234\156\006\114
\363\043\166\057\151\046\350\005\071\151\267\365\110\032\367\337
\331\071\067\062\125\021\047\004\201\037\235\074\213\214\203\122
\167\301\256\054\315\053\052\112\345\055\361\031\151\272\207\136
\213\235\340\161\310\164\322\315\356\156\070\067\152\135\031\000
\322\166\335\242\353\156\073\252\035\365\066\006\117\137\136\154
\302\020\363\335\157\265\332\171\132\376\325\106\104\064\110\257
\206\000\064\174\044\204\335\105\220\371\026\202\254\250\221\324
\351\106\063\157\176\272\107\037\341\357\257\345\120\326\306\371
\247\355\154\227\252\053\051\116\135\305\370\036\366\164\311\253
\044\370\015\123\307\150\025\276\374\134\253\075\162\013\322\160
\004\267\026\343\151\251\361\147\272\306\000\114\173\200\064\065
\056\136\355\037\240\045\367\245\202\152\020\177\277\217\131\157
\303\106\246\312\102\116\102\043\205\006\071\065\214\265\361\327
\301\043\102\105\375\057\045\161\370\363\007\323\007\150\276\333
\230\154\052\366\245\107\367\260\145\140\255\256\174\346\021\035
\047\124\010\145\260\330\202\300\141\153\351\176\217\042\326\161
\035\153\101\040\145\330\127\232\037\174\016\132\124\340\224\260
\155\165\357\050\062\065\074\125\303\155\147\370\044\275\373\100
\363\132\235\066\331\065\114\273\342\153\331\261\066\017\344\157
\040\032\305\157\172\303\221\071\257\257\314\363\366\275\040\206
\272\323\044\041\074\037\067\051\346\237\374\032\277\230\337\074
\272\040\041\022\251\302\072\052\223\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\352\225\025
\332\134\071\000\342\232\333\304\272\055\147\372\241\367\165\064
\355\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\306\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\002\001\000\065\320\330\270\236\362\011\370\360\237

\262\156\110\262\327\352\241\233\050\211\071\315\376\026\152\035
\351\234\202\137\121\107\072\365\236\321\274\256\037\237\342\134
\112\310\354\355\106\102\361\174\103\007\025\337\156\227\366\355
\206\374\237\305\010\136\202\016\243\056\250\012\056\274\216\033
\061\022\050\366\171\050\301\042\266\321\225\151\100\350\131\011
\047\242\221\144\166\352\320\023\215\160\374\145\303\157\021\237
\052\110\312\247\142\365\203\024\345\032\026\307\221\213\264\011
\305\316\173\343\344\035\155\227\242\351\313\046\036\153\264\334
\076\203\166\057\136\115\250\150\211\124\375\116\322\106\250\100
\366\330\312\170\317\066\032\075\131\145\214\233\365\053\037\114
\202\337\170\170\115\046\112\107\151\255\157\063\037\003\036\042
\116\331\006\131\236\106\374\120\065\137\306\205\033\344\033\370
\000\311\340\323\072\253\046\103\315\107\372\132\370\205\013\307
\062\332\265\015\055\060\051\072\171\263\024\351\245\017\160\045
\321\215\011\120\224\355\115\222\236\060\067\100\333\132\170\111
\217\017\071\057\275\056\327\253\010\224\311\051\212\367\335\214
\275\202\174\060\133\142\350\065\106\126\070\135\221\366\016\157
\214\356\225\237\375\164\235\355\355\020\253\316\213\217\267\255
\177\115\151\111\360\307\021\125\233\232\202\367\242\372\063\362
\104\021\372\025\113\106\251\233\153\227\102\326\264\267\011\021
\024\171\123\246\347\177\055\047\072\012\064\044\104\316\125\214
\172\200\165\163\002\113\342\372\106\224\175\063\024\015\102\126
\271\240\346\057\205\110\221\237\104\272\241\050\251\261\037\211
\172\046\012\123\134\205\271\174\204\230\214\050\140\245\266\172
\215\075\240\000\075\334\177\252\110\351\250\056\254\137\336\207
\055\134\244\153\026\352\275\350\225\265\316\170\011\370\161\066
\345\220\150\322\007\226\272\274\000\213\016\230\155\115\160\123
\300\303\314\033\023\234\110\232\231\075\022\300\047\216\141\222
\114\150\122\157\215\003\034\211\365\323\206\300\377\161\111\117
\040\153\375\321\157\221\044\365\361\107\043\115\131\337\320\275
\111\102\375\100\070\076\342\361\005\134\045\350\020\344\132\002
\003\343\273\174\045\052
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CISRCA1"
Issuer: CN=CISRCA1,OU=Certification Authorities,O=Carillon Information Security Inc.,C=CA
Serial Number:0b:82:dc:94:33:76
Subject: CN=CISRCA1,OU=Certification Authorities,O=Carillon Information
Security Inc.,C=CA
Not Valid Before: Tue Oct 16 18:28:33 2012
Not Valid After: Sat Oct 16 18:28:33 2032
Fingerprint (MD5): 21:48:4b:8f:d5:50:78:27:86:80:c9:86:93:ad:b1:38
Fingerprint (SHA1): a6:9e:03:36:c4:e5:90:23:ff:65:3c:71:f9:28:eb:73:f2:1c:00:f0

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CISRCA1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\246\236\003\066\304\345\220\043\377\145\074\161\371\050\353\163
\362\034\000\360
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\041\110\113\217\325\120\170\047\206\200\311\206\223\255\261\070
END
CKA_ISSUER MULTILINE_OCTAL
\060\160\061\013\060\011\006\003\125\004\006\023\002\103\101\061
\053\060\051\006\003\125\004\012\023\042\103\141\162\151\154\154
\157\156\040\111\156\146\157\162\155\141\164\151\157\156\040\123
\145\143\165\162\151\164\171\040\111\156\143\056\061\042\060\040
\006\003\125\004\013\023\031\103\145\162\164\151\146\151\143\141
\164\151\157\156\040\101\165\164\150\157\162\151\164\151\145\163
\061\020\060\016\006\003\125\004\003\023\007\103\111\123\122\103
\101\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\006\013\202\334\224\063\166
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ePKI Root Certification Authority - G2"
Issuer: CN=ePKI Root Certification Authority - G2,O=Chunghwa Telecom Co.\, Ltd.,C=TW
Serial Number:d6:96:2e:c1:0a:15:93:12:af:8f:63:bc:d4:44:c9:5b
Subject: CN=ePKI Root Certification Authority - G2,O=Chunghwa Telecom Co.\, Ltd.,C=TW
Not Valid Before: Tue Nov 17 08:23:42 2015
Not Valid After: Thu Dec 31 15:59:59 2037
Fingerprint (MD5): 7d:f0:01:73:ed:fc:31:9d:16:86:7b:35:c7:26:dd:72
Fingerprint (SHA1): d9:9b:10:42:98:59:47:63:f0:b9:a9:27:b7:92:69:cb:47:dd:15:8b
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\143\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\057\060\055\006\003\125\004\003\014\046\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\124\127\061
\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\057\060\055\006\003\125\004\003\014\046\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\326\226\056\301\012\025\223\022\257\217\143\274\324
\104\311\133
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\223\060\202\003\173\240\003\002\001\002\002\021\000
\326\226\056\301\012\025\223\022\257\217\143\274\324\104\311\133
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\143\061\013\060\011\006\003\125\004\006\023\002\124\127\061\043
\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150\167
\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040\114
\164\144\056\061\057\060\055\006\003\125\004\003\014\046\145\120
\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171\040
\055\040\107\062\060\036\027\015\061\065\061\061\061\067\060\070
\062\063\064\062\132\027\015\063\067\061\062\063\061\061\065\065
\071\065\071\132\060\143\061\013\060\011\006\003\125\004\006\023
\002\124\127\061\043\060\041\006\003\125\004\012\014\032\103\150
\165\156\147\150\167\141\040\124\145\154\145\143\157\155\040\103
\157\056\054\040\114\164\144\056\061\057\060\055\006\003\125\004
\003\014\046\145\120\113\111\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\055\040\107\062\060\202\002\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017
\000\060\202\002\012\002\202\002\001\000\244\131\037\240\057\337
\276\340\373\351\334\265\211\376\132\227\003\311\072\167\247\216
\134\257\362\343\030\071\365\252\335\017\106\322\150\017\127\234
\247\143\140\323\130\316\065\302\247\366\210\302\117\177\033\050
\351\320\247\000\304\027\115\155\342\017\305\016\046\043\040\253

\367\072\050\242\114\012\013\314\216\316\346\000\232\132\100\015
\324\120\032\233\321\015\234\224\371\333\356\134\320\361\212\007
\315\232\053\100\054\111\244\135\142\137\247\153\337\356\126\010
\120\363\102\030\154\061\260\136\345\234\163\222\274\016\322\014
\175\305\070\127\274\273\130\333\046\031\002\355\343\103\204\212
\116\126\153\333\255\241\061\331\314\042\147\226\170\377\167\235
\314\144\305\062\040\152\357\116\060\325\044\045\375\210\171\257
\161\032\376\325\113\033\025\210\274\030\160\252\275\255\070\012
\146\060\106\345\211\205\325\166\044\251\251\263\346\131\140\017
\264\251\123\302\072\235\105\032\326\256\343\167\136\304\142\066
\063\057\060\304\277\225\361\055\070\245\165\350\321\152\223\056
\105\207\113\112\242\337\277\130\047\232\312\142\031\252\136\324
\261\200\111\226\335\053\354\137\217\233\340\235\227\210\365\204
\003\243\257\263\245\163\055\101\272\345\007\267\157\153\161\367
\367\311\132\257\151\231\263\057\310\117\102\353\154\153\161\147
\170\337\012\254\117\327\112\205\000\106\032\325\315\270\237\352
\225\235\017\174\321\306\005\205\346\010\336\210\027\201\366\325
\265\156\352\241\034\327\141\252\343\131\102\211\234\131\176\261
\174\144\064\335\141\043\052\071\265\020\253\374\206\251\123\032
\305\353\152\342\200\116\131\221\300\070\211\376\263\135\326\373
\221\351\327\260\175\331\170\010\314\365\053\314\053\341\241\326
\224\163\301\376\121\364\214\175\012\265\232\212\271\365\332\340
\311\263\330\217\252\202\203\215\151\123\055\375\000\004\030\112
\240\332\124\341\171\214\211\353\177\365\202\347\240\271\167\115
\256\371\272\002\073\210\166\353\174\135\263\132\023\333\174\051
\026\153\231\321\035\344\110\041\242\015\136\001\210\350\276\361
\230\115\076\307\026\127\034\137\341\010\157\034\114\130\103\126
\367\200\145\214\161\016\242\004\147\117\002\003\001\000\001\243
\102\060\100\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\035\006\003\125\035\016\004\026\004\024\162
\133\272\252\162\070\356\045\220\044\265\224\042\372\011\210\312
\213\012\373\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\006\243\361\266\163\125\306\147\146
\041\345\235\133\326\224\056\112\042\140\362\124\001\220\241\375
\265\277\300\225\277\030\137\054\366\153\065\016\374\061\310\355
\104\016\222\227\334\257\335\126\317\265\037\272\162\234\060\310
\233\261\221\300\166\167\324\017\032\225\032\351\115\024\210\241
\317\153\002\246\152\353\144\105\115\144\215\336\374\353\154\362
\123\011\241\205\121\025\320\117\236\142\372\021\271\316\310\044
\016\162\144\210\165\064\043\060\052\077\274\074\071\314\314\335
\013\066\273\275\006\202\217\022\001\305\161\005\321\044\241\231
\154\312\344\367\252\355\212\327\247\012\255\257\360\340\200\273
\241\262\077\132\207\144\160\206\063\173\015\036\327\000\206\203
\103\227\165\365\073\301\110\375\266\016\103\250\002\156\270\076
\177\217\116\342\135\264\175\236\060\064\057\250\361\353\047\207
\150\015\132\012\115\001\333\311\024\130\225\362\232\115\026\252
\163\333\364\045\210\027\070\267\257\131\011\011\264\037\055\017

\253\365\270\047\125\356\105\060\063\270\355\033\216\274\210\154
\257\370\132\052\153\340\254\261\005\044\241\011\374\243\017\363
\260\055\173\226\272\266\224\007\025\105\216\051\334\130\016\251
\005\330\073\072\240\173\315\212\307\146\202\227\317\326\063\340
\147\374\246\333\100\057\005\345\305\213\172\052\172\360\260\066
\233\014\030\366\067\351\101\241\375\261\050\371\157\153\275\353
\037\114\143\161\173\120\335\051\362\377\356\367\307\105\137\350
\066\012\350\154\133\042\303\350\300\347\046\334\343\250\225\200
\345\271\072\023\333\000\113\032\375\256\063\107\176\170\224\343
\261\135\053\265\126\265\102\213\237\201\305\374\223\114\020\265
\272\012\274\176\067\343\372\124\155\365\004\305\160\263\251\004
\322\121\327\205\315\175\157\103\217\131\150\345\061\126\021\161
\371\144\051\011\023\376\320\037\274\213\000\070\262\320\312\064
\126\166\020\071\126\163\146\303\321\111\331\276\127\117\077\026
\175\152\170\267\250\202\270\133\316\256\205\212\012\102\014\003
\321\027\304\030\367\330\127\210\306\202\270\007\271\076\375\244
\351\056\334\157\272\220\222\356\145\260\120\064\323\007\332\001
\227\017\274\347\163\202\173
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ePKI Root Certification Authority - G2"
Issuer: CN=ePKI Root Certification Authority - G2,O=Chunghwa Telecom Co.\, Ltd.,C=TW
Serial Number:d6:96:2e:c1:0a:15:93:12:af:8f:63:bc:d4:44:c9:5b
Subject: CN=ePKI Root Certification Authority - G2,O=Chunghwa Telecom Co.\, Ltd.,C=TW
Not Valid Before: Tue Nov 17 08:23:42 2015
Not Valid After: Thu Dec 31 15:59:59 2037
Fingerprint (MD5): 7d:f0:01:73:ed:fc:31:9d:16:86:7b:35:c7:26:dd:72
Fingerprint (SHA1): d9:9b:10:42:98:59:47:63:f0:b9:a9:27:b7:92:69:cb:47:dd:15:8b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ePKI Root Certification Authority
 - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\331\233\020\102\230\131\107\143\360\271\251\047\267\222\151\313
\107\335\025\213
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\175\360\001\163\355\374\061\235\026\206\173\065\307\046\335\162
END
CKA_ISSUER MULTILINE_OCTAL
\060\143\061\013\060\011\006\003\125\004\006\023\002\124\127\061

\043\060\041\006\003\125\004\012\014\032\103\150\165\156\147\150
\167\141\040\124\145\154\145\143\157\155\040\103\157\056\054\040
\114\164\144\056\061\057\060\055\006\003\125\004\003\014\046\145
\120\113\111\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\107\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\326\226\056\301\012\025\223\022\257\217\143\274\324
\104\311\133
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
 CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSL.com EV Root Certification Authority RSA"
Issuer: CN=SSL.com EV Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:1d:6c:11:eb:6f:da:39:9d
Subject: CN=SSL.com EV Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:50:48 2016
Not Valid After: Tue Feb 12 17:50:48 2041
Fingerprint (MD5): ad:b7:7b:b6:c4:5a:d9:dd:9f:eb:b3:ef:3f:c6:31:31
Fingerprint (SHA1): 1c:b7:ed:e1:76:bc:df:ef:0c:86:6f:46:fb:f9:80:e9:01:e5:ce:35
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122\123
\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061

\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122\123
\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\035\154\021\353\157\332\071\235
END
CKA_VALUE
MULTILINE_OCTAL
\060\202\005\343\060\202\003\313\240\003\002\001\002\002\010\035
\154\021\353\157\332\071\235\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\177\061\013\060\011\006\003\125\004
\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014\005
\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014\007
\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004\012
\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151\157
\156\061\064\060\062\006\003\125\004\003\014\053\123\123\114\056
\143\157\155\040\105\126\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\122\123\101\060\036\027\015\061\066\060\062\061
\062\061\067\065\060\064\070\132\027\015\064\061\060\062\061\062
\061\067\065\060\064\070\132\060\177\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\016\060\014\006\003\125\004\010\014
\005\124\145\170\141\163\061\020\060\016\006\003\125\004\007\014
\007\110\157\165\163\164\157\156\061\030\060\026\006\003\125\004
\012\014\017\123\123\114\040\103\157\162\160\157\162\141\164\151
\157\156\061\064\060\062\006\003\125\004\003\014\053\123\123\114
\056\143\157\155\040\105\126\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157
\162\151\164\171\040\122\123\101\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\306\067\174\023\157\317\017
\331\120\317\346\327\252\150\057\134\121\324\277\315\114\246\325
\067\061\100\020\064\101\172\375\313\224\215\142\177\270\220\315
\316\151\226\072\304\377\331\327\143\346\320\204\045\200\021\277
\321\355\060\350\204\006\341\240\227\270\125\220\035\255\363\244
\232\033\116\234\021\367\365\331\326\217\140\052\076\067\370\165
\354\200\243\125\240\364\047\101\302\252\071\344\122\337\020\371
\365\145\071\077\214\235\314\173\047\317\006\024\167\116\075\122
\347\204\201\061\154\022\062\254\204\132\027\152\304\301\134\200
\061\302\332\107\173\166\017\102\350\347\042\024\323\215\304\133
\217\213\145\130\051\054\217\016\216\111\324\324\330\012\132\323
\046\323\011\216\330\103\262\224\117\322\300\034\335\164\142\021
\151\274\124\042\350\072\036\320\125\126\105\217\160\160\215\057

\357\302\135\275\136\124\335\056\173\351\030\213\212\111\331\117
\215\020\363\245\127\341\153\253\030\113\216\256\056\361\362\272
\365\135\101\367\071\330\243\302\135\336\237\132\261\057\104\223
\076\077\361\042\071\224\100\155\047\306\314\015\170\014\013\275
\052\126\046\255\051\127\270\161\344\177\353\023\262\310\175\365
\153\135\363\362\000\060\063\372\133\313\022\152\172\101\157\157
\011\114\267\151\015\017\171\043\043\032\146\215\131\066\143\226
\200\173\030\042\153\036\042\030\055\344\245\165\012\020\131\373
\243\176\046\020\123\306\310\031\056\036\047\030\373\060\005\075
\221\004\172\256\160\306\314\017\240\064\323\044\026\030\001\005
\147\151\345\105\321\126\250\233\277\257\372\254\125\010\014\002
\176\113\167\254\067\301\330\355\231\064\240\101\263\065\072\353
\061\064\311\073\337\304\075\051\105\065\124\270\177\226\317\010
\017\351\261\236\125\312\147\204\240\047\140\253\372\120\061\071
\325\173\312\266\232\355\221\214\170\036\371\356\340\342\131\101
\324\037\102\200\171\365\364\203\120\010\255\363\107\101\137\120
\243\237\211\363\264\047\052\124\271\032\131\153\011\234\121\300
\050\153\133\270\050\322\157\065\176\325\223\003\156\164\045\145
\352\026\005\221\001\361\007\143\117\253\204\305\162\331\315\150
\233\115\054\176\004\070\360\352\107\002\003\001\000\001\243\143
\060\141\060\035\006\003\125\035\016\004\026\004\024\331\132\052
\377\245\316\235\241\221\175\377\207\135\253\152\065\022\331\311
\114\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\331
\132\052\377\245\316\235\241\221\175\377\207\135\253\152\065\022
\331\311\114\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\274\214\317\043\372\275\063\127\226
\037\320\202\360\022\256\064\104\352\361\274\041\327\365\211\306
\064\036\170\246\342\121\337\335\170\200\325\352\155\306\252\157
\011\002\214\247\346\313\310\211\132\224\172\112\263\126\357\335
\335\123\062\143\360\151\357\335\100\271\220\242\056\003\167\226
\265\051\000\122\356\373\016\247\224\150\305\074\003\055\351\153
\252\235\356\247\330\147\222\342\021\132\070\337\230\146\243\240
\216\313\014\102\066\114\305\126\133\237\165\360\100\321\350\073
\052\010\233\122\303\034\137\220\064\127\373\306\371\035\161\374
\045\174\317\172\175\036\151\306\273\364\024\376\035\035\347\227
\242\206\233\362\337\127\222\006\122\144\223\051\131\012\057\241
\027\334\273\356\255\073\263\000\145\070\331\250\234\201\255\315
\065\234\213\351\342\364\204\217\016\317\215\161\155\000\200\071
\157\263\004\065\240\070\141\251\362\057\364\065\215\330\337\336
\244\151\060\372\240\046\174\132\042\171\360\150\376\313\315\274
\357\225\214\047\345\204\371\375\204\102\306\272\375\271\311\306
\132\161\060\166\066\002\037\320\174\251\023\016\341\040\331\122
\014\254\036\210\167\240\051\206\072\210\146\123\257\303\245\311
\333\124\261\244\350\356\114\156\077\271\173\060\243\102\350\002
\246\275\204\155\052\174\375\364\355\105\267\060\372\154\134\043
\126\132\074\141\052\307\233\346\305\362\104\267\007\277\166\235

\102\344\134\360\356\271\076\020\363\317\122\322\315\316\122\030
\177\140\366\056\225\114\065\000\114\106\326\020\354\064\313\130
\173\152\015\344\143\125\314\130\331\117\143\147\061\302\122\241
\171\017\052\317\311\116\314\022\313\215\032\132\252\106\061\023
\073\015\351\127\150\132\013\204\004\066\057\237\021\274\074\172
\255\132\277\106\343\267\040\211\035\334\007\174\334\172\353\351
\166\311\000\015\160\267\237\227\032\142\357\030\346\144\276\010
\247\244\231\273\177\214\150\232\230\311\206\142\366\241\230\066
\071\243\363\226\127\244\002\143\371\125\076\260\214\237\277\251
\172\113\074\331\271\256\017\212\364\272\034\045\253\125\131\241
\126\302\063\271\072\304\100\317\213\032\367\003\016\275\033\140
\143\175\045\324\251\276\345
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSL.com EV Root Certification Authority RSA"
Issuer: CN=SSL.com EV Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Serial Number:1d:6c:11:eb:6f:da:39:9d
Subject: CN=SSL.com EV Root Certification Authority RSA,O=SSL Corporation,L=Houston,ST=Texas,C=US
Not Valid Before: Fri Feb 12 17:50:48 2016
Not Valid After: Tue Feb 12 17:50:48 2041
Fingerprint (MD5): ad:b7:7b:b6:c4:5a:d9:dd:9f:eb:b3:ef:3f:c6:31:31
Fingerprint (SHA1): 1c:b7:ed:e1:76:bc:df:ef:0c:86:6f:46:fb:f9:80:e9:01:e5:ce:35
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com EV Root Certification Authority RSA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\034\267\355\341\166\274\337\357\014\206\157\106\373\371\200\351
\001\345\316\065
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\255\267\173\266\304\132\331\335\237\353\263\357\077\306\061\061
END
CKA_ISSUER MULTILINE_OCTAL
\060\177\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\016\060\014\006\003\125\004\010\014\005\124\145\170\141\163\061
\020\060\016\006\003\125\004\007\014\007\110\157\165\163\164\157
\156\061\030\060\026\006\003\125\004\012\014\017\123\123\114\040
\103\157\162\160\157\162\141\164\151\157\156\061\064\060\062\006
\003\125\004\003\014\053\123\123\114\056\143\157\155\040\105\126
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164

\151\157\156\040\101\165\164\150\157\162\151\164\171\040\122\123
\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\010\035\154\021\353\157\332\071\235
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "LuxTrust Global Root 2"
Issuer: CN=LuxTrust Global Root 2,O=LuxTrust S.A.,C=LU
Serial Number:0a:7e:a6:df:4b:44:9e:da:6a:24:85:9e:e6:b8:15:d3:16:7f:bb:b1
Subject: CN=LuxTrust Global Root 2,O=LuxTrust S.A.,C=LU
Not Valid Before: Thu Mar 05 13:21:57 2015
Not Valid After: Mon Mar 05 13:21:57 2035
Fingerprint (MD5): b2:e1:09:00:61:af:f7:f1:91:6f:c4:ad:8d:5e:3b:7c
Fingerprint (SHA1): 1e:0e:56:19:0a:d1:8b:25:98:b2:04:44:ff:66:8a:04:17:99:5f:3f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LuxTrust Global Root 2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\014\015\114\165\170\124\162\165
\163\164\040\123\056\101\056\061\037\060\035\006\003\125\004\003
\014\026\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164\040\062
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\014\015\114\165\170\124\162\165
\163\164\040\123\056\101\056\061\037\060\035\006\003\125\004\003
\014\026\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164\040\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\012\176\246\337\113\104\236\332\152\044\205\236\346\270
\025\323\026\177\273\261
END
CKA_VALUE MULTILINE_OCTAL

\060\202\005\303\060\202\003\253\240\003\002\001\002\002\024\012
\176\246\337\113\104\236\332\152\044\205\236\346\270\025\323\026
\177\273\261\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\106\061\013\060\011\006\003\125\004\006\023\002\114
\125\061\026\060\024\006\003\125\004\012\014\015\114\165\170\124
\162\165\163\164\040\123\056\101\056\061\037\060\035\006\003\125
\004\003\014\026\114\165\170\124\162\165\163\164\040\107\154\157
\142\141\154\040\122\157\157\164\040\062\060\036\027\015\061\065
\060\063\060\065\061\063\062\061\065\067\132\027\015\063\065\060
\063\060\065\061\063\062\061\065\067\132\060\106\061\013\060\011
\006\003\125\004\006\023\002\114\125\061\026\060\024\006\003\125
\004\012\014\015\114\165\170\124\162\165\163\164\040\123\056\101
\056\061\037\060\035\006\003\125\004\003\014\026\114\165\170\124
\162\165\163\164\040\107\154\157\142\141\154\040\122\157\157\164
\040\062\060\202\002\042\060\015\006\011\052\206\110\206\367\015
\001\001\001\005\000\003\202\002\017\000\060\202\002\012\002\202
\002\001\000\327\205\227\277\021\230\351\360\142\203\114\074\207
\371\123\152\067\013\362\017\074\207\316\157\334\046\051\275\305
\211\272\311\203\075\367\356\312\133\306\155\111\163\264\311\106
\243\033\064\023\077\301\211\105\127\364\331\261\373\066\145\113
\373\010\342\110\161\021\310\156\073\236\235\337\211\145\067\246
\205\366\073\104\030\266\306\067\060\142\104\222\227\151\175\102
\060\044\344\015\014\211\153\143\336\305\341\337\116\251\024\154
\123\340\141\316\366\027\057\035\074\275\346\042\114\035\223\365
\020\304\241\166\354\152\336\305\154\337\226\264\126\100\102\300
\142\222\060\241\055\025\224\240\322\040\006\011\156\152\155\345
\353\267\276\324\360\361\025\174\213\346\116\272\023\314\113\047
\136\231\074\027\135\217\201\177\063\075\117\323\077\033\354\134
\077\360\074\114\165\156\362\246\325\235\332\055\007\143\002\306
\162\351\224\274\114\111\225\117\210\122\310\333\350\151\202\370
\314\064\133\042\360\206\247\211\275\110\012\155\146\201\155\310
\310\144\373\001\341\364\341\336\331\236\335\333\133\324\052\231
\046\025\033\036\114\222\051\202\236\325\222\201\222\101\160\031
\367\244\345\223\113\274\167\147\061\335\034\375\061\160\015\027
\231\014\371\014\071\031\052\027\265\060\161\125\325\017\256\130
\341\075\057\064\233\317\237\366\170\205\302\223\172\162\076\146
\217\234\026\021\140\217\236\211\157\147\276\340\107\132\073\014
\232\147\213\317\106\306\256\070\243\362\247\274\346\326\205\153
\063\044\160\042\113\313\010\233\273\310\370\002\051\035\276\040
\014\106\277\153\207\233\263\052\146\102\065\106\154\252\272\255
\371\230\173\351\120\125\024\061\277\261\332\055\355\200\255\150
\044\373\151\253\330\161\023\060\346\147\263\207\100\375\211\176
\362\103\321\021\337\057\145\057\144\316\137\024\271\261\277\061
\275\207\170\132\131\145\210\252\374\131\062\110\206\326\114\271
\051\113\225\323\166\363\167\045\155\102\034\070\203\115\375\243
\137\233\177\055\254\171\033\016\102\061\227\143\244\373\212\151
\325\042\015\064\220\060\056\250\264\340\155\266\224\254\274\213
\116\327\160\374\305\070\216\144\045\341\115\071\220\316\311\207

\204\130\161\002\003\001\000\001\243\201\250\060\201\245\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\102\006\003\125\035\040\004\073\060\071\060\067\006\007\053\201
\053\001\001\001\012\060\054\060\052\006\010\053\006\001\005\005
\007\002\001\026\036\150\164\164\160\163\072\057\057\162\145\160
\157\163\151\164\157\162\171\056\154\165\170\164\162\165\163\164
\056\154\165\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\037\006\003\125\035\043\004\030\060\026\200\024
\377\030\050\166\371\110\005\054\241\256\361\053\033\053\262\123
\370\113\174\263\060\035\006\003\125\035\016\004\026\004\024\377
\030\050\166\371\110\005\054\241\256\361\053\033\053\262\123\370
\113\174\263\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\152\031\024\355\156\171\301\054\207
\324\015\160\176\327\366\170\311\013\004\116\304\261\316\223\160
\376\260\124\300\062\315\231\060\144\027\277\017\345\342\063\375
\007\066\100\162\016\032\266\152\131\326\000\345\150\040\335\056
\162\015\037\152\144\061\040\204\175\111\246\132\067\353\105\311
\205\365\324\307\027\231\007\346\233\125\344\014\350\251\264\316
\214\133\265\021\134\317\212\016\015\326\254\167\201\376\062\234
\044\236\162\316\124\363\320\157\242\126\326\354\303\067\054\145
\130\276\127\000\032\362\065\372\353\173\061\135\302\301\022\075
\226\201\210\226\211\301\131\134\172\346\177\160\064\347\203\342
\261\341\341\270\130\357\324\225\344\140\234\360\226\227\162\214
\353\204\002\056\145\217\244\267\322\177\147\335\310\323\236\134
\252\251\244\240\045\024\006\233\354\117\176\055\013\177\035\165
\361\063\330\355\316\270\165\155\076\133\271\230\035\061\015\126
\330\103\017\060\221\262\004\153\335\126\276\225\200\125\147\276
\330\315\203\331\030\356\056\017\206\055\222\236\160\023\354\336
\121\311\103\170\002\245\115\310\371\137\304\221\130\106\026\167
\132\164\252\100\274\007\237\060\271\261\367\022\027\335\343\377
\044\100\035\172\152\321\117\030\012\252\220\035\353\100\036\337
\241\036\104\222\020\232\362\215\341\321\113\106\236\350\105\102
\227\352\105\231\363\354\146\325\002\372\362\246\112\044\252\336
\316\271\312\371\077\223\157\371\243\272\352\245\076\231\255\375
\377\173\231\365\145\356\360\131\050\147\327\220\225\244\023\204
\251\204\301\350\316\316\165\223\143\032\274\074\352\325\144\037
\055\052\022\071\306\303\132\062\355\107\221\026\016\274\070\301
\120\336\217\312\052\220\064\034\356\101\224\234\136\031\056\370
\105\111\231\164\221\260\004\157\343\004\132\261\253\052\253\376
\307\320\226\266\332\341\112\144\006\156\140\115\275\102\116\377
\170\332\044\312\033\264\327\226\071\154\256\361\016\252\247\175
\110\213\040\114\317\144\326\270\227\106\260\116\321\052\126\072
\240\223\275\257\200\044\340\012\176\347\312\325\312\350\205\125
\334\066\052\341\224\150\223\307\146\162\104\017\200\041\062\154
\045\307\043\200\203\012\353
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "LuxTrust Global Root 2"
Issuer:
CN=LuxTrust Global Root 2,O=LuxTrust S.A.,C=LU
Serial Number:0a:7e:a6:df:4b:44:9e:da:6a:24:85:9e:e6:b8:15:d3:16:7f:bb:b1
Subject: CN=LuxTrust Global Root 2,O=LuxTrust S.A.,C=LU
Not Valid Before: Thu Mar 05 13:21:57 2015
Not Valid After: Mon Mar 05 13:21:57 2035
Fingerprint (MD5): b2:e1:09:00:61:af:f7:f1:91:6f:c4:ad:8d:5e:3b:7c
Fingerprint (SHA1): 1e:0e:56:19:0a:d1:8b:25:98:b2:04:44:ff:66:8a:04:17:99:5f:3f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "LuxTrust Global Root 2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\036\016\126\031\012\321\213\045\230\262\004\104\377\146\212\004
\027\231\137\077
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\262\341\011\000\141\257\367\361\221\157\304\255\215\136\073\174
END
CKA_ISSUER MULTILINE_OCTAL
\060\106\061\013\060\011\006\003\125\004\006\023\002\114\125\061
\026\060\024\006\003\125\004\012\014\015\114\165\170\124\162\165
\163\164\040\123\056\101\056\061\037\060\035\006\003\125\004\003
\014\026\114\165\170\124\162\165\163\164\040\107\154\157\142\141
\154\040\122\157\157\164\040\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\012\176\246\337\113\104\236\332\152\044\205\236\346\270
\025\323\026\177\273\261
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "ACA ROOT"
Issuer: CN=ACA ROOT,O=CONSEJO GENERAL DE LA ABOGACIA,2.5.4.5=Q2863006I,C=ES
Serial Number:47:43:91:24:3f:ce:c3:0d:57:48:28:6b:ee:80:5d:ab
Subject: CN=ACA ROOT,O=CONSEJO GENERAL DE LA ABOGACIA,2.5.4.5=Q2863006I,C=ES

Not Valid Before: Fri May 27 10:58:51 2016
Not Valid After: Mon May 27 10:58:51 2041
Fingerprint (MD5): cc:49:10:f6:2f:f5:db:be:2f:8c:51:f3:8f:74:7c:12
Fingerprint (SHA1): d4:96:59:2b:30:57:07:38:6c:c5:f3:cd:b2:59:ae:66:d7:66:1f:ca
CKA_CLASS
CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACA ROOT"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\022\060\020\006\003\125\004\005\023\011\121\062\070\066\063\060
\060\066\111\061\047\060\045\006\003\125\004\012\014\036\103\117
\116\123\105\112\117\040\107\105\116\105\122\101\114\040\104\105
\040\114\101\040\101\102\117\107\101\103\111\101\061\021\060\017
\006\003\125\004\003\014\010\101\103\101\040\122\117\117\124
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\022\060\020\006\003\125\004\005\023\011\121\062\070\066\063\060
\060\066\111\061\047\060\045\006\003\125\004\012\014\036\103\117
\116\123\105\112\117\040\107\105\116\105\122\101\114\040\104\105
\040\114\101\040\101\102\117\107\101\103\111\101\061\021\060\017
\006\003\125\004\003\014\010\101\103\101\040\122\117\117\124
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\107\103\221\044\077\316\303\015\127\110\050\153\356\200
\135\253
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\310\060\202\003\260\240\003\002\001\002\002\020\107
\103\221\044\077\316\303\015\127\110\050\153\356\200\135\253\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\135
\061\013\060\011\006\003\125\004\006\023\002\105\123\061\022\060
\020\006\003\125\004\005\023\011\121\062\070\066\063\060\060\066
\111\061\047\060\045\006\003\125\004\012\014\036\103\117\116\123
\105\112\117\040\107\105\116\105\122\101\114\040\104\105\040\114
\101\040\101\102\117\107\101\103\111\101\061\021\060\017\006\003
\125\004\003\014\010\101\103\101\040\122\117\117\124\060\036\027
\015\061\066\060\065\062\067\061\060\065\070\065\061\132\027\015
\064\061\060\065\062\067\061\060\065\070\065\061\132\060\135\061
\013\060\011\006\003\125\004\006\023\002\105\123\061\022\060\020
\006\003\125\004\005\023\011\121\062\070\066\063\060\060\066\111
\061\047\060\045\006\003\125\004\012\014\036\103\117\116\123\105

\112\117\040\107\105\116\105\122\101\114\040\104\105\040\114\101
\040\101\102\117\107\101\103\111\101\061\021\060\017\006\003\125
\004\003\014\010\101\103\101\040\122\117\117\124\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\271\053\136
\365\076\272\211\036\235\365\321\023\317\273\243\136\272\351\337
\071\162\144\230\122\207\151\245\266\336\341\277\224\105\276\305
\370\244\123\147\025\120\334\122\117\052\166\054\056\215\040\152
\214\346\135\271\331\150\276\221\033\272\151\003\030\255\030\116
\066\242\254\106\253\040\370\003\152\252\255\171\325\337\035\301
\356\105\157\041\164\371\115\261\261\075\220\073\074\062\200\355
\377\025\317\121\312\327\244\207\056\252\345\016\266\321\172\132
\307\271\370\121\273\331\224\335\076\306\206\116\012\376\073\211
\362\370\156\044\316\221\003\130\005\022\112\335\120\253\101\172
\316\355\251\037\021\123\036\245\023\333\141\360\365\252\200\336
\164\171\035\244\343\051\326\373\340\374\227\332\242\270\253\042
\076\145\260\041\304\345\305\020\104\207\262\343\340\052\202\056
\175\346\364\270\244\023\045\363\167\140\137\143\123\256\056\261
\235\212\153\166\173\072\161\275\222\201\066\260\234\202\361\367
\305\211\050\135\377\274\102\006\263\010\152\117\141\315\244\055
\220\323\071\270\167\377\310\307\243\171\273\003\271\221\003\001
\064\022\330\060\213\266\214\002\312\344\110\354\070\052\062\114
\155\312\166\050\132\206\012\272\324\040\216\257\240\137\040\055
\142\234\210\371\361\025\155\133\275\261\003\120\300\077\066\327
\256\077\121\321\312\343\130\146\104\346\243\233\167\056\061\372
\331\177\042\304\005\114\353\164\033\134\143\172\246\002\223\176
\103\016\166\024\017\115\157\062\225\210\200\222\122\227\024\365
\074\374\224\007\323\154\051\005\225\106\017\344\161\341\177\370
\155\024\022\202\222\265\363\123\076\231\021\227\107\166\112\011
\162\356\324\303\226\011\254\332\377\361\113\113\266\327\045\317
\036\114\227\046\013\064\273\266\224\361\054\144\161\137\211\362
\025\073\067\247\002\344\015\117\110\211\063\243\214\150\170\061
\121\147\012\031\333\264\342\164\057\075\172\363\167\000\237\161
\022\143\377\163\052\144\151\124\354\254\072\256\332\362\130\143
\064\176\370\074\136\300\102\072\245\333\263\250\324\132\301\116
\130\270\151\266\254\202\142\333\321\373\032\103\041\042\374\035
\365\234\117\116\073\345\215\377\166\132\043\136\133\002\003\001
\000\001\243\201\203\060\201\200\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\016\006\003\125\035\017
\001\001\377\004\004\003\002\001\006\060\035\006\003\125\035\016
\004\026\004\024\032\125\344\025\061\342\061\233\021\324\210\161
\172\000\075\160\050\005\277\315\060\076\006\003\125\035\040\004
\067\060\065\060\063\006\004\125\035\040\000\060\053\060\051\006
\010\053\006\001\005\005\007\002\001\026\035\150\164\164\160\072
\057\057\167\167\167\056\141\143\141\142\157\147\141\143\151\141
\056\157\162\147\057\144\157\143\060\015\006\011\052\206\110\206
\367\015\001\001\013\005\000\003\202\002\001\000\173\060\312\125
\206\323\257\356\032\327\270\225\230\354\371\073\335\220\023\243

\234\222\105\240\222\211\151\241\161\221\274\161\205\207\240\055
\060\011\344\302\123\075\364\251\267\150\055\115\231\315\244\317
\236\073\220\235\232\012\051\015\052\102\301\075\133\153\100\202
\305\213\023\261\101\147\217\276\244\167\340\300\166\344\363\266
\051\126\054\357\161\117\302\144\361\332\264\013\312\320\071\137
\123\262\203\001\373\262\175\331\203\164\172\065\320\301\135\217
\233\367\136\347\122\337\356\252\067\223\253\331\075\175\036\361
\275\034\333\350\165\335\270\133\114\343\026\243\366\165\210\016
\217\074\303\013\154\333\140\131\344\005\253\050\106\367\146\151
\045\167\336\312\112\063\330\130\136\173\217\232\317\122\216\075
\155\375\321\262\275\076\171\127\206\036\104\034\007\115\364\302
\020\252\170\313\363\121\027\015\166\075\215\156\150\111\351\357
\007\111\321\270\026\311\171\235\314\256\013\005\107\172\375\230
\254\061\241\220\132\207\142\371\370\253\142\132\340\041\166\320
\150\102\350\034\276\162\201\360\306\147\175\176\164\074\325\125
\157\217\245\150\226\021\361\312\323\060\027\275\106\266\061\257
\160\351\244\204\067\127\272\011\074\056\331\013\023\126\007\076
\225\304\265\160\057\223\302\256\257\201\135\106\024\060\373\256
\305\363\232\367\101\172\261\336\113\026\331\105\165\107\002\174
\024\036\325\261\073\240\054\101\265\233\113\173\243\203\360\271
\314\316\036\224\267\136\056\043\006\225\221\034\070\107\034\355
\304\170\016\244\017\374\033\174\326\362\153\320\212\133\352\226
\363\061\324\136\152\304\224\270\060\237\225\341\007\211\270\210
\322\047\205\244\141\164\345\250\104\061\172\040\165\350\370\330
\353\263\117\252\377\123\077\226\355\352\273\374\121\100\246\053
\354\044\241\373\371\104\215\043\347\246\227\000\017\313\244\152
\277\120\240\312\161\242\154\256\157\337\331\203\202\146\334\123
\135\257\372\124\367\203\377\253\077\211\225\247\264\155\363\017
\012\015\110\063\057\201\051\307\113\005\304\306\127\164\204\303
\230\066\377\357\205\062\253\142\234\023\321\042\207\261\276\230
\333\164\232\217\352\302\326\223\171\105\040\303
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "ACA ROOT"
Issuer: CN=ACA ROOT,O=CONSEJO GENERAL DE LA ABOGACIA,2.5.4.5=Q2863006I,C=ES
Serial Number:47:43:91:24:3f:ce:c3:0d:57:48:28:6b:ee:80:5d:ab
Subject: CN=ACA ROOT,O=CONSEJO GENERAL DE LA ABOGACIA,2.5.4.5=Q2863006I,C=ES
Not Valid Before: Fri May 27 10:58:51 2016
Not Valid After: Mon May 27 10:58:51 2041
Fingerprint (MD5): cc:49:10:f6:2f:f5:db:be:2f:8c:51:f3:8f:74:7c:12
Fingerprint (SHA1): d4:96:59:2b:30:57:07:38:6c:c5:f3:cd:b2:59:ae:66:d7:66:1f:ca
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL
CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "ACA ROOT"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\324\226\131\053\060\127\007\070\154\305\363\315\262\131\256\146
\327\146\037\312
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\314\111\020\366\057\365\333\276\057\214\121\363\217\164\174\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\135\061\013\060\011\006\003\125\004\006\023\002\105\123\061
\022\060\020\006\003\125\004\005\023\011\121\062\070\066\063\060
\060\066\111\061\047\060\045\006\003\125\004\012\014\036\103\117
\116\123\105\112\117\040\107\105\116\105\122\101\114\040\104\105
\040\114\101\040\101\102\117\107\101\103\111\101\061\021\060\017
\006\003\125\004\003\014\010\101\103\101\040\122\117\117\124
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\107\103\221\044\077\316\303\015\127\110\050\153\356\200
\135\253
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "CHAMBERS OF COMMERCE ROOT - 2016"
Issuer: CN=CHAMBERS OF COMMERCE ROOT - 2016,O=AC CAMERFIRMA S.A.,2.5.4.97=VATES-A82743287,2.5.4.5=A82743287,OU=CHAMBERS OF COMMERCE ROOT - 2016,OU=see current address at www.camerfirma.com/address,L=MADRID,ST=MADRID,C=ES
Serial Number:34:9a:2d:a1:82:06:b2:b3
Subject: CN=CHAMBERS OF COMMERCE ROOT - 2016,O=AC CAMERFIRMA S.A.,2.5.4.97=VATES-A82743287,2.5.4.5=A82743287,OU=CHAMBERS OF COMMERCE ROOT - 2016,OU=see current address at www.camerfirma.com/address,L=MADRID,ST=MADRID,C=ES
Not Valid Before: Thu Apr 14 07:35:48 2016
Not Valid After: Sun Apr 08 07:35:48 2040
Fingerprint (MD5): d9:84:45:a4:8b:62:ec:c1:fc:51:54:8a:d1:58:8d:e8
Fingerprint (SHA1): 2d:e1:6a:56:77:ba:ca:39:e1:d6:8c:30:dc:b1:4a:be:22:a6:17:9b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL

UTF8 "CHAMBERS OF COMMERCE ROOT - 2016"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\202\001\014\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\017\060\015\006\003\125\004\010\014\006\115\101\104\122
\111\104\061\017\060\015\006\003\125\004\007\014\006\115\101\104
\122\111\104\061\072\060\070\006\003\125\004\013\014\061\163\145
\145\040\143\165\162\162\145\156\164\040\141\144\144\162\145\163
\163\040\141\164\040\167\167\167\056\143\141\155\145\162\146\151
\162\155\141\056\143\157\155\057\141\144\144\162\145\163\163\061
\051\060\047\006\003\125\004\013\014\040\103\110\101\115\102\105
\122\123\040\117\106\040\103\117\115\115\105\122\103\105\040\122
\117\117\124\040\055\040\062\060\061\066\061\022\060\020\006\003
\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061\030
\060\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101
\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125\004
\012\014\022\101\103\040\103\101\115\105\122\106\111\122\115\101
\040\123\056\101\056\061\051\060\047\006\003\125\004\003\014\040
\103\110\101\115\102\105\122\123\040\117\106\040\103\117\115\115
\105\122\103\105\040\122\117\117\124\040\055\040\062\060\061\066
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\202\001\014\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\017\060\015\006\003\125\004\010\014\006\115\101\104\122
\111\104\061\017\060\015\006\003\125\004\007\014\006\115\101\104
\122\111\104\061\072\060\070\006\003\125\004\013\014\061\163\145
\145\040\143\165\162\162\145\156\164\040\141\144\144\162\145\163
\163\040\141\164\040\167\167\167\056\143\141\155\145\162\146\151
\162\155\141\056\143\157\155\057\141\144\144\162\145\163\163\061
\051\060\047\006\003\125\004\013\014\040\103\110\101\115\102\105
\122\123\040\117\106\040\103\117\115\115\105\122\103\105\040\122
\117\117\124\040\055\040\062\060\061\066\061\022\060\020\006\003
\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061\030
\060\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101
\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125\004
\012\014\022\101\103\040\103\101\115\105\122\106\111\122\115\101
\040\123\056\101\056\061\051\060\047\006\003\125\004\003\014\040
\103\110\101\115\102\105\122\123\040\117\106\040\103\117\115\115
\105\122\103\105\040\122\117\117\124\040\055\040\062\060\061\066
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\064\232\055\241\202\006\262\263
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\340\060\202\004\310\240\003\002\001\002\002\010\064

\232\055\241\202\006\262\263\060\015\006\011\052\206\110\206\367
\015\001\001\013\005\000\060\202\001\014\061\013\060\011\006\003
\125\004\006\023\002\105\123\061\017\060\015\006\003\125\004\010
\014\006\115\101\104\122\111\104\061\017\060\015\006\003\125\004
\007\014\006\115\101\104\122\111\104\061\072\060\070\006\003\125
\004\013\014\061\163\145\145\040\143\165\162\162\145\156\164\040
\141\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143
\141\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144
\144\162\145\163\163\061\051\060\047\006\003\125\004\013\014\040
\103\110\101\115\102\105\122\123\040\117\106\040\103\117\115\115
\105\122\103\105\040\122\117\117\124\040\055\040\062\060\061\066
\061\022\060\020\006\003\125\004\005\023\011\101\070\062\067\064
\063\062\070\067\061\030\060\026\006\003\125\004\141\014\017\126
\101\124\105\123\055\101\070\062\067\064\063\062\070\067\061\033
\060\031\006\003\125\004\012\014\022\101\103\040\103\101\115\105
\122\106\111\122\115\101\040\123\056\101\056\061\051\060\047\006
\003\125\004\003\014\040\103\110\101\115\102\105\122\123\040\117
\106\040\103\117\115\115\105\122\103\105\040\122\117\117\124\040
\055\040\062\060\061\066\060\036\027\015\061\066\060\064\061\064
\060\067\063\065\064\070\132\027\015\064\060\060\064\060\070\060
\067\063\065\064\070\132\060\202\001\014\061\013\060\011\006\003
\125\004\006\023\002\105\123\061\017\060\015\006\003\125\004\010
\014\006\115\101\104\122\111\104\061\017\060\015\006\003\125\004
\007\014\006\115\101\104\122\111\104\061\072\060\070\006\003\125
\004\013\014\061\163\145\145\040\143\165\162\162\145\156\164\040
\141\144\144\162\145\163\163\040\141\164\040\167\167\167\056\143
\141\155\145\162\146\151\162\155\141\056\143\157\155\057\141\144
\144\162\145\163\163\061\051\060\047\006\003\125\004\013\014\040
\103\110\101\115\102\105\122\123\040\117\106\040\103\117\115\115
\105\122\103\105\040\122\117\117\124\040\055\040\062\060\061\066
\061\022\060\020\006\003\125\004\005\023\011\101\070\062\067\064
\063\062\070\067\061\030\060\026\006\003\125\004\141\014\017\126
\101\124\105\123\055\101\070\062\067\064\063\062\070\067\061\033
\060\031\006\003\125\004\012\014\022\101\103\040\103\101\115\105
\122\106\111\122\115\101\040\123\056\101\056\061\051\060\047\006
\003\125\004\003\014\040\103\110\101\115\102\105\122\123\040\117
\106\040\103\117\115\115\105\122\103\105\040\122\117\117\124\040
\055\040\062\060\061\066\060\202\002\042\060\015\006\011\052\206
\110\206\367\015\001\001\001\005\000\003\202\002\017\000\060\202
\002\012\002\202\002\001\000\352\306\244\241\324\255\231\226\311
\237\365\274\120\000\364\054\317\362\170\350\362\054\002\047\326
\203\214\004\253\323\016\173\127\040\311\324\257\145\364\207\335
\060\010\327\316\101\243\166\012\333\212\106\344\246\375\355\010
\316\160\077\372\020\140\171\114\153\201\124\200\125\344\347\172
\041\266\165\232\334\136\366\016\231\374\370\302\337\101\216\057
\253\307\133\155\034\120\131\300\355\350\254\202\102\376\271\257
\057\014\101\121\234\275\000\156\144\121\262\073\345\066\253\225
\221\022\373\061\307\163\254\034\330\145\166\073\316\033\114\116

\260\037\040\006\373\120\264\373\233\241\171\216\026\225\343\237
\353\030\113\204\253\071\223\315\067\203\320\351\174\013\047\217
\355\102\010\351\206\106\062\254\232\046\151\160\141\055\030\275
\077\120\360\236\366\150\120\116\151\225\160\301\355\223\251\227
\116\051\242\272\335\302\237\156\111\010\053\243\372\043\361\051
\136\260\175\061\131\233\355\214\315\246\156\370\370\367\330\030
\350\332\126\351\110\362\100\164\176\236\315\040\257\024\044\131
\356\167\065\205\277\112\231\112\251\165\335\263\046\343\006\316
\175\157\113\144\243\166\064\031\076\024\157\205\124\070\342\213
\055\100\265\144\146\037\127\063\034\160\315\303\264\050\132\024
\043\134\374\270\275\263\376\073\022\137\366\271\214\035\310\224
\012\126\333\162\176\357\047\007\015\000\264\277\175\231\077\115
\105\263\233\367\035\031\320\117\004\372\307\163\224\210\175\213
\024\052\231\340\351\231\222\011\306\326\001\153\267\360\333\103
\127\142\033\307\104\122\342\227\143\272\317\352\316\140\346\012
\345\030\150\055\063\200\165\240\060\007\150\366\325\367\023\054
\072\260\236\350\130\125\156\214\126\104\115\103\027\101\002\314
\167\334\137\105\005\131\317\315\140\323\277\322\366\342\364\325
\334\207\161\063\007\032\365\157\264\177\075\227\373\137\144\364
\116\016\000\104\011\351\353\354\076\161\031\004\027\071\110\140
\270\113\377\136\310\145\231\053\246\062\362\133\206\250\235\350
\043\164\020\170\357\313\047\235\061\272\140\213\116\006\120\342
\120\035\007\140\302\101\214\025\264\133\067\034\012\345\011\031
\162\004\212\074\343\001\333\002\003\001\000\001\243\102\060\100
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\035\006\003\125\035\016\004\026\004\024\236\056\145\117
\076\127\365\253\175\226\306\213\337\263\065\155\112\350\236\213
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\002\001\000\005\151\052\205\227\046\120\272\102\071\034\223
\054\322\117\133\321\135\104\046\332\157\151\053\265\173\236\320
\364\112\056\110\307\354\177\237\312\131\172\271\104\367\076\275
\367\120\153\121\237\164\377\220\032\100\320\223\171\222\017\212
\043\136\213\257\201\013\320\213\255\146\340\052\334\232\051\275
\065\330\154\100\024\111\102\075\211\057\272\233\053\070\274\032
\243\013\267\210\327\255\306\024\014\356\174\111\254\256\354\362
\075\030\117\214\155\024\135\016\252\267\337\167\253\073\217\142
\116\213\014\145\306\031\216\315\300\014\241\167\252\264\335\172
\247\023\005\346\071\030\307\225\144\176\003\266\213\220\301\345
\137\000\043\230\346\163\332\021\322\020\377\036\123\042\047\307
\323\001\311\057\305\073\062\156\360\303\070\312\022\147\274\272
\043\051\273\304\225\111\132\006\335\324\132\220\324\023\155\347
\325\302\174\342\130\004\300\354\304\275\242\074\176\306\043\201
\165\174\253\160\137\064\204\225\367\263\325\107\226\117\161\312
\170\062\010\040\264\102\244\102\153\325\045\234\262\047\353\301
\016\107\104\011\341\053\017\320\043\066\156\034\271\272\116\254
\314\360\014\224\316\101\017\153\335\017\325\310\340\027\213\336
\072\135\122\276\351\165\045\035\272\005\007\332\126\031\074\215

\321\327\361\121\066\331\222\357\242\170\121\005\130\275\122\314
\012\136\157\257\332\320\345\014\333\154\301\043\357\071\061\167
\027\007\000\214\366\272\017\160\371\274\276\341\344\175\341\314
\104\172\244\041\354\107\077\250\326\025\245\354\001\251\310\160
\350\230\147\035\275\131\124\176\241\127\025\065\007\305\162\311
\076\267\051\206\215\237\332\062\171\062\334\333\250\345\011\377
\357\126\052\376\223\261\216\052\023\355\255\242\053\153\057\004
\336\315\057\222\222\326\076\140\265\170\001\225\007\010\251\154
\343\034\332\373\345\233\043\126\040\133\351\320\134\306\112\044
\073\274\343\266\042\026\052\204\222\377\250\376\227\277\243\235
\333\141\136\356\031\052\054\327\353\015\166\126\070\165\176\111
\000\223\127\311\374\043\132\374\364\361\337\052\235\260\214\151
\364\020\243\125\235\160\074\042\377\007\326\053\266\231\300\227
\320\364\052\240
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "CHAMBERS OF COMMERCE ROOT - 2016"
Issuer: CN=CHAMBERS OF COMMERCE ROOT - 2016,O=AC CAMERFIRMA S.A.,2.5.4.97=VATES-A82743287,2.5.4.5=A82743287,OU=CHAMBERS
OF COMMERCE ROOT - 2016,OU=see current address at www.camerfirma.com/address,L=MADRID,ST=MADRID,C=ES
Serial Number:34:9a:2d:a1:82:06:b2:b3
Subject: CN=CHAMBERS OF COMMERCE ROOT - 2016,O=AC CAMERFIRMA S.A.,2.5.4.97=VATES-A82743287,2.5.4.5=A82743287,OU=CHAMBERS OF COMMERCE ROOT - 2016,OU=see current address at www.camerfirma.com/address,L=MADRID,ST=MADRID,C=ES
Not Valid Before: Thu Apr 14 07:35:48 2016
Not Valid After: Sun Apr 08 07:35:48 2040
Fingerprint (MD5): d9:84:45:a4:8b:62:ec:c1:fc:51:54:8a:d1:58:8d:e8
Fingerprint (SHA1): 2d:e1:6a:56:77:ba:ca:39:e1:d6:8c:30:dc:b1:4a:be:22:a6:17:9b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "CHAMBERS OF COMMERCE ROOT - 2016"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\055\341\152\126\167\272\312\071\341\326\214\060\334\261\112\276
\042\246\027\233
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\331\204\105\244\213\142\354\301\374\121\124\212\321\130\215\350
END
CKA_ISSUER

MULTILINE_OCTAL
\060\202\001\014\061\013\060\011\006\003\125\004\006\023\002\105
\123\061\017\060\015\006\003\125\004\010\014\006\115\101\104\122
\111\104\061\017\060\015\006\003\125\004\007\014\006\115\101\104
\122\111\104\061\072\060\070\006\003\125\004\013\014\061\163\145
\145\040\143\165\162\162\145\156\164\040\141\144\144\162\145\163
\163\040\141\164\040\167\167\167\056\143\141\155\145\162\146\151
\162\155\141\056\143\157\155\057\141\144\144\162\145\163\163\061
\051\060\047\006\003\125\004\013\014\040\103\110\101\115\102\105
\122\123\040\117\106\040\103\117\115\115\105\122\103\105\040\122
\117\117\124\040\055\040\062\060\061\066\061\022\060\020\006\003
\125\004\005\023\011\101\070\062\067\064\063\062\070\067\061\030
\060\026\006\003\125\004\141\014\017\126\101\124\105\123\055\101
\070\062\067\064\063\062\070\067\061\033\060\031\006\003\125\004
\012\014\022\101\103\040\103\101\115\105\122\106\111\122\115\101
\040\123\056\101\056\061\051\060\047\006\003\125\004\003\014\040
\103\110\101\115\102\105\122\123\040\117\106\040\103\117\115\115
\105\122\103\105\040\122\117\117\124\040\055\040\062\060\061\066
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\010\064\232\055\241\202\006\262\263
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Network Solutions RSA Certificate Authority"
Issuer: CN=Network Solutions RSA Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Serial Number:4c:03:4b:ac:67:18:4c:7f:af:44:08:4d:82:96:c7:b2
Subject: CN=Network Solutions RSA Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Not Valid Before: Wed Nov 18 00:00:00 2015
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 5a:2f:58:bc:83:2c:2d:99:b4:9b:78:24:d4:8f:f9:67
#
Fingerprint (SHA1): 8e:92:8c:0f:c2:7b:b7:ab:a3:4e:6b:c0:ca:12:50:cb:57:b6:0f:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions RSA Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123

\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\122\123\101\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\122\123\101\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\114\003\113\254\147\030\114\177\257\104\010\115\202\226
\307\262
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\342\060\202\003\312\240\003\002\001\002\002\020\114
\003\113\254\147\030\114\177\257\104\010\115\202\226\307\262\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\201
\212\061\013\060\011\006\003\125\004\006\023\002\125\123\061\013
\060\011\006\003\125\004\010\023\002\106\114\061\025\060\023\006
\003\125\004\007\023\014\112\141\143\153\163\157\156\166\151\154
\154\145\061\041\060\037\006\003\125\004\012\023\030\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\114
\056\114\056\103\056\061\064\060\062\006\003\125\004\003\023\053
\116\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156
\163\040\122\123\101\040\103\145\162\164\151\146\151\143\141\164
\145\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\065\061\061\061\070\060\060\060\060\060\060\132\027\015\063\070
\060\061\061\070\062\063\065\071\065\071\132\060\201\212\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\013\060\011\006
\003\125\004\010\023\002\106\114\061\025\060\023\006\003\125\004
\007\023\014\112\141\143\153\163\157\156\166\151\154\154\145\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\064\060\062\006\003\125\004\003\023\053\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\122

\123\101\040\103\145\162\164\151\146\151\143\141\164\145\040\101
\165\164\150\157\162\151\164\171\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\204\337\250\246\243\214\013
\170\036\310\115\031\225\335\051\220\222\040\065\220\052\224\215
\202\063\055\160\022\130\245\010\212\236\301\010\363\223\326\150
\300\057\024\276\171\244\374\175\314\325\274\076\217\355\234\112
\002\141\131\075\252\303\157\164\000\322\370\032\064\324\124\236
\152\164\107\232\057\340\322\367\017\367\303\335\077\245\277\301
\372\175\102\151\140\000\200\354\074\346\273\201\067\244\036\006
\024\075\127\217\220\244\065\112\064\163\207\266\032\303\135\220
\357\006\115\160\166\066\074\202\211\355\317\144\031\203\045\103
\116\034\342\361\152\122\206\376\121\344\176\070\337\025\215\114
\154\140\101\112\117\260\100\125\106\071\165\311\201\071\000\163
\212\142\352\017\145\267\217\117\227\100\316\317\356\301\152\050
\240\161\251\231\047\321\075\311\065\163\172\200\231\370\175\206
\271\235\171\072\355\323\052\372\176\246\270\377\127\052\163\262
\246\277\332\211\272\006\033\332\145\240\346\276\140\224\210\366
\337\146\341\047\152\033\376\320\136\251\215\040\213\012\304\037
\176\210\101\057\262\301\320\363\266\150\355\310\073\361\357\252
\007\336\176\327\042\340\201\366\245\352\173\026\364\102\124\235
\226\176\366\142\026\123\315\375\012\253\262\102\241\116\052\210
\102\165\203\275\214\345\115\172\347\035\343\114\270\336\343\253
\140\070\055\147\051\376\344\137\256\302\250\350\277\256\154\371
\353\263\122\361\177\351\354\302\057\331\235\312\027\236\102\372
\073\130\301\076\210\142\117\137\223\301\227\155\146\217\034\042
\363\232\301\364\355\271\153\032\176\066\204\310\061\270\360\136
\053\176\225\344\171\317\165\114\302\330\004\277\070\216\050\263
\335\133\266\330\117\043\156\222\350\067\225\256\203\256\326\374
\071\052\106\006\037\361\204\165\041\326\270\116\246\052\227\130
\145\365\232\030\001\327\365\303\177\051\311\020\356\163\112\103
\166\173\321\246\060\121\377\326\053\035\036\142\204\276\371\276
\151\227\231\307\015\347\174\044\120\165\027\375\244\040\347\065
\150\003\140\224\247\331\015\306\032\054\345\342\116\325\314\016
\300\172\060\126\357\140\222\276\331\056\365\307\360\350\105\317
\332\206\256\357\330\167\251\022\047\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\017\361\112
\112\165\164\005\021\014\035\330\133\231\353\277\376\252\175\136
\327\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\075\313\322\106\170\365\366\072\027\350
\303\173\144\321\305\273\220\170\215\365\117\271\304\055\227\373
\013\346\305\270\361\266\352\350\130\113\064\255\167\171\054\065
\037\162\175\002\076\356\265\320\026\212\006\067\226\265\357\103
\320\011\020\054\227\146\307\201\037\036\346\047\305\202\221\130
\136\363\310\133\101\150\200\203\221\271\234\201\370\047\372\105
\337\356\171\362\134\155\160\002\124\356\300\123\330\103\353\005

\172\314\364\121\335\251\324\042\175\152\073\362\376\210\324\122
\111\072\205\222\144\123\370\152\123\140\210\217\362\133\324\256
\053\122\340\352\377\124\176\241\344\357\206\033\247\203\013\006
\146\136\060\200\214\125\240\107\063\377\153\036\104\110\113\141
\252\036\076\350\114\144\307\330\155\175\016\256\074\074\102\075
\312\044\032\160\361\141\024\234\072\030\325\360\006\051\221\042
\262\072\072\241\026\124\143\032\371\063\225\104\237\044\243\041
\144\004\010\342\233\325\336\010\122\034\142\034\123\026\107\065
\102\046\307\247\014\375\363\133\023\167\002\214\134\342\026\360
\030\037\331\175\365\337\002\044\210\172\363\136\377\027\016\263
\142\147\241\253\261\027\216\075\072\106\260\365\106\214\253\204
\330\365\016\241\040\353\302\360\231\164\075\216\263\003\330\044
\305\154\353\153\014\123\277\140\151\335\214\050\305\157\317\273
\322\201\167\053\306\174\261\304\112\154\025\020\067\051\135\256
\370\261\021\005\304\024\215\354\023\243\104\375\115\213\150\270
\301\377\235\325\067\056\110\370\050\174\334\371\163\123\331\266
\001\165\102\172\277\013\337\121\120\270\123\262\341\356\164\220
\313\274\252\320\161\203\242\253\116\311\020\266\075\034\357\100
\327\117\103\220\063\271\001\226\124\135\052\325\006\133\222\206
\270\006\020\201\006\310\221\333\051\040\262\123\275\363\113\133
\114\333\151\037\211\156\124\077\327\211\135\347\265\315\014\276
\077\175\170\070\001\322\266\147\246\317\130\110\224\032\105\375
\220\163\111\312\265\103\240\041\142\215\111\004\046\252\370\037
\056\077\362\056\241\362\253\364\006\036\260\055\304\301\160\102
\075\375\303\121\111\210\000\016\312\202\015\233\171\002\342\300
\056\223\337\344\362\361
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing
Only Certificate
Trust for "Network Solutions RSA Certificate Authority"
Issuer: CN=Network Solutions RSA Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Serial Number:4c:03:4b:ac:67:18:4c:7f:af:44:08:4d:82:96:c7:b2
Subject: CN=Network Solutions RSA Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Not Valid Before: Wed Nov 18 00:00:00 2015
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): 5a:2f:58:bc:83:2c:2d:99:b4:9b:78:24:d4:8f:f9:67
Fingerprint (SHA1): 8e:92:8c:0f:c2:7b:b7:ab:a3:4e:6b:c0:ca:12:50:cb:57:b6:0f:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Network Solutions RSA Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\216\222\214\017\302\173\267\253\243\116\153\300\312\022\120\313
\127\266\017\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\132\057\130\274\203\054\055\231\264\233\170\044\324\217\371\147
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\122\123\101\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\114\003\113\254\147\030\114\177\257\104\010\115\202\226
\307\262
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Certificate "Network Solutions ECC Certificate Authority"
Issuer: CN=Network Solutions ECC Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Serial Number:79:38:4b:b4:19:1a:8d:74:22:cc:ff:85:32:f2:e4:ba
Subject: CN=Network Solutions ECC Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Not Valid Before: Wed Nov 18 00:00:00 2015
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): a5:a8:cc:e3:1c:41:11:8c:6a:8c:38:bd:a2:47:fe:b2
Fingerprint (SHA1): 80:f9:5b:74:1c:38:39:94:95:c3:4f:20:c2:3e:73:36:31:4d:3c:6b
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions ECC Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL

\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\105\103\103\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\105\103\103\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\171\070\113\264\031\032\215\164\042\314\377\205\062\362
\344\272
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\224\060\202\002\031\240\003\002\001\002\002\020\171
\070\113\264\031\032\215\164\042\314\377\205\062\362\344\272\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\212\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\013\060\011\006
\003\125\004\010\023\002\106\114\061\025\060\023\006\003\125\004
\007\023\014\112\141\143\153\163\157\156\166\151\154\154\145\061
\041\060\037\006\003\125\004\012\023\030\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\114\056\114\056
\103\056\061\064\060\062\006\003\125\004\003\023\053\116\145\164
\167\157\162\153\040\123\157\154\165\164\151\157\156\163\040\105
\103\103\040\103\145\162\164\151\146\151\143\141\164\145\040\101
\165\164\150\157\162\151\164\171\060\036\027\015\061\065\061\061
\061\070\060\060\060\060\060\060\132\027\015\063\070\060\061\061
\070\062\063\065\071\065\071\132\060\201\212\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\013\060\011\006\003\125\004
\010\023\002\106\114\061\025\060\023\006\003\125\004\007\023\014
\112\141\143\153\163\157\156\166\151\154\154\145\061\041\060\037
\006\003\125\004\012\023\030\116\145\164\167\157\162\153\040\123
\157\154\165\164\151\157\156\163\040\114\056\114\056\103\056\061

\064\060\062\006\003\125\004\003\023\053\116\145\164\167\157\162
\153\040\123\157\154\165\164\151\157\156\163\040\105\103\103\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\024\341\003
\013\145\157\255\131\326\036\356\311\277\264\114\305\306\134\057
\060\307\237\122\333\150\141\300\151\020\342\222\172\032\303\277
\222\250\211\071\212\373\347\240\273\161\244\240\303\337\167\326
\224\067\023\137\176\123\135\120\272\343\114\010\307\145\342\101
\260\346\131\362\234\370\300\262\167\301\012\221\046\167\362\151
\266\273\320\101\074\052\210\032\224\221\026\306\076\243\102\060
\100\060\035\006\003\125\035\016\004\026\004\024\233\173\353\310
\377\203\362\122\230\107\060\012\126\370\070\276\343\353\000\316
\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001\206
\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001
\377\060\012\006\010\052\206\110\316\075\004\003\003\003\151\000
\060\146\002\061\000\251\144\130\367\234\271\023\146\042\111\177
\262\321\002\351\023\374\034\373\244\064\222\344\312\007\015\267
\261\122\170\050\064\313\362\041\126\221\206\206\310\212\013\257
\062\204\124\145\211\002\061\000\354\171\015\235\211\360\014\030
\352\173\127\122\255\013\346\324\171\133\313\233\342\006\105\165
\030\275\320\374\247\335\307\341\307\042\266\343\101\044\135\043
\346\250\237\000\152\120\062\045
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Network Solutions ECC Certificate Authority"
Issuer: CN=Network Solutions ECC Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Serial Number:79:38:4b:b4:19:1a:8d:74:22:cc:ff:85:32:f2:e4:ba
Subject: CN=Network Solutions ECC Certificate Authority,O=Network Solutions
L.L.C.,L=Jacksonville,ST=FL,C=US
Not Valid Before: Wed Nov 18 00:00:00 2015
Not Valid After: Mon Jan 18 23:59:59 2038
Fingerprint (MD5): a5:a8:cc:e3:1c:41:11:8c:6a:8c:38:bd:a2:47:fe:b2
Fingerprint (SHA1): 80:f9:5b:74:1c:38:39:94:95:c3:4f:20:c2:3e:73:36:31:4d:3c:6b
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Network Solutions ECC Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\200\371\133\164\034\070\071\224\225\303\117\040\302\076\163\066

\061\115\074\153
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\245\250\314\343\034\101\021\214\152\214\070\275\242\107\376\262
END
CKA_ISSUER
MULTILINE_OCTAL
\060\201\212\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\013\060\011\006\003\125\004\010\023\002\106\114\061\025\060
\023\006\003\125\004\007\023\014\112\141\143\153\163\157\156\166
\151\154\154\145\061\041\060\037\006\003\125\004\012\023\030\116
\145\164\167\157\162\153\040\123\157\154\165\164\151\157\156\163
\040\114\056\114\056\103\056\061\064\060\062\006\003\125\004\003
\023\053\116\145\164\167\157\162\153\040\123\157\154\165\164\151
\157\156\163\040\105\103\103\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\171\070\113\264\031\032\215\164\042\314\377\205\062\362
\344\272
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Australian Defence Public Root CA"
Issuer: CN=Australian Defence Public Root CA,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Serial Number:29:eb:92:33:46:4f:32:41:ff:83:19:00:a9:ad:c4:d9:f8:e3:e2:7f
Subject: CN=Australian Defence Public Root CA,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Not Valid Before: Mon Nov 28 22:25:28 2016
Not Valid After: Fri Nov 28 22:13:48 2036
Fingerprint (MD5): a2:6b:fb:f8:f3:14:59:bf:16:d7:3c:ce:f3:20:0a:97
Fingerprint (SHA1): a9:ca:fe:9d:fd:67:f4:14:5a:d3:97:d0:e2:f3:05:0d:19:8d:e6:ee
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Australian Defence Public Root CA"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\052\060\050\006\003\125\004\003

\023\041\101\165\163\164\162\141\154\151\141\156\040\104\145\146
\145\156\143\145\040\120\165\142\154\151\143\040\122\157\157\164
\040\103\101
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\052\060\050\006\003\125\004\003
\023\041\101\165\163\164\162\141\154\151\141\156\040\104\145\146
\145\156\143\145\040\120\165\142\154\151\143\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\051\353\222\063\106\117\062\101\377\203\031\000\251\255
\304\331\370\343\342\177
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\042\060\202\003\012\240\003\002\001\002\002\024\051
\353\222\063\106\117\062\101\377\203\031\000\251\255\304\331\370
\343\342\177\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\161\061\013\060\011\006\003\125\004\006\023\002\101
\125\061\014\060\012\006\003\125\004\012\023\003\107\117\126\061
\014\060\012\006\003\125\004\013\023\003\104\157\104\061\014\060
\012\006\003\125\004\013\023\003\120\113\111\061\014\060\012\006
\003\125\004\013\023\003\103\101\163\061\052\060\050\006\003\125
\004\003\023\041\101\165\163\164\162\141\154\151\141\156\040\104
\145\146\145\156\143\145\040\120\165\142\154\151\143\040\122\157
\157\164\040\103\101\060\036\027\015\061\066\061\061\062\070\062
\062\062\065\062\070\132\027\015\063\066\061\061\062\070\062\062
\061\063\064\070\132\060\161\061\013\060\011\006\003\125\004\006
\023\002\101\125\061\014\060\012\006\003\125\004\012\023\003\107
\117\126\061\014\060\012\006\003\125\004\013\023\003\104\157\104
\061\014\060\012\006\003\125\004\013\023\003\120\113\111\061\014
\060\012\006\003\125\004\013\023\003\103\101\163\061\052\060\050
\006\003\125\004\003\023\041\101\165\163\164\162\141\154\151\141
\156\040\104\145\146\145\156\143\145\040\120\165\142\154\151\143
\040\122\157\157\164\040\103\101\060\202\001\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017\000
\060\202\001\012\002\202\001\001\000\323\116\124\004\033\320\364
\233\235\270\043\207\340\040\307\236\230\261\161\172\006\220\056
\342\255\110\376\223\005\154\354\206\277\050\100\205\263\114\171
\357\107\123\230\020\036\124\356\175\170\270\030\023\014\104\122
\375\320\201\252\223\010\043\071\276\137\017\153\335\045\227\363
\001\102\337\324\201\000\304\120\276\172\211\055\031\257\163\112

\077\314\072\300\277\242\250\305\025\367\076\174\101\164\202\153
\056\167\146\342\152\245\221\210\156\006\061\247\257\013\346\132
\340\256\175\132\257\057\107\320\362\373\204\163\234\106\241\036
\204\104\121\304\137\056\332\220\002\137\201\337\021\016\322\373
\273\072\027\163\243\362\215\143\252\117\377\162\172\145\142\203
\132\052\074\362\315\054\043\215\317\353\041\037\277\324\003\127
\365\067\026\014\136\345\127\021\302\250\372\377\154\071\362\075
\122\346\265\171\300\133\342\262\352\143\040\014\016\245\052\136
\022\341\346\257\137\213\174\240\255\071\065\065\230\137\361\257
\070\320\046\323\115\275\142\167\165\075\257\153\024\206\173\132
\366\041\217\326\352\342\247\016\255\002\003\001\000\001\243\201
\261\060\201\256\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\113\006\003\125\035\040\004\104\060\102
\060\006\006\004\125\035\040\000\060\070\006\011\052\044\001\202
\116\001\001\001\007\060\053\060\051\006\010\053\006\001\005\005
\007\002\001\026\035\150\164\164\160\072\057\057\143\162\154\056
\144\145\146\145\156\143\145\056\147\157\166\056\141\165\057\160
\153\151\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\306\060\037\006\003\125\035\043\004\030\060\026\200\024\254
\231\341\002\057\350\134\113\101\267\064\270\036\351\233\203\066
\015\224\264\060\035\006\003\125\035\016\004\026\004\024\254\231
\341\002\057\350\134\113\101\267\064\270\036\351\233\203\066\015
\224\264\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\003\202\001\001\000\170\274\201\112\330\072\127\273\275\046
\277\352\052\050\360\210\212\362\120\114\220\147\332\113\365\270
\024\010\272\333\177\162\250\232\131\274\361\034\211\250\364\072
\003\020\124\023\172\135\306\332\272\076\017\210\325\152\323\033
\227\055\142\141\072\157\371\000\257\162\006\163\354\020\300\141
\036\314\134\117\031\062\106\070\301\335\077\322\067\032\245\216
\206\240\360\011\314\065\326\031\002\174\315\071\374\367\371\037
\347\224\171\116\075\267\370\227\116\073\104\152\315\224\260\271
\367\176\342\343\371\231\177\305\323\246\120\264\111\373\026\176
\116\101\054\317\076\307\171\100\272\201\030\046\010\371\305\235
\343\330\361\157\034\150\077\152\133\167\027\122\243\006\336\031
\302\113\156\242\225\374\325\010\277\054\265\151\065\121\343\343
\337\117\032\051\155\203\170\075\070\044\312\002\077\124\020\341
\263\144\341\325\232\336\363\067\366\063\020\265\166\263\253\327
\311\037\123\072\255\125\101\034\110\311\066\236\207\377\165\334
\151\320\257\331\172\127\306\312\261\103\374\071\201\374\334\172
\243\232\245\230\120\124
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Australian Defence Public Root CA"

Issuer: CN=Australian Defence Public Root CA,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Serial Number:29:eb:92:33:46:4f:32:41:ff:83:19:00:a9:ad:c4:d9:f8:e3:e2:7f
Subject: CN=Australian Defence Public Root CA,OU=CAs,OU=PKI,OU=DoD,O=GOV,C=AU
Not Valid Before: Mon Nov 28 22:25:28 2016
Not Valid After: Fri Nov 28 22:13:48 2036
Fingerprint (MD5): a2:6b:fb:f8:f3:14:59:bf:16:d7:3c:ce:f3:20:0a:97
Fingerprint (SHA1): a9:ca:fe:9d:fd:67:f4:14:5a:d3:97:d0:e2:f3:05:0d:19:8d:e6:ee
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Australian Defence Public Root CA"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\251\312\376\235\375\147\364\024\132\323\227\320\342\363\005\015
\031\215\346\356
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\242\153\373\370\363\024\131\277\026\327\074\316\363\040\012\227
END
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\101\125\061
\014\060\012\006\003\125\004\012\023\003\107\117\126\061\014\060
\012\006\003\125\004\013\023\003\104\157\104\061\014\060\012\006
\003\125\004\013\023\003\120\113\111\061\014\060\012\006\003\125
\004\013\023\003\103\101\163\061\052\060\050\006\003\125\004\003
\023\041\101\165\163\164\162\141\154\151\141\156\040\104\145\146
\145\156\143\145\040\120\165\142\154\151\143\040\122\157\157\164
\040\103\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\051\353\222\063\106\117\062\101\377\203\031\000\251\255
\304\331\370\343\342\177
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SI-TRUST Root"
Issuer: CN=SI-TRUST Root,2.5.4.97=VATSI-17659957,O=Republika Slovenija,C=SI
Serial Number:90:ae:77:76:00:00:00:00:57:1d:d0:6f
Subject: CN=SI-TRUST Root,2.5.4.97=VATSI-17659957,O=Republika Slovenija,C=SI
Not Valid Before: Mon Apr 25 07:38:17 2016
Not Valid After: Fri Dec 25 08:08:17 2037
Fingerprint (MD5): 3a:ba:c6:f3:c7:d1:b7:8a:86:22:7d:ee:99:81:fc:90

Fingerprint (SHA1): 3a:49:79:b4:0f:a8:41:48:82:00:b5:82:fb:ee:b6:3a:ab:99:19:ae
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SI-TRUST Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT
MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\034\060\032\006\003\125\004\012\023\023\122\145\160\165\142\154
\151\153\141\040\123\154\157\166\145\156\151\152\141\061\027\060
\025\006\003\125\004\141\023\016\126\101\124\123\111\055\061\067
\066\065\071\071\065\067\061\026\060\024\006\003\125\004\003\023
\015\123\111\055\124\122\125\123\124\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\034\060\032\006\003\125\004\012\023\023\122\145\160\165\142\154
\151\153\141\040\123\154\157\166\145\156\151\152\141\061\027\060
\025\006\003\125\004\141\023\016\126\101\124\123\111\055\061\067
\066\065\071\071\065\067\061\026\060\024\006\003\125\004\003\023
\015\123\111\055\124\122\125\123\124\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\015\000\220\256\167\166\000\000\000\000\127\035\320\157
END
CKA_VALUE MULTILINE_OCTAL
\060\202\004\212\060\202\002\362\240\003\002\001\002\002\015\000
\220\256\167\166\000\000\000\000\127\035\320\157\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\060\134\061\013\060
\011\006\003\125\004\006\023\002\123\111\061\034\060\032\006\003
\125\004\012\023\023\122\145\160\165\142\154\151\153\141\040\123
\154\157\166\145\156\151\152\141\061\027\060\025\006\003\125\004
\141\023\016\126\101\124\123\111\055\061\067\066\065\071\071\065
\067\061\026\060\024\006\003\125\004\003\023\015\123\111\055\124
\122\125\123\124\040\122\157\157\164\060\036\027\015\061\066\060
\064\062\065\060\067\063\070\061\067\132\027\015\063\067\061\062
\062\065\060\070\060\070\061\067\132\060\134\061\013\060\011\006
\003\125\004\006\023\002\123\111\061\034\060\032\006\003\125\004
\012\023\023\122\145\160\165\142\154\151\153\141\040\123\154\157
\166\145\156\151\152\141\061\027\060\025\006\003\125\004\141\023
\016\126\101\124\123\111\055\061\067\066\065\071\071\065\067\061
\026\060\024\006\003\125\004\003\023\015\123\111\055\124\122\125
\123\124\040\122\157\157\164\060\202\001\242\060\015\006\011\052
\206\110\206\367\015\001\001\001\005\000\003\202\001\217\000\060
\202\001\212\002\202\001\201\000\323\313\234\055\302\340\060\103

\145\061\044\377\113\260\070\331\251\123\327\065\321\333\267\113
\223\264\162\215\361\313\225\322\123\053\164\233\062\232\244\057
\076\002\006\335\257\160\025\241\252\317\021\207\212\146\173\313
\314\035\160\104\134\217\254\312\346\303\133\047\264\215\243\216
\020\277\156\124\164\010\160\212\043\350\312\307\164\304\146\221
\040\335\113\350\245\204\165\245\230\225\202\213\033\341\040\044
\007\106\253\014\145\066\100\147\213\165\356\251\331\221\051\033
\355\157\055\105\302\326\342\140\001\261\363\116\071\053\073\157
\077\205\276\010\366\123\053\173\242\311\105\241\104\201\200\146
\232\140\072\033\304\276\014\314\060\020\177\021\066\070\112\346
\233\241\226\123\234\224\314\021\306\004\114\242\125\113\377\200
\341\257\214\034\065\374\271\223\067\337\371\135\075\334\353\015
\047\154\104\311\131\146\053\126\157\377\004\033\367\365\151\303
\135\303\030\376\275\247\331\144\057\242\237\140\331\162\154\075
\074\165\362\045\047\230\056\072\270\311\335\115\165\275\253\260
\042\141\130\001\067\050\246\040\235\056\140\134\373\220\274\106
\103\270\376\155\330\300\146\042\044\153\064\170\042\345\271\342
\130\351\110\070\356\114\275\001\173\156\076\100\352\321\302\012
\102\223\147\303\046\057\077\007\133\317\257\343\035\350\072\342
\145\341\204\221\077\365\146\000\375\252\063\106\102\354\026\076
\322\023\145\057\016\011\123\366\344\052\165\024\234\031\063\026
\232\105\341\333\127\317\317\070\324\247\367\355\130\103\344\016
\230\134\304\340\061\077\224\244\157\113\112\242\325\112\215\046
\251\035\144\045\010\065\015\347\002\003\001\000\001\243\113\060
\111\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\023\006\003\125\035\043\004\014\060\012\200\010\114
\243\303\150\136\010\002\143\060\021\006\003\125\035\016\004\012
\004\010\114\243\303\150\136\010\002\143\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\003\202\001\201\000\046\043
\205\273\135\101\031\156\222\203\212\356\001\213\004\065\031\177
\253\217\334\326\063\301\371\171\226\136\043\365\360\316\335\352
\333\141\073\132\257\335\130\351\102\211\100\357\371\331\147\021
\177\115\361\355\351\021\173\261\101\017\355\244\322\026\266\357
\301\375\213\366\021\053\054\357\374\007\006\106\014\317\002\013
\355\073\336\217\011\271\063\253\046\200\124\104\102\145\327\347
\257\315\120\016\312\310\210\241\022\234\052\225\073\076\124\074
\110\163\366\174\170\324\233\377\223\367\105\344\051\204\143\374
\372\176\032\347\134\340\162\127\260\057\170\035\060\306\023\375
\210\137\261\145\210\332\136\227\023\201\173\376\036\317\173\277
\127\060\301\160\222\103\246\231\360\125\237\230\305\043\102\275
\164\034\061\216\022\245\331\105\152\052\132\310\130\315\275\326
\335\076\065\013\031\177\003\034\316\007\017\207\105\223\025\241
\153\275\064\034\340\336\365\324\270\345\221\034\113\005\265\047
\046\274\317\321\011\230\026\306\341\361\125\113\072\173\155\336
\306\147\266\301\067\055\237\250\216\131\307\267\246\305\357\337
\026\342\355\336\262\267\363\242\066\244\050\062\072\012\224\313
\077\136\376\156\131\355\272\066\262\223\326\306\303\031\376\365

\231\170\353\107\107\345\255\102\172\354\274\173\311\056\101\116
\115\017\004\016\212\113\063\207\334\361\166\174\132\030\214\234
\012\022\327\242\263\302\205\207\256\155\061\120\142\062\041\240
\150\026\137\224\065\164\125\051\322\161\201\010\112\341\327\135
\252\124\001\263\033\174\131\256\276\254\014\312\270\100\144\147
\133\235\352\006\006\021\326\320\060\163\036\343\274\053
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SI-TRUST Root"
Issuer: CN=SI-TRUST Root,2.5.4.97=VATSI-17659957,O=Republika Slovenija,C=SI
Serial
Number:90:ae:77:76:00:00:00:00:57:1d:d0:6f
Subject: CN=SI-TRUST Root,2.5.4.97=VATSI-17659957,O=Republika Slovenija,C=SI
Not Valid Before: Mon Apr 25 07:38:17 2016
Not Valid After: Fri Dec 25 08:08:17 2037
Fingerprint (MD5): 3a:ba:c6:f3:c7:d1:b7:8a:86:22:7d:ee:99:81:fc:90
Fingerprint (SHA1): 3a:49:79:b4:0f:a8:41:48:82:00:b5:82:fb:ee:b6:3a:ab:99:19:ae
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SI-TRUST Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\072\111\171\264\017\250\101\110\202\000\265\202\373\356\266\072
\253\231\031\256
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\072\272\306\363\307\321\267\212\206\042\175\356\231\201\374\220
END
CKA_ISSUER MULTILINE_OCTAL
\060\134\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\034\060\032\006\003\125\004\012\023\023\122\145\160\165\142\154
\151\153\141\040\123\154\157\166\145\156\151\152\141\061\027\060
\025\006\003\125\004\141\023\016\126\101\124\123\111\055\061\067
\066\065\071\071\065\067\061\026\060\024\006\003\125\004\003\023
\015\123\111\055\124\122\125\123\124\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\015\000\220\256\167\166\000\000\000\000\127\035\320\157
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Swiss Government Root CA III"
Issuer: CN=Swiss Government Root CA III,OU=www.pki.admin.ch,O=Swiss Government PKI,C=CH
Serial Number:fb:1f:0b:42:2b:a8:41:3e:57:d1:ee:2a:6e:5a:4f:bb
Subject: CN=Swiss Government Root CA III,OU=www.pki.admin.ch,O=Swiss Government PKI,C=CH
Not Valid Before: Fri Apr 15 07:00:00 2016
Not Valid After: Mon Apr 15 06:59:59 2041
Fingerprint (MD5): 56:83:cb:f2:76:2c:93:dc:11:3b:ea:c2:09:19:17:46
Fingerprint (SHA1): cc:ea:e3:24:45:cd:42:18:dd:18:8e:ad:ce:b3:13:3c:7f:b3:40:ad
CKA_CLASS
 CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA III"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\035\060\033\006\003\125\004\012\023\024\123\167\151\163\163\040
\107\157\166\145\162\156\155\145\156\164\040\120\113\111\061\031
\060\027\006\003\125\004\013\023\020\167\167\167\056\160\153\151
\056\141\144\155\151\156\056\143\150\061\045\060\043\006\003\125
\004\003\023\034\123\167\151\163\163\040\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\101\040\111\111\111
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\035\060\033\006\003\125\004\012\023\024\123\167\151\163\163\040
\107\157\166\145\162\156\155\145\156\164\040\120\113\111\061\031
\060\027\006\003\125\004\013\023\020\167\167\167\056\160\153\151
\056\141\144\155\151\156\056\143\150\061\045\060\043\006\003\125
\004\003\023\034\123\167\151\163\163\040\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\101\040\111\111\111
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\021\000\373\037\013\102\053\250\101\076\127\321\356\052\156
\132\117\273
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\126\060\202\004\076\240\003\002\001\002\002\021\000
\373\037\013\102\053\250\101\076\127\321\356\052\156\132\117\273
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\156\061\013\060\011\006\003\125\004\006\023\002\103\110\061\035

\060\033\006\003\125\004\012\023\024\123\167\151\163\163\040\107
\157\166\145\162\156\155\145\156\164\040\120\113\111\061\031\060
\027\006\003\125\004\013\023\020\167\167\167\056\160\153\151\056
\141\144\155\151\156\056\143\150\061\045\060\043\006\003\125\004
\003\023\034\123\167\151\163\163\040\107\157\166\145\162\156\155
\145\156\164\040\122\157\157\164\040\103\101\040\111\111\111\060
\036\027\015\061\066\060\064\061\065\060\067\060\060\060\060\132
\027\015\064\061\060\064\061\065\060\066\065\071\065\071\132\060
\156\061\013\060\011\006\003\125\004\006\023\002\103\110\061\035
\060\033\006\003\125\004\012\023\024\123\167\151\163\163\040\107
\157\166\145\162\156\155\145\156\164\040\120\113\111\061\031\060
\027\006\003\125\004\013\023\020\167\167\167\056\160\153\151\056
\141\144\155\151\156\056\143\150\061\045\060\043\006\003\125\004
\003\023\034\123\167\151\163\163\040\107\157\166\145\162\156\155
\145\156\164\040\122\157\157\164\040\103\101\040\111\111\111\060
\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001\000
\341\103\206\216\117\030\224\272\323\302\071\160\155\135\151\121
\204\131\274\273\310\177\057\375\027\243\170\234\275\330\222\343
\330\170\041\076\273\232\137\373\262\145\120\162\266\247\354\245
\347\301\305\000\004\343\314\263\002\112\371\000\333\157\155\273
\223\027\104\371\043\302\126\072\060\037\201\171\373\144\277\365
\124\205\277\073\053\157\225\004\006\135\150\012\303\217\270\053
\146\022\276\242\330\132\224\005\175\257\301\023\006\246\221\072
\077\031\013\205\203\300\226\135\363\201\310\023\212\365\020\113
\240\165\072\133\243\100\007\275\241\146\030\145\204\124\171\221
\232\323\162\204\146\325\015\346\073\132\352\372\333\241\124\375
\000\043\131\350\127\352\234\267\364\217\101\013\151\261\107\260
\232\057\142\332\232\031\255\240\225\060\315\056\255\147\273\155
\371\066\103\267\224\171\311\220\011\000\151\137\227\246\323\157
\045\350\357\142\207\167\327\246\331\116\034\137\141\146\320\261
\160\325\340\142\040\066\330\226\100\370\136\061\336\101\231\151
\020\326\240\356\075\255\023\056\322\224\112\215\200\035\334\214
\106\041\126\213\111\133\336\241\330\003\312\316\330\145\264\260
\005\075\046\151\112\155\245\214\171\057\244\217\022\170\020\351
\262\011\010\103\303\306\004\273\063\076\107\065\245\134\040\040
\012\342\066\370\143\206\344\015\364\076\024\171\276\105\007\264
\213\011\223\365\366\052\046\241\275\104\307\363\120\015\015\141
\233\073\021\337\250\203\352\042\054\225\104\015\071\101\143\115
\250\053\155\150\245\113\237\100\207\152\074\105\012\276\162\247
\210\276\360\071\052\133\357\131\244\040\357\264\334\303\332\101
\333\101\245\272\042\137\227\243\310\143\241\044\055\116\045\240
\303\027\050\305\210\101\223\226\144\146\067\103\005\233\025\174
\266\276\236\373\033\310\146\030\272\024\357\271\030\317\204\151
\233\237\275\202\007\022\155\033\031\277\060\176\361\222\016\300
\114\026\377\321\076\157\370\253\262\141\232\150\103\342\012\124
\307\001\243\127\216\363\104\006\042\303\160\246\273\245\263\314
\202\030\330\100\216\275\352\160\101\157\224\127\014\276\007\164

\156\216\223\172\031\217\306\150\374\033\245\105\263\271\205\251
\002\003\001\000\001\243\201\356\060\201\353\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003
\125\035\016\004\026\004\024\007\353\216\252\161\313\047\245\273
\307\061\140\276\355\037\317\240\063\304\346\060\201\250\006\003
\125\035\043\004\201\240\060\201\235\200\024\007\353\216\252\161
\313\047\245\273\307\061\140\276\355\037\317\240\063\304\346\241
\162\244\160\060\156\061\013\060\011\006\003\125\004\006\023\002
\103\110\061\035\060\033\006\003\125\004\012\023\024\123\167\151
\163\163\040\107\157\166\145\162\156\155\145\156\164\040\120\113
\111\061\031\060\027\006\003\125\004\013\023\020\167\167\167\056
\160\153\151\056\141\144\155\151\156\056\143\150\061\045\060\043
\006\003\125\004\003\023\034\123\167\151\163\163\040\107\157\166
\145\162\156\155\145\156\164\040\122\157\157\164\040\103\101\040
\111\111\111\202\021\000\373\037\013\102\053\250\101\076\127\321
\356\052\156\132\117\273\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\006\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\263\117\146\274\336\351
\214\145\374\267\123\020\056\374\374\335\211\032\021\100\160\224
\061\211\225\166\306\326\052\314\075\247\243\301\270\316\022\153
\064\120\301\165\052\057\347\141\046\357\113\077\336\215\043\237
\015\230\076\037\073\326\152\316\074\361\337\321\113\167\214\250
\117\362\120\345\050\251\301\152\352\126\157\107\264\202\053\246
\047\262\045\360\335\043\012\077\351\075\214\045\354\303\265\117
\067\372\123\012\351\070\230\153\051\354\123\065\327\206\220\232
\372\143\272\166\124\343\120\117\312\326\347\300\161\320\322\347
\352\150\124\255\223\344\062\374\172\161\100\207\005\050\270\352
\270\302\074\215\000\136\301\116\050\126\345\303\154\265\365\252
\215\357\147\026\007\320\216\305\362\132\031\073\273\301\213\263
\104\237\014\245\307\313\336\323\104\140\247\275\033\151\332\016
\232\377\227\105\206\155\372\261\144\212\037\354\337\121\130\122
\115\326\352\272\006\366\123\161\133\336\351\125\365\054\023\162
\006\114\123\226\372\312\133\364\077\034\247\337\122\375\313\116
\175\237\020\100\224\247\241\125\272\163\076\164\164\060\370\243
\340\237\252\137\037\135\300\337\101\317\001\201\041\333\250\256
\263\063\255\106\023\167\233\073\060\264\244\340\027\202\300\212
\265\064\024\034\005\213\256\340\075\332\305\174\253\046\010\114
\275\112\140\351\160\354\250\130\210\165\147\361\030\227\166\015
\154\013\175\031\055\002\265\202\231\167\317\142\372\235\022\001
\053\331\365\264\127\261\072\353\325\051\360\214\323\102\247\065
\110\214\142\203\076\012\076\141\335\261\363\007\241\307\163\260
\211\360\266\131\173\243\043\330\067\003\065\210\253\105\167\143
\114\377\160\353\216\152\007\321\042\340\062\221\313\025\161\132
\053\305\204\076\221\315\335\264\231\147\215\264\252\214\145\027
\246\254\234\136\126\230\247\364\342\100\022\325\101\227\265\063
\361\355\027\241\245\002\020\341\144\265\100\332\036\255\321\246
\356\254\036\307\021\333\027\161\172\331\232\036\306\116\233\364
\250\263\224\237\011\212\177\114\233\376\010\013\054\253\120\320

\067\262\111\065\032\267\036\051\041\166\341\233\360\241\252\130
\147\044\003\341\031\244\321\023\152\361
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Swiss Government Root CA III"
Issuer: CN=Swiss Government Root CA III,OU=www.pki.admin.ch,O=Swiss Government PKI,C=CH
Serial Number:fb:1f:0b:42:2b:a8:41:3e:57:d1:ee:2a:6e:5a:4f:bb
Subject: CN=Swiss Government Root CA III,OU=www.pki.admin.ch,O=Swiss Government PKI,C=CH
Not Valid Before: Fri Apr 15 07:00:00 2016
Not Valid After: Mon Apr 15 06:59:59 2041
Fingerprint (MD5): 56:83:cb:f2:76:2c:93:dc:11:3b:ea:c2:09:19:17:46
Fingerprint (SHA1): cc:ea:e3:24:45:cd:42:18:dd:18:8e:ad:ce:b3:13:3c:7f:b3:40:ad
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Swiss Government Root CA III"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\314\352\343\044\105\315\102\030\335\030\216\255\316\263\023\074
\177\263\100\255
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\126\203\313\362\166\054\223\334\021\073\352\302\011\031\027\106
END
CKA_ISSUER MULTILINE_OCTAL
\060\156\061\013\060\011\006\003\125\004\006\023\002\103\110\061
\035\060\033\006\003\125\004\012\023\024\123\167\151\163\163\040
\107\157\166\145\162\156\155\145\156\164\040\120\113\111\061\031
\060\027\006\003\125\004\013\023\020\167\167\167\056\160\153\151
\056\141\144\155\151\156\056\143\150\061\045\060\043\006\003\125
\004\003\023\034\123\167\151\163\163\040\107\157\166\145\162\156
\155\145\156\164\040\122\157\157\164\040\103\101\040\111\111\111
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\021\000\373\037\013\102\053\250\101\076\127\321\356\052\156
\132\117\273
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Certificate "Application CA G4 Root"
Issuer: CN=Application CA G4 Root,O=LGPKI,C=JP
Serial Number:31:a5:f3:ca:90:ea:23:ac:d2:9e:bd
Subject: CN=Application CA G4 Root,O=LGPKI,C=JP
Not Valid Before: Wed Feb 15 15:00:00 2017
Not Valid After: Sun Feb 15 14:59:59 2037
Fingerprint (MD5): 80:88:87:a3:29:65:03:a4:53:f1:23:08:41:e6:6b:66
Fingerprint (SHA1): 21:da:ce:4c:2c:34:e6:64:68:ee:06:31:4d:b0:55:a0:a8:9d:4c:1d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Application CA G4 Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\064\040\122\157\157\164
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\064\040\122\157\157\164
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\013\061\245\363\312\220\352\043\254\322\236\275
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\144\060\202\002\114\240\003\002\001\002\002\013\061
\245\363\312\220\352\043\254\322\236\275\060\015\006\011\052\206
\110\206\367\015\001\001\013\005\000\060\076\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\016\060\014\006\003\125\004
\012\023\005\114\107\120\113\111\061\037\060\035\006\003\125\004
\003\023\026\101\160\160\154\151\143\141\164\151\157\156\040\103
\101\040\107\064\040\122\157\157\164\060\036\027\015\061\067\060
\062\061\065\061\065\060\060\060\060\132\027\015\063\067\060\062
\061\065\061\064\065\071\065\071\132\060\076\061\013\060\011\006
\003\125\004\006\023\002\112\120\061\016\060\014\006\003\125\004
\012\023\005\114\107\120\113\111\061\037\060\035\006\003\125\004
\003\023\026\101\160\160\154\151\143\141\164\151\157\156\040\103
\101\040\107\064\040\122\157\157\164\060\202\001\042\060\015\006
\011\052\206\110\206\367\015\001\001\001\005\000\003\202\001\017

\000\060\202\001\012\002\202\001\001\000\257\253\307\345\214\246
\130\236\057\326\005\311\221\167\060\276\336\032\324\016\143\142
\321\314\055\261\321\206\070\215\035\205\146\123\237\252\101\145
\340\130\322\345\051\276\224\250\225\223\074\137\152\305\233\237
\064\350\155\301\306\323\247\345\103\240\022\060\300\071\064\140
\014\213\364\150\365\110\337\351\216\034\256\110\247\273\252\075
\170\267\342\111\273\301\043\004\132\033\220\001\305\175\253\112
\001\241\302\223\152\322\205\263\266\347\166\353\153\157\070\353
\040\122\060\225\010\365\371\054\356\310\300\165\271\001\355\301
\067\126\060\134\235\177\144\302\312\100\040\271\225\205\274\245
\007\175\014\276\056\241\335\306\046\351\052\051\154\237\050\230
\051\121\350\166\023\033\357\056\013\067\132\063\236\300\045\147
\252\017\055\250\324\222\046\070\001\247\320\142\030\056\042\070
\070\170\013\272\122\231\241\174\046\002\261\342\305\342\336\316
\212\002\104\204\242\243\351\213\210\143\061\311\057\070\000\351
\304\002\115\036\043\047\022\110\334\021\261\360\322\342\016\060
\031\257\003\241\007\263\065\224\042\245\002\003\001\000\001\243
\143\060\141\060\035\006\003\125\035\016\004\026\004\024\156\334
\012\065\037\040\302\350\241\323\175\005\116\117\114\140\345\244
\304\147\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024
\156\334\012\065\037\040\302\350\241\323\175\005\116\117\114\140
\345\244\304\147\060\015\006\011\052\206\110\206\367\015\001\001
\013\005\000\003\202\001\001\000\125\063\325\100\267\032\176\117
\334\164\203\016\104\272\077\275\122\225\310\223\226\043\362\001
\271\024\353\312\022\164\315\141\210\064\257\115\136\364\131\212
\253\036\330\343\131\301\036\370\060\265\100\306\273\270\257\321
\355\077\154\252\163\230\202\344\230\064\256\222\101\016\131\066
\032\272\120\034\026\364\027\072\054\033\342\227\157\262\257\321
\332\336\024\122\337\200\074\307\117\075\207\236\272\225\275\170
\274\125\074\211\366\056\046\325\025\345\320\100\022\305\263\161
\077\154\146\037\243\374\113\265\116\342\156\334\200\007\303\371
\050\024\173\367\136\026\152\103\247\256\221\001\037\117\145\251
\110\263\316\156\032\006\041\244\323\061\210\210\245\111\021\202
\153\353\271\235\140\376\237\376\305\367\370\177\253\067\356\257
\347\130\106\272\011\344\135\071\247\113\004\330\003\002\311\140
\052\136\125\151\021\013\140\170\201\172\364\161\365\217\106\256
\217\004\250\227\034\200\211\043\143\333\376\353\246\027\016\131
\266\056\271\206\353\137\136\154\335\201\347\253\060\201\043\220
\047\261\367\053\220\071\013\270
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Application CA G4 Root"
Issuer: CN=Application CA G4 Root,O=LGPKI,C=JP
Serial Number:31:a5:f3:ca:90:ea:23:ac:d2:9e:bd
Subject: CN=Application CA G4 Root,O=LGPKI,C=JP
Not Valid Before: Wed Feb 15 15:00:00 2017
Not Valid After: Sun Feb 15 14:59:59 2037
Fingerprint (MD5): 80:88:87:a3:29:65:03:a4:53:f1:23:08:41:e6:6b:66
Fingerprint (SHA1): 21:da:ce:4c:2c:34:e6:64:68:ee:06:31:4d:b0:55:a0:a8:9d:4c:1d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Application CA G4 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\041\332\316\114\054\064\346\144\150\356\006\061\115\260\125\240
\250\235\114\035
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\200\210\207\243\051\145\003\244\123\361\043\010\101\346\153\146
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\064\040\122\157\157\164
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\061\245\363\312\220\352\043\254\322\236\275
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSC GDL CA Root A"
Issuer: CN=SSC GDL CA Root A,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:50:96:6e:72:bd:10:d6:8c:4f:6b:c7:62:3f:9c:70:38
Subject: CN=SSC GDL CA Root A,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Tue Jun 04 13:00:47 2013
Not Valid After: Sat Jun 04 13:00:47 2033
Fingerprint (MD5): 59:3f:bc:3d:18:77:a4:ae:1c:d8:a2:25:cd:c3:44:3e
#
 Fingerprint (SHA1): 0c:20:09:a4:a8:8d:8b:42:02:18:52:50:54:0c:c4:2b:df:b5:b0:89
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC GDL CA Root A"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\101
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\101
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\120\226\156\162\275\020\326\214\117\153\307\142\077\234
\160\070
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\256\060\202\003\226\240\003\002\001\002\002\020\120
\226\156\162\275\020\326\214\117\153\307\142\077\234\160\070\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\161
\061\013\060\011\006\003\125\004\006\023\002\114\124\061\053\060
\051\006\003\125\004\012\023\042\123\153\141\151\164\155\145\156
\151\156\151\157\040\163\145\162\164\151\146\151\153\141\166\151
\155\157\040\143\145\156\164\162\141\163\061\031\060\027\006\003
\125\004\013\023\020\103\101\040\122\117\117\124\040\123\145\162
\166\151\143\145\163\061\032\060\030\006\003\125\004\003\023\021
\123\123\103\040\107\104\114\040\103\101\040\122\157\157\164\040
\101\060\036\027\015\061\063\060\066\060\064\061\063\060\060\064
\067\132\027\015\063\063\060\066\060\064\061\063\060\060\064\067
\132\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124
\061\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164
\155\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153
\141\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060
\027\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040

\123\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004
\003\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157
\157\164\040\101\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\237\134\112\374\034\153\267\031\227\331\001
\067\076\012\351\030\206\323\005\352\242\332\337\011\202\127\356
\155\053\215\232\026\075\125\076\211\327\311\276\341\001\243\200
\065\243\106\354\341\021\355\250\074\225\345\072\122\201\312\116
\230\010\052\017\204\334\273\351\244\371\171\266\111\302\025\236
\240\225\350\017\110\367\120\327\371\246\103\324\007\013\060\101
\311\066\022\142\267\154\170\013\006\077\056\263\236\352\060\375
\101\143\117\204\054\067\316\007\246\071\144\173\161\025\133\053
\001\362\327\175\230\015\030\076\333\205\232\340\001\120\041\044
\270\033\243\143\103\323\201\133\115\014\201\116\070\153\316\140
\305\352\007\342\047\342\353\366\303\124\232\310\311\263\321\053
\062\067\002\274\155\173\236\220\167\043\215\223\023\046\073\207
\127\243\145\117\046\130\024\152\143\045\232\345\141\372\034\127
\375\015\054\151\017\306\012\360\046\071\027\002\243\326\163\201
\102\303\102\061\203\213\340\372\113\116\130\141\061\050\222\074
\306\311\020\010\311\014\133\104\254\143\302\327\142\031\362\161
\356\040\267\111\203\031\236\107\332\126\305\034\254\244\071\150
\027\137\021\032\154\252\245\222\217\275\033\313\305\340\002\200
\125\323\160\123\345\213\052\376\102\352\275\073\134\343\122\000
\175\170\077\046\314\021\256\064\321\062\014\370\173\240\321\175
\075\343\212\274\276\036\036\222\077\070\262\137\062\136\065\304
\176\302\222\015\235\266\313\131\325\353\022\152\335\162\041\121
\021\260\163\345\062\351\326\314\016\335\263\071\132\042\357\344
\365\351\006\151\206\052\174\163\257\030\042\163\054\066\045\334
\125\251\122\061\263\212\216\025\175\262\116\020\173\120\212\000
\114\272\207\342\105\123\167\176\115\145\002\153\214\223\266\153
\165\355\357\226\267\110\216\250\340\272\271\202\262\122\155\041
\377\222\272\321\076\260\134\261\253\031\016\031\163\106\053\323
\122\110\145\064\332\004\065\322\170\076\317\143\065\244\123\346
\113\343\120\203\275\363\233\207\262\041\332\110\241\172\113\354
\262\342\361\324\045\005\224\123\026\114\053\146\044\020\310\340
\327\234\022\244\224\302\001\043\223\241\000\246\340\156\273\071
\342\365\172\150\251\002\003\001\000\001\243\102\060\100\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\006\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\035\006\003\125\035\016\004\026\004\024\240\021\176\037\344\224
\144\121\073\022\071\172\154\335\111\223\371\375\300\134\060\015
\006\011\052\206\110\206\367\015\001\001\013\005\000\003\202\002
\001\000\014\361\113\214\341\117\026\026\322\352\142\222\266\255
\324\122\216\013\031\144\113\071\360\230\071\163\112\122\352\116
\315\216\144\107\260\060\217\074\017\055\332\042\145\363\031\130
\062\074\177\203\217\012\014\345\124\346\251\276\270\256\227\126
\346\267\015\031\174\275\227\054\152\052\245\126\163\202\336\116
\230\213\075\034\304\320\053\053\273\305\014\370\116\376\055\256

\277\251\147\177\127\263\157\355\377\213\323\126\014\357\060\214
\301\136\246\351\131\212\074\056\334\107\317\314\224\136\203\254
\024\166\372\176\274\014\243\016\134\033\210\354\053\033\065\150
\210\261\365\173\305\363\263\305\032\274\373\357\265\136\337\360
\071\036\165\150\355\104\302\113\042\160\076\134\153\224\311\020
\254\360\375\310\057\176\043\342\201\247\033\316\014\272\105\062
\047\120\105\071\254\340\376\000\264\052\165\007\014\147\033\273
\161\300\202\343\227\126\227\320\344\167\131\271\377\174\147\134
\204\145\273\010\066\250\113\116\221\302\151\376\035\354\232\023
\037\165\063\054\051\306\351\260\150\220\043\377\043\137\177\306
\073\247\050\020\270\037\242\210\315\144\026\045\117\343\200\267
\300\112\200\127\360\220\333\072\262\002\062\040\325\153\310\330
\024\100\311\331\070\031\124\070\353\350\145\073\157\134\325\105
\172\257\333\331\330\225\236\266\247\225\315\034\011\035\002\036
\001\351\004\225\135\205\227\070\025\275\250\307\231\336\323\104
\102\135\206\203\101\044\174\121\211\252\103\011\047\064\350\361
\012\265\226\113\264\363\240\376\362\000\215\152\073\164\271\103
\271\146\271\317\352\353\067\316\377\233\351\043\370\154\323\043
\375\350\351\340\156\370\373\015\122\100\212\254\200\153\040\020
\135\320\250\375\252\075\071\021\053\057\377\122\221\072\240\334
\212\307\166\066\021\131\205\273\060\212\244\110\060\234\141\103
\253\324\257\166\355\300\277\027\224\170\065\333\110\067\010\324
\216\152\000\351\042\335\312\360\323\022\070\074\230\237\140\114
\155\077\102\375\357\214\232\267\036\161\172\032\111\324\140\311
\353\217\364\351\306\277\160\124\210\322\307\127\073\126\315\327
\156\334\355\015\164\176\345\165\101\221\127\223\064\175\251\365
\275\207
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "SSC GDL CA Root A"
Issuer: CN=SSC GDL CA Root A,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Serial Number:50:96:6e:72:bd:10:d6:8c:4f:6b:c7:62:3f:9c:70:38
Subject: CN=SSC GDL CA Root A,OU=CA ROOT Services,O=Skaitmeninio sertifikavimo centras,C=LT
Not Valid Before: Tue Jun 04 13:00:47 2013
Not Valid After: Sat Jun 04 13:00:47 2033
Fingerprint (MD5): 59:3f:bc:3d:18:77:a4:ae:1c:d8:a2:25:cd:c3:44:3e
#
Fingerprint (SHA1): 0c:20:09:a4:a8:8d:8b:42:02:18:52:50:54:0c:c4:2b:df:b5:b0:89
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSC GDL CA Root A"

CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\014\040\011\244\250\215\213\102\002\030\122\120\124\014\304\053
\337\265\260\211
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\131\077\274\075\030\167\244\256\034\330\242\045\315\303\104\076
END
CKA_ISSUER MULTILINE_OCTAL
\060\161\061\013\060\011\006\003\125\004\006\023\002\114\124\061
\053\060\051\006\003\125\004\012\023\042\123\153\141\151\164\155
\145\156\151\156\151\157\040\163\145\162\164\151\146\151\153\141
\166\151\155\157\040\143\145\156\164\162\141\163\061\031\060\027
\006\003\125\004\013\023\020\103\101\040\122\117\117\124\040\123
\145\162\166\151\143\145\163\061\032\060\030\006\003\125\004\003
\023\021\123\123\103\040\107\104\114\040\103\101\040\122\157\157
\164\040\101
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\120\226\156\162\275\020\326\214\117\153\307\142\077\234
\160\070
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Halcom Root Certificate Authority"
Issuer: CN=Halcom Root Certificate Authority,2.5.4.97=VATSI-43353126,O=Halcom d.d.,C=SI
Serial Number: 843675 (0xcdf9b)
Subject: CN=Halcom Root Certificate Authority,2.5.4.97=VATSI-43353126,O=Halcom d.d.,C=SI
Not Valid Before: Fri Jun 10 07:07:50 2016
Not Valid After: Tue Jun 10 07:07:50 2036
Fingerprint (MD5): 69:16:83:a1:f7:27:b9:ec:7c:d2:c6:b3:79:b2:a3:61
Fingerprint (SHA1): 23:d7:31:fe:dc:5c:8b:b9:7d:e6:dc:8e:13:b4:11:bd:4f:24:00:4f
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
 UTF8 "Halcom Root Certificate Authority"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\024\060\022\006\003\125\004\012\023\013\110\141\154\143\157\155
\040\144\056\144\056\061\027\060\025\006\003\125\004\141\023\016
\126\101\124\123\111\055\064\063\063\065\063\061\062\066\061\052

\060\050\006\003\125\004\003\023\041\110\141\154\143\157\155\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\145
\040\101\165\164\150\157\162\151\164\171
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\024\060\022\006\003\125\004\012\023\013\110\141\154\143\157\155
\040\144\056\144\056\061\027\060\025\006\003\125\004\141\023\016
\126\101\124\123\111\055\064\063\063\065\063\061\062\066\061\052
\060\050\006\003\125\004\003\023\041\110\141\154\143\157\155\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\145
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\014\337\233
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\200\060\202\002\150\240\003\002\001\002\002\003\014
\337\233\060\015\006\011\052\206\110\206\367\015\001\001\013\005
\000\060\150\061\013\060\011\006\003\125\004\006\023\002\123\111
\061\024\060\022\006\003\125\004\012\023\013\110\141\154\143\157
\155\040\144\056\144\056\061\027\060\025\006\003\125\004\141\023
\016\126\101\124\123\111\055\064\063\063\065\063\061\062\066\061
\052\060\050\006\003\125\004\003\023\041\110\141\154\143\157\155
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\145\040\101\165\164\150\157\162\151\164\171\060\036\027\015\061
\066\060\066\061\060\060\067\060\067\065\060\132\027\015\063\066
\060\066\061\060\060\067\060\067\065\060\132\060\150\061\013\060
\011\006\003\125\004\006\023\002\123\111\061\024\060\022\006\003
\125\004\012\023\013\110\141\154\143\157\155\040\144\056\144\056
\061\027\060\025\006\003\125\004\141\023\016\126\101\124\123\111
\055\064\063\063\065\063\061\062\066\061\052\060\050\006\003\125
\004\003\023\041\110\141\154\143\157\155\040\122\157\157\164\040
\103\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150
\157\162\151\164\171\060\202\001\042\060\015\006\011\052\206\110
\206\367\015\001\001\001\005\000\003\202\001\017\000\060\202\001
\012\002\202\001\001\000\351\122\246\306\032\357\143\273\255\201
\364\220\262\132\217\015\325\026\063\264\034\030\373\313\211\052
\060\273\145\201\304\341\373\002\251\224\007\166\345\327\025\344
\172\144\020\200\352\074\320\263\242\255\256\034\037\352\273\201
\141\230\324\371\215\151\225\304\105\056\003\011\312\206\372\134
\132\021\027\100\060\076\360\306\143\011\311\361\215\101\245\126
\015\005\144\151\113\130\254\052\051\226\273\100\063\026\064\113
\147\154\327\361\264\106\245\352\131\250\103\150\017\214\070\052
\252\074\366\104\003\206\370\212\333\105\041\053\051\036\022\267
\372\245\145\101\336\006\010\130\160\225\076\364\114\331\353\017

\051\251\221\212\236\255\312\022\365\345\225\346\070\331\032\246
\213\234\117\246\110\023\020\245\171\104\275\152\073\051\365\026
\167\100\313\176\233\134\337\276\213\353\347\240\031\157\237\025
\077\047\236\051\261\365\015\374\137\107\242\074\335\056\013\002
\373\364\215\352\354\014\261\371\264\005\254\371\217\251\075\156
\054\035\071\237\320\116\237\116\310\152\236\200\003\141\334\317
\370\155\224\313\017\317\002\003\001\000\001\243\063\060\061\060
\017\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377
\060\021\006\003\125\035\016\004\012\004\010\102\256\246\103\307
\230\050\260\060\013\006\003\125\035\017\004\004\003\002\001\006
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\003
\202\001\001\000\122\271\171\320\333\143\376\031\201\373\014\371
\301\345\120\131\312\235\262\373\134\063\320\070\250\253\265\032
\116\123\045\165\042\323\111\277\312\201\317\323\341\173\243\221
\106\165\312\032\353\331\365\135\274\173\206\065\375\201\227\234
\204\327\046\230\042\374\261\065\320\251\225\266\174\377\344\227
\264\100\176\111\135\150\310\342\324\071\165\047\117\003\221\262
\061\127\277\206\327\155\312\161\000\042\067\320\073\130\044\120
\240\234\214\232\211\216\365\050\106\154\347\026\355\260\201\253
\364\106\046\257\246\350\032\105\167\160\026\222\262\173\161\161
\334\367\337\111\147\300\063\010\016\056\123\301\167\253\307\112
\221\114\022\357\347\016\011\345\165\061\040\256\156\374\132\212
\200\234\020\260\333\250\112\314\363\053\334\066\064\246\367\251
\013\147\235\220\313\075\046\237\165\315\114\311\035\006\012\165
\213\122\300\201\360\321\046\254\314\222\246\024\234\134\074\026
\102\373\223\314\002\250\023\363\332\256\012\303\270\025\364\260
\320\324\340\026\040\117\254\120\230\170\046\224\036\150\353\224
\162\376\367\213
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Halcom Root Certificate
Authority"
Issuer: CN=Halcom Root Certificate Authority,2.5.4.97=VATSI-43353126,O=Halcom d.d.,C=SI
Serial Number: 843675 (0xcdf9b)
Subject: CN=Halcom Root Certificate Authority,2.5.4.97=VATSI-43353126,O=Halcom d.d.,C=SI
Not Valid Before: Fri Jun 10 07:07:50 2016
Not Valid After: Tue Jun 10 07:07:50 2036
Fingerprint (MD5): 69:16:83:a1:f7:27:b9:ec:7c:d2:c6:b3:79:b2:a3:61
Fingerprint (SHA1): 23:d7:31:fe:dc:5c:8b:b9:7d:e6:dc:8e:13:b4:11:bd:4f:24:00:4f
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE

CKA_LABEL UTF8 "Halcom Root Certificate Authority"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\043\327\061\376\334\134\213\271\175\346\334\216\023\264\021\275
\117\044\000\117
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\151\026\203\241\367\047\271\354\174\322\306\263\171\262\243\141
END
CKA_ISSUER MULTILINE_OCTAL
\060\150\061\013\060\011\006\003\125\004\006\023\002\123\111\061
\024\060\022\006\003\125\004\012\023\013\110\141\154\143\157\155
\040\144\056\144\056\061\027\060\025\006\003\125\004\141\023\016
\126\101\124\123\111\055\064\063\063\065\063\061\062\066\061\052
\060\050\006\003\125\004\003\023\041\110\141\154\143\157\155\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\145
\040\101\165\164\150\157\162\151\164\171
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\003\014\337\233
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Application CA G3 Root"
Issuer: CN=Application CA G3 Root,O=LGPKI,C=JP
Serial Number: 49 (0x31)
Subject: CN=Application CA G3 Root,O=LGPKI,C=JP
Not Valid Before: Tue Jun 03 15:00:00 2014
Not Valid After: Sat Jun 03 14:59:59 2034
Fingerprint (MD5): 47:5e:d1:73:5a:e8:95:77:04:01:a3:3f:33:02:5c:20
Fingerprint (SHA1):
 6f:38:84:56:8e:99:c8:c6:ac:0e:5d:de:2d:b2:02:dd:00:2e:36:63
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Application CA G3 Root"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\063\040\122\157\157\164
END

CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061
\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\063\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\061
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\132\060\202\002\102\240\003\002\001\002\002\001\061
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061\016
\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061\037
\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143\141
\164\151\157\156\040\103\101\040\107\063\040\122\157\157\164\060
\036\027\015\061\064\060\066\060\063\061\065\060\060\060\060\132
\027\015\063\064\060\066\060\063\061\064\065\071\065\071\132\060
\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061\016
\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061\037
\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143\141
\164\151\157\156\040\103\101\040\107\063\040\122\157\157\164\060
\202\001\042\060\015\006\011\052\206\110\206\367\015\001\001\001
\005\000\003\202\001\017\000\060\202\001\012\002\202\001\001\000
\315\105\076\367\321\226\042\134\221\057\076\012\000\003\314\266
\367\154\124\374\050\067\324\004\030\354\255\230\311\257\323\245
\271\347\331\277\116\346\243\231\074\231\156\241\040\036\106\033
\342\165\125\274\322\354\366\210\032\354\064\105\113\203\235\323
\262\346\335\007\211\301\010\331\370\073\213\222\144\162\135\232
\073\314\255\067\211\307\334\140\171\010\340\160\254\367\053\355
\237\003\111\037\216\076\203\250\156\342\222\134\124\321\171\337
\354\030\072\175\270\155\217\326\243\045\115\255\037\100\246\137
\324\252\116\261\160\030\131\231\362\013\124\151\076\171\050\104
\210\367\161\227\315\177\005\334\312\334\166\112\220\114\153\140
\350\372\046\061\330\265\370\347\374\155\213\044\152\266\357\102
\327\043\124\305\032\143\212\073\307\374\252\155\074\217\313\154
\332\040\260\362\274\145\034\001\114\042\225\015\034\043\037\254
\325\371\316\165\133\352\060\275\114\001\044\037\165\324\141\111
\303\033\231\145\216\010\134\071\070\315\051\303\070\105\315\144
\171\267\233\115\107\352\130\062\372\246\366\222\360\301\267\137
\002\003\001\000\001\243\143\060\141\060\035\006\003\125\035\016
\004\026\004\024\251\065\052\110\276\054\067\355\206\333\174\125
\207\000\046\276\030\055\134\056\060\016\006\003\125\035\017\001
\001\377\004\004\003\002\001\006\060\017\006\003\125\035\023\001
\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035\043
\004\030\060\026\200\024\251\065\052\110\276\054\067\355\206\333
\174\125\207\000\046\276\030\055\134\056\060\015\006\011\052\206

\110\206\367\015\001\001\013\005\000\003\202\001\001\000\266\202
\275\305\106\320\161\213\245\221\075\176\055\132\371\234\204\175
\007\047\225\035\347\115\310\174\354\346\223\350\126\032\172\060
\110\073\014\372\116\365\011\262\257\210\255\224\354\375\262\255
\057\346\005\164\041\033\204\213\070\052\303\355\357\106\150\265
\335\122\372\160\302\165\117\377\243\101\056\074\027\224\114\011
\042\264\216\301\177\304\246\254\355\203\150\317\145\136\354\172
\275\305\146\356\320\243\177\362\127\261\010\302\171\160\353\162
\177\101\131\011\171\165\361\274\261\041\376\203\263\104\075\211
\243\276\261\172\330\235\303\037\346\304\124\341\215\345\330\120
\334\344\126\067\173\276\050\000\363\054\167\332\043\177\140\230
\075\005\026\362\170\151\255\231\303\072\164\154\076\232\262\224
\355\217\252\366\123\153\347\310\267\350\074\214\373\307\174\117
\031\135\244\146\025\351\177\207\240\320\325\255\040\244\106\011
\105\254\345\310\145\207\273\006\337\374\327\150\126\103\163\242
\000\231\062\222\302\016\240\034\016\221\275\225\130\274\223\237
\204\302\245\146\347\145\315\051\342\142\362\005\222\140
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Application CA G3 Root"
Issuer: CN=Application CA G3 Root,O=LGPKI,C=JP
Serial Number: 49 (0x31)
Subject: CN=Application CA G3 Root,O=LGPKI,C=JP
Not Valid Before: Tue Jun 03 15:00:00 2014
Not Valid After: Sat Jun 03 14:59:59 2034
Fingerprint (MD5): 47:5e:d1:73:5a:e8:95:77:04:01:a3:3f:33:02:5c:20
Fingerprint (SHA1): 6f:38:84:56:8e:99:c8:c6:ac:0e:5d:de:2d:b2:02:dd:00:2e:36:63
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Application CA G3 Root"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\157\070\204\126\216\231\310\306\254\016\135\336\055\262\002\335
\000\056\066\143
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\107\136\321\163\132\350\225\167\004\001\243\077\063\002\134\040
END
CKA_ISSUER MULTILINE_OCTAL
\060\076\061\013\060\011\006\003\125\004\006\023\002\112\120\061
\016\060\014\006\003\125\004\012\023\005\114\107\120\113\111\061

\037\060\035\006\003\125\004\003\023\026\101\160\160\154\151\143
\141\164\151\157\156\040\103\101\040\107\063\040\122\157\157\164
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\001\061
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL
CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GLOBALTRUST 2015"
Issuer: CN=GLOBALTRUST 2015,OU=GLOBALTRUST Certification Service,O=e-commerce monitoring GmbH,L=Wien,ST=Wien,C=AT
Serial Number: 0 (0x0)
Subject: CN=GLOBALTRUST 2015,OU=GLOBALTRUST Certification Service,O=e-commerce monitoring GmbH,L=Wien,ST=Wien,C=AT
Not Valid Before: Thu Jun 11 00:00:00 2015
Not Valid After: Sun Jun 10 00:00:00 2040
Fingerprint (MD5): da:5a:b9:da:8e:0a:38:d4:82:63:03:9d:6c:96:6c:ed
Fingerprint (SHA1): 46:5b:26:be:be:71:06:dd:85:44:c1:13:9d:9f:a2:57:00:c1:d7:bd
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2015"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\015\060\013\006\003\125\004\010\023\004\127\151\145\156\061
\015\060\013\006\003\125\004\007\023\004\127\151\145\156\061\043
\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155\145
\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040\107
\155\142\110\061\052\060\050\006\003\125\004\013\023\041\107\114
\117\102\101\114\124\122\125\123\124\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\061
\031\060\027\006\003\125\004\003\023\020\107\114\117\102\101\114
\124\122\125\123\124\040\062\060\061\065
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\015\060\013\006\003\125\004\010\023\004\127\151\145\156\061
\015\060\013\006\003\125\004\007\023\004\127\151\145\156\061\043
\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155\145

\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040\107
\155\142\110\061\052\060\050\006\003\125\004\013\023\041\107\114
\117\102\101\114\124\122\125\123\124\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\061
\031\060\027\006\003\125\004\003\023\020\107\114\117\102\101\114
\124\122\125\123\124\040\062\060\061\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\001\000
END
CKA_VALUE MULTILINE_OCTAL
\060\202\006\014\060\202\003\364\240\003\002\001\002\002\001\000
\060\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060
\201\227\061\013\060\011\006\003\125\004\006\023\002\101\124\061
\015\060\013\006\003\125\004\010\023\004\127\151\145\156\061\015
\060\013\006\003\125\004\007\023\004\127\151\145\156\061\043\060
\041\006\003\125\004\012\023\032\145\055\143\157\155\155\145\162
\143\145\040\155\157\156\151\164\157\162\151\156\147\040\107\155
\142\110\061\052\060\050\006\003\125\004\013\023\041\107\114\117
\102\101\114\124\122\125\123\124\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\123\145\162\166\151\143\145\061\031
\060\027\006\003\125\004\003\023\020\107\114\117\102\101\114\124
\122\125\123\124\040\062\060\061\065\060\036\027\015\061\065\060
\066\061\061\060\060\060\060\060\060\132\027\015\064\060\060\066
\061\060\060\060\060\060\060\060\060\132\060\201\227\061\013\060\011
\006\003\125\004\006\023\002\101\124\061\015\060\013\006\003\125
\004\010\023\004\127\151\145\156\061\015\060\013\006\003\125\004
\007\023\004\127\151\145\156\061\043\060\041\006\003\125\004\012
\023\032\145\055\143\157\155\155\145\162\143\145\040\155\157\156
\151\164\157\162\151\156\147\040\107\155\142\110\061\052\060\050
\006\003\125\004\013\023\041\107\114\117\102\101\114\124\122\125
\123\124\040\103\145\162\164\151\146\151\143\141\164\151\157\156
\040\123\145\162\166\151\143\145\061\031\060\027\006\003\125\004
\003\023\020\107\114\117\102\101\114\124\122\125\123\124\040\062
\060\061\065\060\202\002\040\060\015\006\011\052\206\110\206\367
\015\001\001\001\005\000\003\202\002\015\000\060\202\002\010\002
\202\002\001\000\324\246\227\250\362\364\220\021\103\255\264\202
\106\101\361\057\221\157\143\242\315\015\040\334\275\014\070\212
\145\112\012\053\072\250\164\251\167\241\213\216\362\057\201\367
\204\030\315\255\353\142\266\222\175\340\101\345\116\124\070\067
\202\357\313\340\355\317\273\312\314\243\113\367\133\376\270\174
\247\010\155\313\103\304\114\042\024\146\343\235\003\271\167\041
\253\104\153\041\107\043\310\040\372\052\313\221\166\035\165\154
\370\233\351\017\046\351\103\057\232\040\005\150\030\307\216\231
\205\055\101\007\246\144\216\130\341\215\225\200\244\115\137\365
\002\330\201\171\333\325\347\337\242\042\375\024\247\147\026\354
\331\130\114\312\251\335\352\032\216\251\010\144\117\121\041\266

\162\242\116\377\120\161\275\073\145\344\275\177\123\021\256\337
\020\071\173\135\366\107\160\027\367\103\221\003\172\141\045\137
\054\374\370\211\021\074\354\071\124\026\111\304\041\232\161\340
\171\213\166\035\166\075\007\131\270\007\261\214\334\307\315\116
\341\373\255\103\115\077\100\357\041\142\057\061\104\116\151\307
\157\042\313\253\124\113\350\302\372\021\150\254\310\156\016\336
\154\305\047\226\011\121\002\115\001\266\127\277\062\050\325\011
\103\226\367\304\210\265\371\124\376\032\072\152\267\054\265\044
\144\373\112\170\162\303\374\331\117\310\116\043\271\051\330\015
\241\110\101\223\002\155\277\022\205\233\306\305\140\055\360\221
\374\231\375\040\224\236\161\143\253\325\111\253\220\354\207\071
\205\177\215\205\314\013\350\333\113\073\016\374\302\166\175\106
\347\071\046\236\337\125\337\036\204\371\101\066\046\154\002\131
\053\216\373\274\351\037\047\044\142\004\147\204\341\077\330\235
\030\116\226\240\045\356\312\050\003\117\002\121\317\367\065\067
\151\244\264\326\326\325\036\031\103\047\026\037\107\121\356\112
\011\114\021\132\266\133\075\141\350\073\020\276\326\106\346\364
\034\375\270\105\275\174\372\165\132\354\341\122\043\015\216\037
\206\227\123\221\134\233\233\050\326\216\345\156\047\255\040\214
\247\301\101\251\227\067\213\054\352\156\030\005\227\366\316\003
\122\361\275\171\064\233\100\307\043\222\164\363\157\355\243\351
\131\360\125\113\002\001\003\243\143\060\141\060\017\006\003\125
\035\023\001\001\377\004\005\060\003\001\001\377\060\016\006\003
\125\035\017\001\001\377\004\004\003\002\001\006\060\035\006\003
\125\035\016\004\026\004\024\313\260\335\075\214\074\337\142\054
\053\146\074\236\074\351\025\155\161\264\327\060\037\006\003\125
\035\043\004\030\060\026\200\024\313\260\335\075\214\074\337\142
\054\053\146\074\236\074\351\025\155\161\264\327\060\015\006\011
\052\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000
\242\175\125\004\146\356\026\024\274\202\201\207\045\031\071\142
\364\376\073\037\341\300\163\000\161\312\165\251\342\163\361\305
\015\101\243\135\216\301\055\331\145\133\331\211\342\360\216\305
\240\175\275\313\314\106\123\037\137\355\040\266\002\052\326\023
\362\235\175\121\112\100\125\161\255\236\354\166\352\105\040\216
\252\372\172\103\232\160\147\176\023\336\230\350\313\215\335\037
\254\064\322\241\265\355\376\270\347\026\317\370\321\070\060\215
\064\211\322\316\175\201\322\036\377\121\030\123\066\223\334\011
\313\010\026\270\010\327\132\060\220\212\012\371\057\265\317\304
\315\124\162\052\306\275\001\347\130\013\156\006\100\264\011\316
\264\216\263\232\351\211\221\224\254\172\124\341\373\343\204\054
\203\240\117\376\353\350\301\364\353\266\046\323\070\304\055\255
\254\105\200\064\155\041\075\135\205\072\342\173\376\124\267\335
\350\205\124\313\244\361\253\051\120\170\327\044\265\243\057\236
\257\021\146\256\030\270\375\135\050\317\100\327\125\340\054\353
\122\061\150\103\146\005\227\222\273\305\361\041\054\375\022\144
\061\231\103\157\213\235\113\140\376\024\136\122\263\043\250\341
\230\172\356\024\311\241\342\314\077\166\041\142\375\153\015\331
\264\112\225\346\156\133\172\044\303\323\306\326\037\242\353\067

\153\116\243\337\142\353\353\016\112\010\277\353\030\210\373\107
\032\255\302\121\303\325\174\367\037\053\263\310\112\120\016\151
\130\040\142\001\112\133\312\143\226\046\042\256\366\351\234\100
\254\147\003\235\235\151\025\302\300\370\135\247\044\261\047\074
\277\005\342\253\242\312\311\260\055\176\243\301\061\040\106\041
\145\222\335\312\336\337\223\033\274\155\057\137\251\026\244\127
\207\054\162\232\132\202\147\321\104\342\075\011\012\201\214\036
\020\375\306\064\150\354\377\167\141\166\177\046\367\333\374\022
\106\022\252\300\321\370\171\205\242\002\314\213\252\244\255\154
\024\300\275\374\150\256\104\175\042\371\012\105\135\354\004\346
\372\343\244\305\346\371\262\031\303\331\214\250\223\173\072\212
\151\073\122\023\074\035\063\002\116\226\100\237\271\225\375\223
\027\063\301\311\013\366\375\275\151\020\365\255\051\373\343\332
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GLOBALTRUST 2015"
Issuer: CN=GLOBALTRUST 2015,OU=GLOBALTRUST Certification Service,O=e-commerce monitoring GmbH,L=Wien,ST=Wien,C=AT
Serial Number: 0 (0x0)
Subject: CN=GLOBALTRUST 2015,OU=GLOBALTRUST Certification Service,O=e-commerce monitoring GmbH,L=Wien,ST=Wien,C=AT
Not Valid
Before: Thu Jun 11 00:00:00 2015
Not Valid After: Sun Jun 10 00:00:00 2040
Fingerprint (MD5): da:5a:b9:da:8e:0a:38:d4:82:63:03:9d:6c:96:6c:ed
Fingerprint (SHA1): 46:5b:26:be:be:71:06:dd:85:44:c1:13:9d:9f:a2:57:00:c1:d7:bd
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GLOBALTRUST 2015"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\106\133\046\276\276\161\006\335\205\104\301\023\235\237\242\127
\000\301\327\275
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\332\132\271\332\216\012\070\324\202\143\003\235\154\226\154\355
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\227\061\013\060\011\006\003\125\004\006\023\002\101\124
\061\015\060\013\006\003\125\004\010\023\004\127\151\145\156\061
\015\060\013\006\003\125\004\007\023\004\127\151\145\156\061\043
\060\041\006\003\125\004\012\023\032\145\055\143\157\155\155\145

\162\143\145\040\155\157\156\151\164\157\162\151\156\147\040\107
\155\142\110\061\052\060\050\006\003\125\004\013\023\041\107\114
\117\102\101\114\124\122\125\123\124\040\103\145\162\164\151\146
\151\143\141\164\151\157\156\040\123\145\162\166\151\143\145\061
\031\060\027\006\003\125\004\003\023\020\107\114\117\102\101\114
\124\122\125\123\124\040\062\060\061\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\001\000
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft ECC Product Root Certificate Authority 2018"
Issuer: CN=Microsoft ECC Product Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Serial Number:14:98:26:66:dc:7c:cd:8f:40:53:67:7b:b9:99:ec:85
Subject: CN=Microsoft ECC Product Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Tue Feb 27 20:42:08
2018
Not Valid After: Fri Feb 27 20:50:46 2043
Fingerprint (MD5): 1f:12:4e:de:13:e0:6a:02:3c:d7:c0:9a:4f:48:c3:d6
Fingerprint (SHA1): 06:f1:aa:33:0b:92:7b:75:3a:40:e6:8c:df:22:e3:4b:cb:ef:33:52
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Product Root Certificate Authority 2018"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\076\060\074\006\003\125\004\003
\023\065\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\120\162\157\144\165\143\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\070
END
CKA_ID

UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\076\060\074\006\003\125\004\003
\023\065\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\120\162\157\144\165\143\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\070
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\024\230\046\146\334\174\315\217\100\123\147\173\271\231
\354\205
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\043\060\202\002\250\240\003\002\001\002\002\020\024
\230\046\146\334\174\315\217\100\123\147\173\271\231\354\205\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\224\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\023\060\021\006
\003\125\004\010\023\012\127\141\163\150\151\156\147\164\157\156
\061\020\060\016\006\003\125\004\007\023\007\122\145\144\155\157
\156\144\061\036\060\034\006\003\125\004\012\023\025\115\151\143
\162\157\163\157\146\164\040\103\157\162\160\157\162\141\164\151
\157\156\061\076\060\074\006\003\125\004\003\023\065\115\151\143
\162\157\163\157\146\164\040\105\103\103\040\120\162\157\144\165
\143\164\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\070\060\036\027\015\061\070\060\062\062\067\062\060\064\062
\060\070\132\027\015\064\063\060\062\062\067\062\060\065\060\064
\066\132\060\201\224\061\013\060\011\006\003\125\004\006\023\002
\125\123\061\023\060\021\006\003\125\004\010\023\012\127\141\163
\150\151\156\147\164\157\156\061\020\060\016\006\003\125\004\007
\023\007\122\145\144\155\157\156\144\061\036\060\034\006\003\125
\004\012\023\025\115\151\143\162\157\163\157\146\164\040\103\157
\162\160\157\162\141\164\151\157\156\061\076\060\074\006\003\125
\004\003\023\065\115\151\143\162\157\163\157\146\164\040\105\103
\103\040\120\162\157\144\165\143\164\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\061\070\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\307\021\026\052\166\035\126\216\276\271\142\145\324\303\316
\264\360\303\060\354\217\155\327\156\071\274\310\111\253\253\270
\343\103\170\325\201\006\135\357\307\175\237\316\326\263\220\165
\336\014\260\220\336\043\272\310\321\076\147\340\031\251\033\206
\061\036\137\064\055\356\027\375\025\373\176\047\212\062\241\352

\311\217\311\176\030\313\057\073\054\110\172\175\246\364\001\007
\254\243\201\274\060\201\271\060\016\006\003\125\035\017\001\001
\377\004\004\003\002\001\206\060\017\006\003\125\035\023\001\001
\377\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004
\026\004\024\103\357\160\207\270\235\277\354\210\031\334\306\304
\153\165\015\165\064\063\010\060\020\006\011\053\006\001\004\001
\202\067\025\001\004\003\002\001\000\060\145\006\003\125\035\040
\004\136\060\134\060\006\006\004\125\035\040\000\060\122\006\014
\053\006\001\004\001\202\067\114\203\175\001\001\060\102\060\100
\006\010\053\006\001\005\005\007\002\001\026\064\150\164\164\160
\072\057\057\167\167\167\056\155\151\143\162\157\163\157\146\164
\056\143\157\155\057\160\153\151\157\160\163\057\104\157\143\163
\057\122\145\160\157\163\151\164\157\162\171\056\150\164\155\000
\060\012\006\010\052\206\110\316\075\004\003\003\003\151\000\060
\146\002\061\000\241\300\111\104\135\062\125\047\314\076\220\156
\045\042\235\044\133\233\121\065\307\221\111\111\052\243\371\157
\117\034\315\335\234\341\265\127\311\236\302\042\105\233\006\025
\160\034\105\277\002\061\000\305\323\050\353\162\307\076\260\254
\047\011\177\142\075\140\171\345\222\361\105\052\271\245\002\344
\140\273\376\172\053\234\140\247\265\231\024\362\260\276\360\273
\005\226\126\126\217\301\150
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft ECC Product Root Certificate Authority 2018"
Issuer: CN=Microsoft ECC Product Root Certificate Authority 2018,O=Microsoft Corporation,L=Redmond,ST=Washington,C=US
Serial Number:14:98:26:66:dc:7c:cd:8f:40:53:67:7b:b9:99:ec:85
Subject: CN=Microsoft ECC Product Root Certificate Authority 2018,O=Microsoft Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Tue Feb 27 20:42:08 2018
Not Valid After: Fri Feb 27 20:50:46 2043
Fingerprint (MD5): 1f:12:4e:de:13:e0:6a:02:3c:d7:c0:9a:4f:48:c3:d6
Fingerprint (SHA1): 06:f1:aa:33:0b:92:7b:75:3a:40:e6:8c:df:22:e3:4b:cb:ef:33:52
CKA_CLASS CK_OBJECT_CLASS
CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC Product Root Certificate Authority 2018"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\006\361\252\063\013\222\173\165\072\100\346\214\337\042\343\113
\313\357\063\122
END

CKA_CERT_MD5_HASH MULTILINE_OCTAL
\037\022\116\336\023\340\152\002\074\327\300\232\117\110\303\326
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\224\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\076\060\074\006\003\125\004\003
\023\065\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\120\162\157\144\165\143\164\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\061\070
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\024\230\046\146\334\174\315\217\100\123\147\173\271\231
\354\205
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "emSign Root CA - G2"
Issuer: CN=emSign Root CA - G2,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:86:4d:bf:0f:e3:5e:d7:7d:8e:d8
Subject: CN=emSign Root CA - G2,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After: Wed Feb 18 18:30:00 2043
Fingerprint (MD5): 63:ac:61:e5:f7:da:aa:05:80:53:bd:e4:ab:fd:bb:30
Fingerprint (SHA1): 1e:65:77:b9:cf:70:d0:17:ca:e1:bd:a1:35:1d:47:25:a9:73:c0:6d
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
 CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157

\164\040\103\101\040\055\040\107\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\013\000\206\115\277\017\343\136\327\175\216\330
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\225\060\202\003\175\240\003\002\001\002\002\013\000
\206\115\277\017\343\136\327\175\216\330\060\015\006\011\052\206
\110\206\367\015\001\001\014\005\000\060\147\061\013\060\011\006
\003\125\004\006\023\002\111\116\061\023\060\021\006\003\125\004
\013\023\012\145\155\123\151\147\156\040\120\113\111\061\045\060
\043\006\003\125\004\012\023\034\145\115\165\144\150\162\141\040
\124\145\143\150\156\157\154\157\147\151\145\163\040\114\151\155
\151\164\145\144\061\034\060\032\006\003\125\004\003\023\023\145
\155\123\151\147\156\040\122\157\157\164\040\103\101\040\055\040
\107\062\060\036\027\015\061\070\060\062\061\070\061\070\063\060
\060\060\132\027\015\064\063\060\062\061\070\061\070\063\060\060
\060\132\060\147\061\013\060\011\006\003\125\004\006\023\002\111
\116\061\023\060\021\006\003\125\004\013\023\012\145\155\123\151
\147\156\040\120\113\111\061\045\060\043\006\003\125\004\012\023
\034\145\115\165\144\150\162\141\040\124\145\143\150\156\157\154
\157\147\151\145\163\040\114\151\155\151\164\145\144\061\034\060
\032\006\003\125\004\003\023\023\145\155\123\151\147\156\040\122
\157\157\164\040\103\101\040\055\040\107\062\060\202\002\042\060
\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202
\002\017\000\060\202\002\012\002\202\002\001\000\303\160\030\205
\226\332\101\337\034\257\254\135\063\160\304\135\073\053\342\025
\311\044\356\310\123\066\257\133\364\323\154\024\175\307\123\373
\073\071\070\316\120\154\306\005\026\167\235\135\002\072\200\041
\113\262\062\253\161\247\243\343\306\155\337\263\262\021\275\342
\150\373\073\012\303\370\220\014\223\303\062\207\365\246\136\352
\005\330\036\262\152\343\117\331\124\303\134\101\122\066\075\302
\051\343\100\177\110\003\166\201\106\176\145\245\055\040\353\325
\214\114\166\353\367\233\065\245\321\042\313\141\226\103\206\375
\306\201\371\004\160\017\015\155\227\275\367\361\231\157\320\315
\250\114\025\062\340\035\336\355\321\217\346\230\027\037\275\114
\216\241\317\012\203\150\373\033\375\177\103\123\005\077\241\120

\066\274\207\314\024\265\301\220\253\320\203\170\224\351\215\147
\003\331\263\366\000\307\125\033\252\025\244\300\024\171\114\350
\160\054\240\226\373\105\165\103\043\202\014\101\157\016\052\205
\253\265\035\163\306\360\353\175\207\002\373\144\310\274\266\104
\363\256\365\010\307\026\374\033\322\305\377\271\012\170\041\073
\264\146\132\127\060\323\235\173\242\176\135\346\261\036\004\254
\173\020\340\376\345\126\355\200\042\062\000\206\260\027\241\347
\103\211\326\373\244\307\037\355\060\001\166\266\024\117\122\150
\033\360\042\053\342\175\214\356\206\116\067\200\014\076\013\060
\064\201\146\021\314\270\022\277\074\237\340\322\101\201\267\357
\302\324\277\277\035\104\163\102\022\144\062\124\147\063\244\157
\136\200\255\174\252\051\112\131\354\346\332\331\231\070\275\357
\125\243\156\177\074\101\163\372\326\121\251\004\045\017\300\050
\354\356\272\116\142\364\224\046\322\076\225\306\305\373\176\352
\220\212\216\135\211\025\117\167\056\244\064\251\303\341\374\366
\101\155\217\221\212\143\345\347\313\202\361\143\355\310\274\062
\021\213\047\172\223\055\103\076\076\365\334\062\064\312\253\336
\022\233\010\257\160\064\075\334\056\311\102\073\011\055\143\203
\103\147\030\124\372\137\034\253\323\020\176\124\073\174\334\122
\130\133\313\365\352\115\251\155\244\070\221\134\100\335\245\335
\137\327\131\143\045\121\325\056\175\050\316\371\002\003\001\000
\001\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024
\355\354\115\105\141\030\050\347\263\043\050\021\034\115\245\047
\015\136\354\364\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\006\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001
\001\014\005\000\003\202\002\001\000\010\120\277\212\124\040\360
\244\302\124\034\105\045\157\354\153\072\046\221\055\044\065\206
\304\041\230\070\007\172\033\253\013\011\355\045\375\363\077\031
\201\374\301\247\075\047\140\051\160\300\230\326\154\123\165\107
\154\330\362\220\204\242\336\277\166\011\200\361\126\352\320\154
\141\300\363\071\140\337\322\146\253\215\311\022\061\073\167\024
\166\120\034\301\377\257\111\354\335\124\047\375\300\354\357\110
\001\167\253\106\271\226\073\333\165\263\111\066\227\322\161\005
\151\355\105\035\346\300\154\146\117\043\134\355\112\103\370\050
\375\127\377\030\063\347\254\201\146\306\220\010\030\115\354\202
\163\274\224\013\375\027\065\032\001\353\257\354\165\236\343\274
\115\364\236\376\155\014\305\367\174\207\270\205\300\010\364\313
\245\001\341\203\154\314\277\220\273\004\006\356\014\167\333\217
\120\256\333\336\031\363\175\262\205\047\301\163\070\226\032\311
\016\276\135\336\263\141\034\037\053\133\113\327\075\077\355\063
\062\231\032\357\061\202\324\121\353\274\266\377\026\207\156\037
\316\223\171\233\164\102\066\172\245\312\145\067\072\032\304\071
\303\277\064\311\350\040\266\022\174\276\250\177\300\074\120\256
\125\113\371\377\010\360\027\341\317\233\303\356\247\140\021\217
\327\004\247\335\276\322\247\036\255\361\332\160\332\271\204\307
\206\145\326\300\375\334\335\121\037\371\317\234\327\167\020\044
\236\137\046\161\361\233\321\343\015\111\065\320\232\140\177\213

\200\036\160\331\353\357\153\230\217\071\132\135\101\230\067\263
\153\157\245\350\270\155\051\236\035\077\004\033\126\132\235\024
\112\022\017\245\141\000\252\316\321\044\030\372\373\126\124\141
\166\170\071\272\302\303\336\266\017\030\115\332\235\175\037\034
\075\056\333\224\121\302\352\251\063\353\025\166\057\300\356\055
\242\350\373\050\231\300\221\244\324\175\161\235\021\241\125\264
\130\240\324\100\067\321\154\311\143\145\365\274\004\073\205\131
\347\210\050\340\151\160\006\252\073\024\352\311\045\064\317\147
\304\074\171\254\120\202\010\113\143\364\250\174\120\170\306\053
\144\052\200\376\144\302\013\155\214\340\051\100\306\202\241\354
\314\174\256\012\017\265\251\071\165
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "emSign Root CA - G2"
Issuer: CN=emSign Root CA - G2,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Serial Number:86:4d:bf:0f:e3:5e:d7:7d:8e:d8
Subject: CN=emSign Root CA - G2,O=eMudhra Technologies Limited,OU=emSign PKI,C=IN
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After: Wed Feb 18 18:30:00 2043
Fingerprint (MD5): 63:ac:61:e5:f7:da:aa:05:80:53:bd:e4:ab:fd:bb:30
Fingerprint (SHA1): 1e:65:77:b9:cf:70:d0:17:ca:e1:bd:a1:35:1d:47:25:a9:73:c0:6d
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - G2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\036\145\167\271\317\160\320\027\312\341\275\241\065\035\107\045
\251\163\300\155
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\143\254\141\345\367\332\252\005\200\123\275\344\253\375\273\060
END
CKA_ISSUER
MULTILINE_OCTAL
\060\147\061\013\060\011\006\003\125\004\006\023\002\111\116\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\045\060\043\006\003\125\004\012\023\034\145
\115\165\144\150\162\141\040\124\145\143\150\156\157\154\157\147
\151\145\163\040\114\151\155\151\164\145\144\061\034\060\032\006
\003\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157
\164\040\103\101\040\055\040\107\062
END

CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\013\000\206\115\277\017\343\136\327\175\216\330
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "emSign Root CA - C2"
Issuer: CN=emSign Root CA - C2,O=eMudhra Inc,OU=emSign PKI,C=US
Serial
 Number:2f:0a:b7:6b:0d:cb:4a:af:27:58
Subject: CN=emSign Root CA - C2,O=eMudhra Inc,OU=emSign PKI,C=US
Not Valid Before: Sun Feb 18 18:30:00 2018
Not Valid After: Wed Feb 18 18:30:00 2043
Fingerprint (MD5): eb:24:3b:fa:70:63:c8:e1:cd:5f:0e:ea:c8:97:2f:21
Fingerprint (SHA1): bc:a2:18:80:74:c3:14:7e:16:f4:c4:8c:59:10:a8:9e:f7:52:f4:79
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C2"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\012\057\012\267\153\015\313\112\257\047\130
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\162\060\202\003\132\240\003\002\001\002\002\012\057
\012\267\153\015\313\112\257\047\130\060\015\006\011\052\206\110

\206\367\015\001\001\014\005\000\060\126\061\013\060\011\006\003
\125\004\006\023\002\125\123\061\023\060\021\006\003\125\004\013
\023\012\145\155\123\151\147\156\040\120\113\111\061\024\060\022
\006\003\125\004\012\023\013\145\115\165\144\150\162\141\040\111
\156\143\061\034\060\032\006\003\125\004\003\023\023\145\155\123
\151\147\156\040\122\157\157\164\040\103\101\040\055\040\103\062
\060\036\027\015\061\070\060\062\061\070\061\070\063\060\060\060
\132\027\015\064\063\060\062\061\070\061\070\063\060\060\060\132
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\062\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\214\175\175\145\003\344\333
\232\037\130\042\171\221\200\345\275\354\205\161\340\265\011\177
\140\321\145\373\074\337\262\153\232\137\251\313\256\032\126\166
\040\130\356\055\350\056\374\176\010\337\113\270\327\371\316\023
\212\162\063\022\253\226\160\217\263\213\107\335\341\047\074\064
\067\373\044\343\151\333\265\126\137\112\260\121\212\263\054\064
\102\267\353\073\316\222\334\177\035\144\313\114\325\040\230\372
\057\116\256\077\042\267\220\212\375\371\200\054\255\130\376\337
\333\255\233\247\266\060\024\054\104\333\055\110\215\337\011\006
\000\032\372\020\115\017\037\120\266\256\116\243\126\151\200\044
\065\201\136\350\165\007\035\003\351\332\355\124\153\115\050\164
\305\342\017\232\021\027\022\334\016\161\200\160\115\110\377\321
\075\230\260\235\222\010\027\212\066\024\232\047\050\357\345\360
\145\341\150\076\033\332\351\342\011\346\235\067\056\335\303\273
\225\267\021\301\321\321\302\146\231\215\151\311\340\067\350\226
\227\051\144\115\063\322\021\215\203\025\064\047\051\342\070\101
\332\322\030\211\237\213\126\117\033\301\017\177\325\315\267\267
\031\257\336\357\173\265\246\145\127\155\215\027\213\155\113\132
\252\334\237\214\072\235\050\031\102\301\316\222\237\107\035\052
\031\132\233\076\351\020\064\140\043\070\262\015\360\240\315\100
\334\333\107\130\200\227\147\174\037\343\022\242\047\001\243\200
\042\167\304\343\055\147\015\277\217\050\011\142\371\335\232\305
\004\304\303\215\242\000\351\372\306\326\336\010\245\271\307\151
\320\073\250\042\111\173\152\251\044\336\247\331\344\012\001\111
\372\122\044\003\034\373\022\250\320\145\161\110\120\341\217\364
\143\111\224\346\270\041\233\143\201\366\265\320\113\121\133\324
\224\102\174\223\015\234\222\046\344\005\001\333\355\221\133\072
\271\116\014\373\111\264\241\243\303\154\146\115\024\155\011\305
\305\310\252\103\333\250\125\060\054\053\136\022\223\332\006\361
\015\363\176\303\064\361\307\117\241\026\364\132\122\031\222\124
\172\230\240\373\057\311\307\377\067\306\273\303\310\046\377\170
\030\140\175\105\237\124\340\016\275\257\167\217\233\057\014\276
\274\337\067\021\312\264\176\254\277\002\003\001\000\001\243\102

\060\100\060\035\006\003\125\035\016\004\026\004\024\263\367\212
\244\326\017\210\000\131\350\121\027\117\325\176\354\206\042\201
\235\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\006\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\064\045\246\045\214\321\313\366\235\235
\007\346\065\154\006\255\061\332\256\266\103\102\360\250\004\354
\010\133\362\271\276\340\304\320\262\265\033\250\003\313\055\230
\363\204\273\371\140\360\210\061\217\201\110\216\214\241\042\265
\224\127\034\242\055\116\315\243\203\376\132\061\024\073\005\023
\304\212\144\020\353\157\031\104\075\176\043\245\160\141\355\041
\220\315\006\126\152\355\152\144\265\160\061\171\136\171\104\363
\354\242\275\272\247\141\115\000\304\105\175\224\041\322\302\327
\204\250\044\362\053\245\111\050\040\253\037\036\316\003\362\173
\255\305\152\046\004\213\207\077\167\064\143\334\163\202\236\306
\142\301\226\124\323\147\137\345\212\115\026\074\122\301\233\304
\343\127\043\032\233\053\245\143\037\100\122\066\263\235\321\155
\345\351\343\271\122\003\026\004\340\334\343\004\123\036\370\114
\005\270\113\336\004\042\101\020\001\371\256\366\056\336\230\266
\242\273\011\343\156\023\251\141\020\127\133\102\260\051\020\317
\346\052\374\351\032\227\274\207\002\102\203\170\345\334\077\272
\015\340\017\223\165\167\066\245\332\261\271\120\247\004\355\021
\231\154\366\046\221\222\111\342\143\211\071\077\070\374\021\260
\363\126\267\001\277\051\162\364\342\215\255\153\170\342\076\222
\156\040\045\155\130\060\034\365\035\332\270\021\040\046\136\153
\112\024\146\005\333\063\033\102\346\316\301\356\144\360\205\111
\200\265\345\020\103\010\340\154\153\306\303\104\237\051\004\125
\066\132\057\302\125\160\200\010\113\232\276\012\057\170\016\005
\153\226\355\337\312\064\075\154\154\004\377\214\246\207\002\165
\133\103\062\254\320\207\034\275\042\210\112\271\165\200\032\267
\254\240\213\312\016\015\361\026\116\253\004\352\343\175\134\011
\172\134\042\377\020\042\262\210\307\074\225\120\277\325\265\315
\122\050\036\237\204\102\017\370\061\000\266\324\326\310\137\144
\150\212\200\176\127\170\112\343\177\133\377\016\335\171\117\061
\330\317\034\227\123\206\322\163\337\156\160\021\227\221\217\063
\273\311\202\056\073\322\073\150\341\047\214\203\241\314\001\155
\304\201\276\172\265\007\015\057\002\075\123\311\231\234\333\321
\201\103\053\220\010\013
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "emSign Root CA - C2"
Issuer: CN=emSign Root CA - C2,O=eMudhra Inc,OU=emSign PKI,C=US
Serial Number:2f:0a:b7:6b:0d:cb:4a:af:27:58

```
# Subject: CN=emSign Root CA - C2,O=eMudhra Inc,OU=emSign PKI,C=US
# Not Valid Before: Sun Feb 18 18:30:00 2018
# Not Valid After: Wed Feb 18 18:30:00 2043
# Fingerprint (MD5): eb:24:3b:fa:70:63:c8:e1:cd:5f:0e:ea:c8:97:2f:21
# Fingerprint (SHA1): bc:a2:18:80:74:c3:14:7e:16:f4:c4:8c:59:10:a8:9e:f7:52:f4:79
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "emSign Root CA - C2"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\274\242\030\200\164\303\024\176\026\364\304\214\131\020\250\236
\367\122\364\171
END
CKA_CERT_MD5_HASH
 MULTILINE_OCTAL
\353\044\073\372\160\143\310\341\315\137\016\352\310\227\057\041
END
CKA_ISSUER MULTILINE_OCTAL
\060\126\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\023\060\021\006\003\125\004\013\023\012\145\155\123\151\147\156
\040\120\113\111\061\024\060\022\006\003\125\004\012\023\013\145
\115\165\144\150\162\141\040\111\156\143\061\034\060\032\006\003
\125\004\003\023\023\145\155\123\151\147\156\040\122\157\157\164
\040\103\101\040\055\040\103\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\012\057\012\267\153\015\313\112\257\047\130
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "Microsoft ECC TS Root Certificate Authority 2018"
# Issuer:
 CN=Microsoft ECC TS Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
# Serial Number:15:38:75:e1:64:7e:d1:b0:47:b4:ef:af:41:12:82:45
# Subject: CN=Microsoft ECC TS Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
# Not Valid Before: Tue Feb 27 20:51:34 2018
# Not Valid After: Fri Feb 27 21:00:12 2043
# Fingerprint (MD5): 37:94:29:58:86:2a:06:e6:bb:cf:d7:ab:59:c7:f2:3c
# Fingerprint (SHA1): 31:f9:fc:8b:a3:80:59:86:b7:21:ea:72:95:c6:5b:3a:44:53:42:74
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
```

CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC TS Root Certificate Authority 2018"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\071\060\067\006\003\125\004\003
\023\060\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\124\123\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\070
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\071\060\067\006\003\125\004\003
\023\060\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\124\123\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\025\070\165\341\144\176\321\260\107\264\357\257\101\022
\202\105
END
CKA_VALUE MULTILINE_OCTAL
\060\202\003\027\060\202\002\236\240\003\002\001\002\002\020\025
\070\165\341\144\176\321\260\107\264\357\257\101\022\202\105\060
\012\006\010\052\206\110\316\075\004\003\003\060\201\217\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\023\060\021\006
\003\125\004\010\023\012\127\141\163\150\151\156\147\164\157\156
\061\020\060\016\006\003\125\004\007\023\007\122\145\144\155\157
\156\144\061\036\060\034\006\003\125\004\012\023\025\115\151\143
\162\157\163\157\146\164\040\103\157\162\160\157\162\141\164\151
\157\156\061\071\060\067\006\003\125\004\003\023\060\115\151\143
\162\157\163\157\146\164\040\105\103\103\040\124\123\040\122\157
\157\164\040\103\145\162\164\151\146\151\143\141\164\145\040\101
\165\164\150\157\162\151\164\171\040\062\060\061\070\060\036\027

\015\061\070\060\062\062\067\062\060\065\061\063\064\132\027\015
\064\063\060\062\062\067\062\061\060\060\061\062\132\060\201\217
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\023\060
\021\006\003\125\004\010\023\012\127\141\163\150\151\156\147\164
\157\156\061\020\060\016\006\003\125\004\007\023\007\122\145\144
\155\157\156\144\061\036\060\034\006\003\125\004\012\023\025\115
\151\143\162\157\163\157\146\164\040\103\157\162\160\157\162\141
\164\151\157\156\061\071\060\067\006\003\125\004\003\023\060\115
\151\143\162\157\163\157\146\164\040\105\103\103\040\124\123\040
\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164\145
\040\101\165\164\150\157\162\151\164\171\040\062\060\061\070\060
\166\060\020\006\007\052\206\110\316\075\002\001\006\005\053\201
\004\000\042\003\142\000\004\336\315\273\160\040\361\045\040\264
\224\350\327\264\073\017\156\207\335\253\254\317\115\100\057\201
\063\153\131\011\030\326\207\015\046\043\234\264\215\225\235\166
\237\245\271\006\102\346\255\066\262\304\263\256\172\074\010\325
\313\235\072\136\105\041\154\013\343\040\365\233\302\335\104\063
\343\102\271\352\362\050\102\222\252\376\014\007\312\212\023\231
\073\142\000\355\332\363\065\243\201\274\060\201\271\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\035
\006\003\125\035\016\004\026\004\024\350\107\310\102\232\260\235
\256\157\013\050\073\230\025\217\343\261\350\200\262\060\020\006
\011\053\006\001\004\001\202\067\025\001\004\003\002\001\000\060
\145\006\003\125\035\040\004\136\060\134\060\006\006\004\125\035
\040\000\060\122\006\014\053\006\001\004\001\202\067\114\203\175
\001\001\060\102\060\100\006\010\053\006\001\005\005\007\002\001
\026\064\150\164\164\160\072\057\057\167\167\167\056\155\151\143
\162\157\163\157\146\164\056\143\157\155\057\160\153\151\157\160
\163\057\104\157\143\163\057\122\145\160\157\163\151\164\157\162
\171\056\150\164\155\000\060\012\006\010\052\206\110\316\075\004
\003\003\003\147\000\060\144\002\060\024\206\120\300\046\032\353
\352\241\024\167\072\133\337\143\071\245\063\307\120\100\325\153
\065\153\017\264\337\175\126\271\341\245\235\170\031\202\241\103
\156\032\327\130\243\125\003\102\333\002\060\030\224\264\036\072
\215\144\372\014\047\033\207\023\112\322\267\072\000\224\306\362
\345\143\277\257\343\372\334\223\325\347\106\232\153\201\151\076
\002\337\121\015\217\050\161\101\211\221\057
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft ECC TS Root Certificate Authority 2018"
Issuer: CN=Microsoft ECC TS Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US

Serial Number:15:38:75:e1:64:7e:d1:b0:47:b4:ef:af:41:12:82:45
Subject: CN=Microsoft ECC TS Root Certificate Authority 2018,O=Microsoft
Corporation,L=Redmond,ST=Washington,C=US
Not Valid Before: Tue Feb 27 20:51:34 2018
#
Not Valid After: Fri Feb 27 21:00:12 2043
Fingerprint (MD5): 37:94:29:58:86:2a:06:e6:bb:cf:d7:ab:59:c7:f2:3c
Fingerprint (SHA1): 31:f9:fc:8b:a3:80:59:86:b7:21:ea:72:95:c6:5b:3a:44:53:42:74
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft ECC TS Root Certificate Authority 2018"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\061\371\374\213\243\200\131\206\267\041\352\162\225\306\133\072
\104\123\102\164
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\067\224\051\130\206\052\006\346\273\317\327\253\131\307\362\074
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\217\061\013\060\011\006\003\125\004\006\023\002\125\123
\061\023\060\021\006\003\125\004\010\023\012\127\141\163\150\151
\156\147\164\157\156\061\020\060\016\006\003\125\004\007\023\007
\122\145\144\155\157\156\144\061\036\060\034\006\003\125\004\012
\023\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160
\157\162\141\164\151\157\156\061\071\060\067\006\003\125\004\003
\023\060\115\151\143\162\157\163\157\146\164\040\105\103\103\040
\124\123\040\122\157\157\164\040\103\145\162\164\151\146\151\143
\141\164\145\040\101\165\164\150\157\162\151\164\171\040\062\060
\061\070
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\025\070\165\341\144\176\321\260\107\264\357\257\101\022
\202\105
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GlobalSign Code Signing Root E45"
Issuer: CN=GlobalSign Code Signing Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:ae:18:26:43:6f:69:f5:1c:c2:77:16:f2:5e
Subject: CN=GlobalSign Code Signing Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020

Not Valid After: Sat Mar 18 00:00:00 2045
Fingerprint (MD5): 1c:65:05:d0:f3:fb:48:c5:29:e4:c4:3e:4d:f8:8d:22
#
Fingerprint (SHA1): 79:aa:50:5e:dd:09:b3:21:e3:6d:57:91:0a:5d:f5:a9:fb:85:cc:57
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Code Signing Root E45"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\105\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\105\064\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\166\123\376\256\030\046\103\157\151\365\034\302\167\026
\362\136
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\042\060\202\001\251\240\003\002\001\002\002\020\166
\123\376\256\030\046\103\157\151\365\034\302\167\026\362\136\060
\012\006\010\052\206\110\316\075\004\003\003\060\123\061\013\060
\011\006\003\125\004\006\023\002\102\105\061\031\060\027\006\003
\125\004\012\023\020\107\154\157\142\141\154\123\151\147\156\040
\156\166\055\163\141\061\051\060\047\006\003\125\004\003\023\040
\107\154\157\142\141\154\123\151\147\156\040\103\157\144\145\040
\123\151\147\156\151\156\147\040\122\157\157\164\040\105\064\065
\060\036\027\015\062\060\060\063\061\070\060\060\060\060\060\060
\132\027\015\064\065\060\063\061\070\060\060\060\060\060\060\132
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157

\164\040\105\064\065\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\166\031\155
\003\265\365\204\043\253\062\152\056\141\335\204\045\057\357\350
\171\047\211\203\303\203\165\363\266\170\152\010\155\242\255\041
\052\002\220\006\354\232\100\234\172\206\221\271\130\205\310\050
\232\056\013\367\342\166\251\337\262\275\251\303\351\051\031\171
\010\262\120\320\302\305\235\012\141\014\343\135\067\006\112\134
\376\204\275\300\200\204\372\113\125\043\340\342\076\243\102\060
\100\060\016\006\003\125\035\017\001\001\377\004\004\003\002\001
\206\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\035\006\003\125\035\016\004\026\004\024\247\237\335
\323\124\315\333\370\154\277\046\154\016\344\327\133\157\200\314
\102\060\012\006\010\052\206\110\316\075\004\003\003\003\147\000
\060\144\002\060\154\214\126\266\305\067\256\055\220\053\170\355
\261\036\106\010\322\303\112\050\357\170\031\010\216\044\064\106
\117\207\161\141\137\251\021\112\157\062\253\034\321\122\173\252
\072\352\345\232\002\060\125\053\167\057\316\370\077\233\150\112
\332\327\250\113\105\015\176\262\153\366\154\332\261\025\342\274
\110\031\167\213\127\301\135\024\327\101\000\314\046\122\320\040
\270\031\117\226\347\232
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "GlobalSign Code Signing Root E45"
Issuer: CN=GlobalSign Code Signing Root E45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:ae:18:26:43:6f:69:f5:1c:c2:77:16:f2:5e
Subject: CN=GlobalSign Code Signing Root E45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After: Sat Mar 18 00:00:00
2045
Fingerprint (MD5): 1c:65:05:d0:f3:fb:48:c5:29:e4:c4:3e:4d:f8:8d:22
Fingerprint (SHA1): 79:aa:50:5e:dd:09:b3:21:e3:6d:57:91:0a:5d:f5:a9:fb:85:cc:57
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Code Signing Root E45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\171\252\120\136\335\011\263\041\343\155\127\221\012\135\365\251
\373\205\314\127
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\034\145\005\320\363\373\110\305\051\344\304\076\115\370\215\042
END

CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\105\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\256\030\046\103\157\151\365\034\302\167\026
\362\136
END
CKA_TRUST_SERVER_AUTH
 CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "GlobalSign Code Signing Root R45"
Issuer: CN=GlobalSign Code Signing Root R45,O=GlobalSign nv-sa,C=BE
Serial Number:76:53:fe:ac:75:46:48:93:f5:e5:d7:4a:48:3a:4e:f8
Subject: CN=GlobalSign Code Signing Root R45,O=GlobalSign nv-sa,C=BE
Not Valid Before: Wed Mar 18 00:00:00 2020
Not Valid After: Sat Mar 18 00:00:00 2045
Fingerprint (MD5): e9:4f:b5:48:71:20:8c:00:df:70:f7:08:ac:47:08:5b
Fingerprint (SHA1): 4e:fc:31:46:0c:61:9e:ca:e5:9c:1b:ce:2c:00:80:36:d9:4c:84:b8
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Code Signing Root R45"
CKA_CERTIFICATE_TYPE
 CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\122\064\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040

\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\122\064\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\166\123\376\254\165\106\110\223\365\345\327\112\110\072
\116\370
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\162\060\202\003\132\240\003\002\001\002\002\020\166
\123\376\254\165\106\110\223\365\345\327\112\110\072\116\370\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\123
\061\013\060\011\006\003\125\004\006\023\002\102\105\061\031\060
\027\006\003\125\004\012\023\020\107\154\157\142\141\154\123\151
\147\156\040\156\166\055\163\141\061\051\060\047\006\003\125\004
\003\023\040\107\154\157\142\141\154\123\151\147\156\040\103\157
\144\145\040\123\151\147\156\151\156\147\040\122\157\157\164\040
\122\064\065\060\036\027\015\062\060\060\063\061\070\060\060\060
\060\060\060\132\027\015\064\065\060\063\061\070\060\060\060\060
\060\060\132\060\123\061\013\060\011\006\003\125\004\006\023\002
\102\105\061\031\060\027\006\003\125\004\012\023\020\107\154\157
\142\141\154\123\151\147\156\040\156\166\055\163\141\061\051\060
\047\006\003\125\004\003\023\040\107\154\157\142\141\154\123\151
\147\156\040\103\157\144\145\040\123\151\147\156\151\156\147\040
\122\157\157\164\040\122\064\065\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\266\055\305\060\335\172\350
\253\220\075\003\162\260\072\113\231\026\141\262\345\377\245\147
\035\067\034\345\176\354\223\203\252\204\365\243\103\233\230\105
\212\270\143\127\135\233\000\210\004\045\351\370\150\222\113\202
\330\113\311\112\003\363\250\177\152\217\212\141\047\275\241\104
\320\375\365\077\042\302\243\117\221\215\263\005\262\050\202\221
\135\373\131\210\005\013\227\006\302\230\370\054\247\063\044\356
\120\072\101\314\360\240\260\173\035\115\322\250\130\070\226\351
\337\371\033\221\273\213\020\054\322\307\103\035\242\011\164\241
\200\257\173\346\063\012\014\131\153\216\274\364\253\132\227\173
\177\256\125\373\204\360\200\376\204\114\327\342\272\275\304\165
\241\157\275\141\020\164\104\262\230\007\342\164\253\377\150\334
\154\046\076\351\037\345\340\004\207\255\060\323\014\215\003\174
\125\270\026\160\134\044\170\040\045\353\147\147\210\253\272\116
\064\230\153\160\021\336\070\312\324\276\241\300\234\341\337\036
\002\001\330\073\341\147\103\204\266\317\374\164\267\057\204\243
\277\272\011\067\075\147\154\261\105\134\031\141\253\101\203\365
\254\035\353\167\015\106\107\163\316\277\275\225\225\355\235\053
\210\020\376\372\130\350\247\127\341\263\317\250\132\351\007\045
\233\022\304\236\200\162\075\223\334\214\224\337\073\104\346\046
\200\374\322\303\003\360\214\014\322\105\326\056\347\217\230\236
\346\004\356\102\156\147\176\102\026\161\142\347\004\371\140\306
\144\241\266\234\201\041\116\053\306\155\150\224\206\306\231\164

\163\147\061\172\221\362\324\214\171\156\174\246\273\176\106\157
\115\305\205\022\053\317\232\042\104\010\250\205\067\316\007\141
\127\006\027\022\044\300\304\061\163\241\230\065\127\107\176\020
\072\105\331\055\244\121\220\230\251\240\007\067\304\145\032\252
\034\153\026\167\367\247\227\354\077\031\060\231\157\061\373\352
\100\262\347\322\304\372\311\320\360\120\166\164\131\372\215\155
\027\062\276\370\351\176\003\364\347\207\165\232\324\112\221\054
\205\003\023\002\053\102\200\362\211\152\066\317\310\114\240\316
\236\370\313\215\255\026\247\323\336\325\233\030\247\306\222\072
\361\202\143\361\056\016\044\144\337\002\003\001\000\001\243\102
\060\100\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\035\006\003\125\035\016\004\026\004\024\037\000
\277\106\200\012\374\170\071\267\245\264\103\331\126\120\273\316
\226\073\060\015\006\011\052\206\110\206\367\015\001\001\014\005
\000\003\202\002\001\000\136\053\272\164\227\064\104\137\166\110
\050\100\204\223\356\001\156\351\241\263\326\200\045\346\173\344
\274\011\221\075\017\374\166\255\327\324\060\040\273\217\140\320
\221\326\034\362\234\357\170\032\053\224\062\002\301\044\226\122
\122\002\320\363\321\374\362\233\071\156\231\341\037\216\103\101
\175\232\036\133\311\135\232\204\374\046\346\207\363\164\162\046
\255\244\033\331\075\073\152\122\240\074\011\036\057\036\173\263
\063\264\105\307\367\254\261\257\223\140\255\166\256\270\262\025
\170\353\203\152\353\377\333\106\253\044\345\356\002\372\220\037
\131\300\057\135\326\267\135\244\134\020\267\162\123\370\101\116
\314\372\170\032\045\112\312\376\205\142\103\141\303\264\067\252
\201\322\364\326\072\017\275\215\131\176\060\107\336\053\153\347
\041\120\063\137\324\147\233\324\270\147\237\074\047\231\003\377
\205\103\216\163\022\312\040\315\350\141\325\261\146\334\027\326
\071\155\017\333\317\043\067\241\202\211\116\034\153\077\326\240
\315\252\007\235\076\102\046\252\327\014\356\372\107\277\032\122
\176\321\165\201\323\311\212\142\027\155\117\210\240\041\240\046
\076\257\155\331\142\060\037\351\230\050\256\156\215\325\216\114
\162\146\223\200\215\052\343\125\307\140\147\220\102\126\134\042
\121\017\263\334\116\071\356\115\335\331\035\170\020\124\073\156
\320\227\157\003\265\036\262\043\163\306\022\262\232\144\320\374
\225\205\044\250\377\337\241\260\334\221\100\256\337\011\063\253
\271\335\222\267\361\314\221\164\073\151\353\147\227\033\220\277
\347\307\240\157\161\273\127\277\267\217\132\355\172\100\152\026
\315\200\204\055\057\341\002\324\044\224\103\263\025\374\014\053
\033\375\161\157\374\313\274\165\027\072\136\203\322\311\263\057
\033\325\234\215\177\124\376\176\176\344\126\243\207\247\235\341
\131\122\224\101\217\155\133\276\206\225\232\377\032\166\335\100
\322\121\112\160\264\037\063\143\043\167\077\354\047\036\131\344
\010\207\355\064\202\112\017\077\376\240\035\301\365\147\163\105
\206\170\364\252\051\351\047\207\306\031\333\306\023\024\303\071
\111\207\115\240\227\340\145\023\365\235\167\126\351\332\263\130
\307\072\362\300\315\202

```
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Trust for "GlobalSign Code Signing Root R45"
# Issuer: CN=GlobalSign Code Signing Root R45,O=GlobalSign nv-sa,C=BE
# Serial Number:76:53:fe:ac:75:46:48:93:f5:e5:d7:4a:48:3a:4e:f8
#
 Subject: CN=GlobalSign Code Signing Root R45,O=GlobalSign nv-sa,C=BE
# Not Valid Before: Wed Mar 18 00:00:00 2020
# Not Valid After: Sat Mar 18 00:00:00 2045
# Fingerprint (MD5): e9:4f:b5:48:71:20:8c:00:df:70:f7:08:ac:47:08:5b
# Fingerprint (SHA1): 4e:fc:31:46:0c:61:9e:ca:e5:9c:1b:ce:2c:00:80:36:d9:4c:84:b8
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "GlobalSign Code Signing Root R45"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\116\374\061\106\014\141\236\312\345\234\033\316\054\000\200\066
\331\114\204\270
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\351\117\265\110\161\040\214\000\337\160\367\010\254\107\010\133
END
CKA_ISSUER MULTILINE_OCTAL
\060\123\061\013\060\011\006\003\125\004\006\023\002\102\105\061
\031\060\027\006\003\125\004\012\023\020\107\154\157\142\141\154
\123\151\147\156\040\156\166\055\163\141\061\051\060\047\006\003
\125\004\003\023\040\107\154\157\142\141\154\123\151\147\156\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\122\157\157
\164\040\122\064\065
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\166\123\376\254\165\106\110\223\365\345\327\112\110\072
\116\370
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

# Microsoft Code Signing Only Certificate
# Certificate "DigiCert CS ECC P384 Root G5"
```

```
# Issuer: CN=DigiCert CS ECC P384 Root G5,O=DigiCert\, Inc.,C=US
# Serial Number:03:69:8f:e7:12:d5:19:f3:ce:d0:fd:b7:b1:64:30:11
# Subject: CN=DigiCert CS ECC P384 Root G5,O=DigiCert\, Inc.,C=US
# Not Valid Before: Fri Jan 15 00:00:00 2021
# Not Valid After: Sun Jan 14 23:59:59 2046
# Fingerprint (MD5): dd:b4:30:09:e8:67:1f:45:a0:80:ec:9d:d9:b1:a1:54
# Fingerprint (SHA1): 84:35:73:11:2a:3b:31:93:44:e5:e4:ec:ab:c9:f2:6c:7c:d5:4d:07
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN
 CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert CS ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\103\123\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\103\123\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\151\217\347\022\325\031\363\316\320\375\267\261\144
\060\021
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\002\026\060\202\001\235\240\003\002\001\002\002\020\003
\151\217\347\022\325\031\363\316\320\375\267\261\144\060\021\060
\012\006\010\052\206\110\316\075\004\003\003\060\115\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\045\060\043\006\003\125\004\003\023\034\104\151
\147\151\103\145\162\164\040\103\123\040\105\103\103\040\120\063
\070\064\040\122\157\157\164\040\107\065\060\036\027\015\062\061
\060\061\061\065\060\060\060\060\060\060\132\027\015\064\066\060
\061\061\064\062\063\065\071\065\071\132\060\115\061\013\060\011
\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125
\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111\156
\143\056\061\045\060\043\006\003\125\004\003\023\034\104\151\147
```

\151\103\145\162\164\040\103\123\040\105\103\103\040\120\063\070
\064\040\122\157\157\164\040\107\065\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\177\024\255\205\266\227\375\002\041\065\115\140\350\070\223
\223\233\075\005\020\155\257\323\376\357\372\273\373\163\231\363
\354\062\022\215\307\150\270\213\336\211\242\210\124\167\215\273
\041\176\063\225\126\226\011\350\325\214\241\004\270\233\156\031
\000\142\350\102\050\246\130\067\204\031\125\046\173\063\067\147
\362\232\162\255\241\256\256\000\102\074\034\176\270\172\236\041
\234\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024
\360\214\230\161\071\070\145\302\072\033\246\027\146\035\310\355
\145\336\222\066\060\016\006\003\125\035\017\001\001\377\004\004
\003\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005
\060\003\001\001\377\060\012\006\010\052\206\110\316\075\004\003
\003\003\147\000\060\144\002\060\043\157\341\000\031\046\120\344
\106\040\145\213\067\247\317\353\006\341\314\062\311\052\241\354
\062\015\163\242\036\002\034\065\141\052\116\151\253\071\167\355
\227\210\300\175\153\352\211\335\002\060\103\361\321\130\243\165
\076\206\233\266\125\021\213\027\367\075\376\012\151\305\177\116
\306\165\033\132\224\313\352\021\021\306\010\042\210\336\320\172
\242\245\171\350\343\041\247\315\023\263
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "DigiCert CS ECC P384 Root G5"
Issuer: CN=DigiCert CS ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:03:69:8f:e7:12:d5:19:f3:ce:d0:fd:b7:b1:64:30:11
Subject: CN=DigiCert CS ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): dd:b4:30:09:e8:67:1f:45:a0:80:ec:9d:d9:b1:a1:54
Fingerprint (SHA1): 84:35:73:11:2a:3b:31:93:44:e5:e4:ec:ab:c9:f2:6c:7c:d5:4d:07
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert CS ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\204\065\163\021\052\073\061\223\104\345\344\354\253\311\362\154
\174\325\115\007
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\335\264\060\011\350\147\037\105\240\200\354\235\331\261\241\124

END
CKA_ISSUER MULTILINE_OCTAL
\060\115\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\045\060\043\006\003\125\004
\003\023\034\104\151\147\151\103\145\162\164\040\103\123\040\105
\103\103\040\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\003\151\217\347\022\325\031\363\316\320\375\267\261\144
\060\021
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing
 Only Certificate
Certificate "DigiCert CS RSA4096 Root G5"
Issuer: CN=DigiCert CS RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:06:ce:e1:31:be:6d:55:c8:07:f7:c0:c7:fb:44:e6:20
Subject: CN=DigiCert CS RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): a7:33:ed:bf:1b:5d:e1:19:c4:91:c9:4a:ea:f7:6d:c7
Fingerprint (SHA1): 5e:ee:d8:6f:a3:7c:67:52:30:64:2f:55:c8:4d:db:f6:7c:d3:3c:80
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert CS RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\044\060\042\006\003\125\004
\003\023\033\104\151\147\151\103\145\162\164\040\103\123\040\122
\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\044\060\042\006\003\125\004
\003\023\033\104\151\147\151\103\145\162\164\040\103\123\040\122
\123\101\064\060\071\066\040\122\157\157\164\040\107\065

END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\316\341\061\276\155\125\310\007\367\300\307\373\104
\346\040
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\144\060\202\003\114\240\003\002\001\002\002\020\006
\316\341\061\276\155\125\310\007\367\300\307\373\104\346\040\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\114
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\044\060\042\006\003\125\004\003\023
\033\104\151\147\151\103\145\162\164\040\103\123\040\122\123\101
\064\060\071\066\040\122\157\157\164\040\107\065\060\036\027\015
\062\061\060\061\061\065\060\060\060\060\060\060\132\027\015\064
\066\060\061\061\064\062\063\065\071\065\071\132\060\114\061\013
\060\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006
\003\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040
\111\156\143\056\061\044\060\042\006\003\125\004\003\023\033\104
\151\147\151\103\145\162\164\040\103\123\040\122\123\101\064\060
\071\066\040\122\157\157\164\040\107\065\060\202\002\042\060\015
\006\011\052\206\110\206\367\015\001\001\001\005\000\003\202\002
\017\000\060\202\002\012\002\202\002\001\000\266\063\163\200\330
\142\003\160\024\054\021\034\071\136\174\256\174\203\206\035\376
\046\057\114\044\255\213\352\203\137\251\274\075\133\374\013\230
\114\002\107\060\354\342\376\354\350\064\133\146\136\277\073\327
\054\246\045\377\214\131\263\337\352\332\174\051\331\106\120\162
\010\035\156\321\033\012\335\037\315\231\211\372\017\017\163\304
\341\234\035\165\062\315\157\227\332\052\152\225\262\154\311\011
\320\352\013\173\175\027\006\111\231\357\326\336\340\310\123\324
\256\306\167\361\206\273\043\034\270\300\337\131\367\216\175\321
\357\202\346\046\213\132\070\265\377\165\325\262\331\117\011\363
\067\210\120\332\021\244\212\024\024\321\123\004\000\175\363\152
\104\030\376\120\160\062\007\034\250\232\016\072\035\305\012\037
\156\013\046\151\267\074\242\127\160\054\206\372\114\156\225\251
\130\103\271\254\022\326\377\077\355\327\103\027\153\114\316\236
\304\220\253\377\372\020\120\232\243\220\127\326\347\214\020\256
\237\026\032\317\065\035\177\327\166\355\212\234\065\247\050\270
\247\135\041\374\060\067\335\336\010\031\117\025\306\347\246\332
\220\107\216\367\224\123\114\216\123\002\276\375\231\345\352\206
\320\257\003\002\323\233\252\223\361\253\050\216\040\001\377\114
\373\314\267\051\100\365\207\244\022\023\005\037\103\156\327\121
\120\237\070\264\040\355\027\011\022\217\314\271\031\257\237\315
\276\151\021\323\257\125\020\155\027\206\171\226\122\306\262\000
\235\345\257\070\260\065\364\210\153\217\016\004\075\174\356\257
\315\323\152\020\112\306\315\206\312\042\075\241\112\134\373\016
\377\210\337\134\142\247\300\271\036\331\254\154\176\070\067\376
\167\223\045\302\205\212\117\265\067\006\132\006\201\024\361\316

\224\235\231\221\352\062\132\316\147\075\156\004\146\255\014\117
\055\243\056\367\236\365\170\235\367\012\375\176\217\343\102\212
\125\226\274\361\237\067\055\374\236\137\225\376\214\030\033\374
\216\375\113\220\257\327\003\150\022\143\254\342\223\247\242\313
\004\345\117\144\316\003\372\306\024\237\331\213\350\314\324\142
\214\153\344\000\054\031\237\032\006\306\061\201\124\373\123\044
\232\257\125\231\272\235\165\256\270\302\335\002\003\001\000\001
\243\102\060\100\060\035\006\003\125\035\016\004\026\004\024\150
\001\223\261\322\112\100\102\151\224\106\054\034\132\210\251\045
\264\107\117\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\206\060\017\006\003\125\035\023\001\001\377\004\005\060
\003\001\001\377\060\015\006\011\052\206\110\206\367\015\001\001
\014\005\000\003\202\002\001\000\222\374\356\270\002\171\027\002
\121\175\041\305\111\147\247\244\361\250\044\070\353\014\150\352
\132\102\153\234\364\163\301\151\112\055\263\067\005\120\102\230
\222\236\006\171\054\056\006\231\366\357\337\053\240\315\263\222
\001\203\265\240\313\047\265\074\043\032\230\111\242\354\055\231
\245\131\103\254\322\261\223\326\127\327\034\274\223\326\306\100
\341\263\157\031\125\267\023\327\345\103\063\244\265\253\313\332
\301\061\144\015\164\326\054\355\303\215\156\353\273\257\031\107
\141\141\055\300\364\005\271\157\170\334\072\367\102\100\145\123
\221\275\231\015\223\222\124\246\251\067\131\053\233\313\231\306
\274\075\367\004\204\360\224\063\035\017\202\132\071\313\056\105
\303\050\031\243\262\233\230\310\374\061\153\140\217\366\351\206
\050\274\340\074\175\164\135\026\211\133\151\044\307\020\213\304
\113\273\066\117\324\131\077\303\260\244\221\231\370\056\321\112
\001\235\365\210\022\357\277\132\021\152\131\117\131\153\132\147
\363\217\264\023\017\300\330\057\075\050\162\252\031\177\021\175
\152\133\237\225\347\137\267\224\117\361\076\241\132\377\055\314
\235\337\047\167\217\062\163\034\147\012\166\363\372\134\261\277
\274\035\275\014\050\233\262\307\027\147\013\063\017\303\275\066
\334\373\272\102\013\253\355\204\303\142\326\204\026\251\261\007
\153\251\156\356\306\317\346\260\104\051\302\360\263\141\200\052
\213\157\322\024\134\045\207\124\144\363\244\114\301\241\370\247
\153\352\376\352\072\374\171\333\016\217\334\306\363\311\324\154
\336\351\203\241\216\035\042\354\311\072\262\000\173\334\073\247
\102\032\177\334\213\251\021\075\216\247\300\040\157\135\011\135
\103\104\346\217\146\314\251\133\007\361\357\233\172\016\263\124
\341\224\375\016\054\306\223\327\125\375\161\230\065\270\011\112
\377\306\051\050\054\366\122\055\333\024\030\222\047\342\026\176
\214\312\324\141\276\202\207\221\353\230\067\077\277\137\135\167
\077\064\254\033\070\103\253\150\162\231\062\036\072\032\031\245
\243\070\114\043\327\243\347\314\325\052\222\027\220\013\132\113
\275\026\275\373\206\152\342\211\231\354\344\240\125\030\311\243
\010\037\023\340\062\010\162\320
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "DigiCert CS RSA4096 Root G5"
Issuer: CN=DigiCert CS RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:06:ce:e1:31:be:6d:55:c8:07:f7:c0:c7:fb:44:e6:20
Subject: CN=DigiCert CS RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): a7:33:ed:bf:1b:5d:e1:19:c4:91:c9:4a:ea:f7:6d:c7
Fingerprint (SHA1): 5e:ee:d8:6f:a3:7c:67:52:30:64:2f:55:c8:4d:db:f6:7c:d3:3c:80
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL
UTF8 "DigiCert CS RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\136\356\330\157\243\174\147\122\060\144\057\125\310\115\333\366
\174\323\074\200
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\247\063\355\277\033\135\341\031\304\221\311\112\352\367\155\307
END
CKA_ISSUER MULTILINE_OCTAL
\060\114\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\044\060\042\006\003\125\004
\003\023\033\104\151\147\151\103\145\162\164\040\103\123\040\122
\123\101\064\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\006\316\341\061\276\155\125\310\007\367\300\307\373\104
\346\040
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "DigiCert
RSA4096 Root G5"
Issuer: CN=DigiCert RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:08:bf:a2:6f:9a:3f:33:65:a2:ac:f0:a6:38:c4:01:70
Subject: CN=DigiCert RSA4096 Root G5,O=DigiCert\, Inc.,C=US

Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): 26:18:9c:6e:60:22:79:b6:8d:0f:65:4c:99:17:56:12
Fingerprint (SHA1): 87:b8:e6:d3:8f:1a:39:cd:97:f0:4a:9e:17:4b:3c:9e:e7:ee:11:15
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert RSA4096 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\041\060\037\006\003\125\004
\003\023\030\104\151\147\151\103\145\162\164\040\122\123\101\064
\060\071\066\040\122\157\157\164\040\107\065
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\041\060\037\006\003\125\004
\003\023\030\104\151\147\151\103\145\162\164\040\122\123\101\064
\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\277\242\157\232\077\063\145\242\254\360\246\070\304
\001\160
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\136\060\202\003\106\240\003\002\001\002\002\020\010
\277\242\157\232\077\063\145\242\254\360\246\070\304\001\160\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\111
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\027\060
\025\006\003\125\004\012\023\016\104\151\147\151\103\145\162\164
\054\040\111\156\143\056\061\041\060\037\006\003\125\004\003\023
\030\104\151\147\151\103\145\162\164\040\122\123\101\064\060\071
\066\040\122\157\157\164\040\107\065\060\036\027\015\062\061\060
\061\061\065\060\060\060\060\060\060\132\027\015\064\066\060\061
\061\064\062\063\065\071\065\071\132\060\111\061\013\060\011\006
\003\125\004\006\023\002\125\123\061\027\060\025\006\003\125\004
\012\023\016\104\151\147\151\103\145\162\164\054\040\111\156\143
\056\061\041\060\037\006\003\125\004\003\023\030\104\151\147\151
\103\145\162\164\040\122\123\101\064\060\071\066\040\122\157\157
\164\040\107\065\060\202\002\042\060\015\006\011\052\206\110\206
\367\015\001\001\001\005\000\003\202\002\017\000\060\202\002\012
\002\202\002\001\000\252\276\015\262\006\175\046\371\107\352\344

\033\347\102\151\270\231\302\271\356\044\261\106\220\313\131\044
\122\124\065\246\044\302\137\221\031\310\266\102\326\363\107\145
\225\144\347\205\145\147\251\256\174\000\117\340\170\003\120\255
\363\177\216\270\021\347\201\142\261\213\337\362\111\046\011\336
\017\026\274\332\050\233\241\310\227\057\223\220\332\040\052\343
\204\324\377\251\236\260\055\277\264\000\336\233\037\310\240\143
\123\150\205\157\115\205\306\252\143\371\215\262\065\166\142\164
\003\334\223\230\150\005\236\315\220\145\335\322\172\061\253\044
\055\155\100\056\220\077\143\154\054\353\372\036\200\124\215\171
\002\220\024\263\265\117\116\365\210\004\103\200\303\110\263\046
\057\254\121\225\062\125\045\057\101\226\260\126\241\010\073\334
\230\037\162\205\054\167\312\230\314\070\373\216\162\311\155\354
\005\354\355\115\267\074\133\024\120\205\335\227\373\131\367\220
\022\364\023\277\203\115\200\262\025\145\021\227\140\345\326\134
\346\004\265\120\346\161\063\266\040\223\251\150\000\070\316\111
\333\264\134\073\162\327\105\134\124\277\315\074\001\043\036\174
\326\370\151\054\245\000\012\154\062\110\264\336\160\055\072\023
\027\301\177\144\313\363\060\355\241\075\226\147\361\224\265\140
\154\133\151\150\365\202\063\011\242\266\331\363\205\262\156\240
\224\360\302\304\175\241\054\312\163\365\256\340\122\234\242\146
\346\003\316\352\337\355\030\324\271\143\213\367\350\377\373\263
\133\217\103\305\257\267\164\224\120\065\145\256\326\057\361\205
\217\123\241\160\364\215\062\135\274\226\303\036\302\004\004\234
\004\017\263\135\176\211\040\312\136\047\015\211\112\022\043\264
\366\304\335\330\037\370\150\263\066\370\036\274\306\367\204\266
\350\212\116\210\060\070\300\046\330\160\012\011\072\064\016\153
\202\022\226\034\057\346\236\255\330\161\065\201\261\214\006\156
\364\156\146\377\113\112\256\275\360\376\327\134\137\123\273\062
\074\315\142\321\024\240\051\037\020\336\251\162\117\261\255\144
\345\203\052\217\213\352\204\225\356\230\045\230\232\263\161\074
\301\247\120\362\254\102\142\061\302\241\220\306\356\342\267\212
\250\265\266\033\073\002\003\001\000\001\243\102\060\100\060\035
\006\003\125\035\016\004\026\004\024\142\155\267\221\117\304\352
\243\142\140\217\240\320\276\265\217\006\174\150\000\060\016\006
\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017\006
\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060\015
\006\011\052\206\110\206\367\015\001\001\014\005\000\003\202\002
\001\000\141\350\373\047\155\326\342\270\263\011\257\252\360\261
\202\114\376\075\027\211\115\055\025\235\373\356\320\273\204\354
\204\165\333\103\023\336\214\237\307\051\357\207\164\313\023\160
\201\126\000\164\374\256\364\331\072\336\042\010\121\245\240\134
\202\146\266\173\114\251\332\217\253\254\034\101\226\146\326\235
\336\126\346\277\116\261\262\136\137\300\303\156\324\302\204\220
\365\175\261\272\026\321\051\212\310\235\351\317\320\307\031\073
\077\317\356\367\341\063\256\102\310\230\300\010\236\363\132\363
\337\324\053\073\216\250\050\126\031\307\116\167\074\045\124\334
\270\110\110\321\371\047\152\076\354\023\257\262\005\211\375\125
\137\363\175\216\015\234\011\135\054\212\176\205\316\370\341\277

\021\075\062\214\132\327\176\075\364\063\130\317\242\005\230\243
\263\373\316\211\277\375\302\026\335\156\334\210\111\015\013\240
\003\377\347\105\351\004\301\351\375\252\235\165\370\270\037\207
\203\331\353\071\323\132\247\313\230\254\023\211\000\374\157\225
\116\341\175\021\106\155\366\070\106\243\023\240\054\001\365\142
\317\277\034\120\221\047\164\135\267\354\107\174\320\321\165\313
\173\356\321\115\043\012\303\140\245\167\055\200\332\147\017\216
\153\166\007\360\246\017\352\204\256\036\171\277\010\212\332\011
\363\364\356\265\066\363\324\172\103\272\224\065\341\372\301\073
\033\226\231\244\127\143\353\265\250\202\367\255\370\167\327\166
\206\363\166\123\126\133\374\046\102\204\316\237\203\221\221\257
\364\276\160\025\200\245\330\350\151\261\330\221\124\270\031\262
\142\371\242\372\125\355\004\277\271\104\206\344\317\361\233\000
\277\021\017\276\265\164\044\121\377\167\064\143\354\110\043\016
\350\021\353\167\155\332\312\202\221\276\244\204\223\114\332\241
\376\314\006\204\350\041\350\124\272\346\323\035\143\075\302\132
\374\346\311\203\236\162\144\251\206\131\000\214\302\367\023\203
\266\320\244\061\306\254\221\216\173\244\042\126\023\306\165\307
\043\274\213\133\374\106\075\376\135\122\051\257\257\350\311\303
\166\113\350\253\107\002\362\232\015\323\054\210\200\007\206\300
\143\017\002\114\216\004\123\166\271\130\102\157\174\051\160\135
\277\047
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "DigiCert RSA4096 Root G5"
Issuer: CN=DigiCert RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:08:bf:a2:6f:9a:3f:33:65:a2:ac:f0:a6:38:c4:01:70
Subject: CN=DigiCert RSA4096 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): 26:18:9c:6e:60:22:79:b6:8d:0f:65:4c:99:17:56:12
Fingerprint (SHA1): 87:b8:e6:d3:8f:1a:39:cd:97:f0:4a:9e:17:4b:3c:9e:e7:ee:11:15
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert RSA4096 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\207\270\346\323\217\032\071\315\227\360\112\236\027\113\074\236
\347\356\021\025
END
CKA_CERT_MD5_HASH

MULTILINE_OCTAL
\046\030\234\156\140\042\171\266\215\017\145\114\231\027\126\022
END
CKA_ISSUER MULTILINE_OCTAL
\060\111\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\041\060\037\006\003\125\004
\003\023\030\104\151\147\151\103\145\162\164\040\122\123\101\064
\060\071\066\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\010\277\242\157\232\077\063\145\242\254\360\246\070\304
\001\160
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "DigiCert ECC P384 Root G5"
Issuer: CN=DigiCert ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:0d:f3:d9:37:65:a3:79:c5:95:66:ea:92:e2:24:4f:34
#
Subject: CN=DigiCert ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): 11:7f:85:ae:47:1f:51:61:6e:06:94:1e:6a:43:08:0b
Fingerprint (SHA1): d1:ee:b1:e8:c0:90:20:ba:b8:5d:3d:e2:7f:78:ee:33:a0:6c:ae:db
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert ECC P384 Root G5"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\042\060\040\006\003\125\004
\003\023\031\104\151\147\151\103\145\162\164\040\105\103\103\040
\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\042\060\040\006\003\125\004
\003\023\031\104\151\147\151\103\145\162\164\040\105\103\103\040

\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\015\363\331\067\145\243\171\305\225\146\352\222\342\044
\117\064
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\021\060\202\001\227\240\003\002\001\002\002\020\015
\363\331\067\145\243\171\305\225\146\352\222\342\044\117\064\060
\012\006\010\052\206\110\316\075\004\003\003\060\112\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\027\060\025\006\003
\125\004\012\023\016\104\151\147\151\103\145\162\164\054\040\111
\156\143\056\061\042\060\040\006\003\125\004\003\023\031\104\151
\147\151\103\145\162\164\040\105\103\103\040\120\063\070\064\040
\122\157\157\164\040\107\065\060\036\027\015\062\061\060\061\061
\065\060\060\060\060\060\060\132\027\015\064\066\060\061\061\064
\062\063\065\071\065\071\132\060\112\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\027\060\025\006\003\125\004\012\023
\016\104\151\147\151\103\145\162\164\054\040\111\156\143\056\061
\042\060\040\006\003\125\004\003\023\031\104\151\147\151\103\145
\162\164\040\105\103\103\040\120\063\070\064\040\122\157\157\164
\040\107\065\060\166\060\020\006\007\052\206\110\316\075\002\001
\006\005\053\201\004\000\042\003\142\000\004\374\131\037\316\231
\154\177\233\016\266\051\143\157\306\205\363\012\323\326\233\256
\127\025\114\016\355\135\343\011\176\155\052\243\206\252\272\170
\240\247\161\275\104\372\010\300\112\006\326\157\335\054\112\070
\164\345\320\275\377\172\377\345\071\116\275\275\027\036\037\103
\255\325\274\047\330\113\277\166\214\060\062\244\373\371\123\345
\330\252\070\123\135\250\240\067\240\147\012\243\102\060\100\060
\035\006\003\125\035\016\004\026\004\024\222\226\367\346\272\325
\021\272\371\042\056\173\176\132\331\360\045\345\005\033\060\016
\006\003\125\035\017\001\001\377\004\004\003\002\001\206\060\017
\006\003\125\035\023\001\001\377\004\005\060\003\001\001\377\060
\012\006\010\052\206\110\316\075\004\003\003\003\150\000\060\145
\002\061\000\375\300\115\361\244\247\333\247\014\046\021\364\111
\275\007\070\143\053\104\142\006\171\010\307\303\324\317\233\076
\253\072\047\252\220\307\375\131\242\270\062\122\333\312\216\027
\013\012\220\002\060\135\032\354\121\211\324\144\334\371\345\036
\070\275\133\056\343\345\104\344\073\030\172\327\360\225\100\217
\362\353\317\364\371\320\145\242\101\362\260\346\174\301\066\054
\217\136\071\335\067
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "DigiCert ECC P384 Root G5"
Issuer: CN=DigiCert ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Serial Number:0d:f3:d9:37:65:a3:79:c5:95:66:ea:92:e2:24:4f:34
Subject: CN=DigiCert ECC P384 Root G5,O=DigiCert\, Inc.,C=US
Not Valid Before: Fri
Jan 15 00:00:00 2021
Not Valid After: Sun Jan 14 23:59:59 2046
Fingerprint (MD5): 11:7f:85:ae:47:1f:51:61:6e:06:94:1e:6a:43:08:0b
Fingerprint (SHA1): d1:ee:b1:e8:c0:90:20:ba:b8:5d:3d:e2:7f:78:ee:33:a0:6c:ae:db
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "DigiCert ECC P384 Root G5"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\321\356\261\350\300\220\040\272\270\135\075\342\177\170\356\063
\240\154\256\333
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\021\177\205\256\107\037\121\141\156\006\224\036\152\103\010\013
END
CKA_ISSUER MULTILINE_OCTAL
\060\112\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\027\060\025\006\003\125\004\012\023\016\104\151\147\151\103\145
\162\164\054\040\111\156\143\056\061\042\060\040\006\003\125\004
\003\023\031\104\151\147\151\103\145\162\164\040\105\103\103\040
\120\063\070\064\040\122\157\157\164\040\107\065
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\015\363\331\067\145\243\171\305\225\146\352\222\342\044
\117\064
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "HARICA Code Signing RSA Root CA 2021"
Issuer: CN=HARICA Code Signing RSA Root CA 2021,O=Hellenic Academic and Research Institutions
CA,C=GR
Serial Number:15:c2:ae:2a:4d:99:9a:63:8c:d3:ba:13:19:76:08:f5
Subject: CN=HARICA Code Signing RSA Root CA 2021,O=Hellenic Academic and Research Institutions
CA,C=GR
Not Valid Before: Fri Feb 19 10:59:54 2021
Not Valid After: Mon Feb 13 10:59:53 2045

Fingerprint (MD5): 00:5d:c9:e3:b2:c0:90:e0:61:9a:42:c0:29:a1:6b:ba
Fingerprint (SHA1): 8d:de:b8:20:46:b6:22:7c:79:24:6a:3e:ad:7b:32:c3:e8:8f:fc:ac
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE
 CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Code Signing RSA Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\123\101\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\123\101\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\025\302\256\052\115\231\232\143\214\323\272\023\031\166
\010\365
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\266\060\202\003\236\240\003\002\001\002\002\020\025
\302\256\052\115\231\232\143\214\323\272\023\031\166\010\365\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\165
\061\013\060\011\006\003\125\004\006\023\002\107\122\061\067\060
\065\006\003\125\004\012\014\056\110\145\154\154\145\156\151\143
\040\101\143\141\144\145\155\151\143\040\141\156\144\040\122\145
\163\145\141\162\143\150\040\111\156\163\164\151\164\165\164\151
\157\156\163\040\103\101\061\055\060\053\006\003\125\004\003\014
\044\110\101\122\111\103\101\040\103\157\144\145\040\123\151\147
\156\151\156\147\040\122\123\101\040\122\157\157\164\040\103\101
\040\062\060\062\061\060\036\027\015\062\061\060\062\061\071\061
\060\065\071\065\064\132\027\015\064\065\060\062\061\063\061\060

\065\071\065\063\132\060\165\061\013\060\011\006\003\125\004\006
\023\002\107\122\061\067\060\065\006\003\125\004\012\014\056\110
\145\154\154\145\156\151\143\040\101\143\141\144\145\155\151\143
\040\141\156\144\040\122\145\163\145\141\162\143\150\040\111\156
\163\164\151\164\165\164\151\157\156\163\040\103\101\061\055\060
\053\006\003\125\004\003\014\044\110\101\122\111\103\101\040\103
\157\144\145\040\123\151\147\156\151\156\147\040\122\123\101\040
\122\157\157\164\040\103\101\040\062\060\062\061\060\202\002\042
\060\015\006\011\052\206\110\206\367\015\001\001\001\005\000\003
\202\002\017\000\060\202\002\012\002\202\002\001\000\212\152\356
\252\012\043\125\014\213\006\102\343\225\133\124\170\137\305\216
\006\054\174\074\061\276\257\015\251\241\354\112\040\130\005\235
\342\150\262\273\353\137\177\052\063\271\362\125\234\157\252\244
\036\355\020\276\203\051\021\066\346\236\077\372\155\173\121\341
\325\167\245\275\313\151\016\073\042\040\224\014\061\145\100\015
\011\257\020\065\172\233\352\171\010\104\244\213\147\251\053\115
\301\347\320\327\247\366\265\072\215\331\243\251\171\270\244\145
\134\274\363\076\367\237\231\366\270\303\145\150\055\253\203\056
\335\205\231\004\251\365\321\134\325\121\102\001\271\237\101\265
\113\042\262\000\364\313\147\020\357\151\304\020\255\372\224\006
\166\120\022\127\202\256\305\024\255\074\175\273\235\361\163\341
\174\360\256\161\336\133\367\022\335\367\200\361\334\076\361\140
\272\311\031\227\157\165\164\205\114\375\071\103\303\144\156\064
\254\023\301\034\145\266\122\102\361\106\353\057\372\135\246\317
\016\111\235\367\164\174\170\015\006\072\054\022\373\342\113\046
\344\157\213\041\201\063\102\071\023\350\102\253\133\125\324\033
\273\067\266\022\221\367\363\175\274\322\377\354\261\303\325\240
\314\262\053\307\217\135\176\114\122\102\110\373\217\375\132\220
\163\020\325\251\162\124\215\111\333\070\122\252\106\110\016\057
\372\000\054\314\163\014\066\113\044\316\023\154\246\244\244\243
\326\174\233\351\070\013\306\044\333\115\254\147\041\111\133\101
\067\144\346\140\153\037\355\052\057\140\031\060\036\330\074\234
\031\103\207\337\300\012\364\344\312\140\210\172\326\243\271\344
\045\056\171\342\376\301\313\074\267\367\317\116\130\114\373\303
\255\253\175\252\312\210\373\016\070\015\037\236\134\071\353\270
\007\304\120\042\115\370\205\177\156\354\214\372\266\161\115\336
\175\226\151\304\335\076\036\336\046\220\012\054\115\025\225\251
\242\076\334\075\016\167\174\215\101\050\117\270\203\121\276\076
\267\217\220\072\160\061\211\132\372\223\123\374\140\311\215\165
\220\356\132\057\035\204\237\000\251\346\303\206\043\242\036\335
\022\343\241\106\140\033\147\277\120\025\042\222\174\112\264\214
\217\156\234\225\302\054\334\073\072\040\266\274\213\002\003\001
\000\001\243\102\060\100\060\017\006\003\125\035\023\001\001\377
\004\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026
\004\024\264\144\026\110\350\374\132\113\063\051\211\353\231\100
\271\040\264\366\141\032\060\016\006\003\125\035\017\001\001\377
\004\004\003\002\001\206\060\015\006\011\052\206\110\206\367\015
\001\001\013\005\000\003\202\002\001\000\053\254\131\213\346\071

\104\334\373\255\112\210\340\144\377\253\303\362\322\316\160\057
\003\345\157\262\304\365\066\326\123\153\207\253\035\213\231\007
\310\060\216\107\162\375\241\270\165\326\027\241\026\275\144\163
\221\060\127\255\175\375\005\100\206\223\321\111\226\262\013\324
\174\144\023\213\323\041\111\070\273\373\350\314\076\061\361\256
\173\114\052\337\202\006\243\216\005\204\234\177\160\316\300\273
\105\027\337\135\145\014\344\120\110\007\104\213\244\057\126\332
\306\172\366\140\215\244\070\361\235\207\026\060\262\360\137\172
\102\125\040\161\317\314\356\000\261\022\107\277\102\271\344\263
\265\035\031\204\271\230\155\340\151\264\025\101\265\342\120\110
\307\037\352\232\267\171\221\335\325\325\123\031\374\256\030\154
\151\333\255\131\050\233\144\230\247\074\307\125\216\321\060\000
\317\324\062\236\142\261\303\052\356\065\042\306\273\360\174\273
\203\270\000\211\365\334\032\227\331\070\232\051\123\141\031\246
\247\364\073\107\375\335\147\225\017\216\244\146\054\202\232\267
\055\161\346\337\256\370\370\150\301\273\017\352\120\240\105\227
\267\032\225\022\157\310\263\266\005\150\332\152\036\016\065\205
\204\254\164\014\212\264\364\165\237\042\257\260\124\273\266\236
\042\371\331\353\325\212\015\307\334\370\230\061\137\236\372\306
\227\364\101\020\165\323\201\266\061\137\172\335\210\205\010\257
\160\107\002\067\173\342\112\354\135\362\335\051\022\104\310\212
\252\335\322\125\170\027\165\257\161\151\015\167\160\112\260\037
\177\102\333\307\161\334\130\326\030\275\120\305\271\162\004\307
\147\173\174\123\140\312\111\030\025\274\100\163\256\053\250\053
\254\157\021\104\071\354\202\110\176\021\312\373\326\077\266\300
\271\270\006\223\165\275\223\047\167\027\015\134\245\236\352\301
\133\000\055\014\250\065\140\307\342\157\065\033\075\166\265\347
\255\335\164\043\117\206\262\107\357\310\057\320\205\174\071\226
\067\241\053\051\002\275\076\207\317\250\366\035\165\062\317\070
\343\163\261\356\020\201\265\052\261\210\006\121\036\132\072\110
\121\363\066\131\142\337\102\146\131\120\267\130\276\365\166\100
\232\022\026\346\016\252\327\154\240\325
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "HARICA Code Signing RSA Root CA 2021"
Issuer: CN=HARICA Code Signing RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:15:c2:ae:2a:4d:99:9a:63:8c:d3:ba:13:19:76:08:f5
Subject: CN=HARICA Code Signing RSA Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 10:59:54 2021
Not Valid After: Mon Feb 13 10:59:53 2045
Fingerprint (MD5): 00:5d:c9:e3:b2:c0:90:e0:61:9a:42:c0:29:a1:6b:ba

Fingerprint (SHA1): 8d:de:b8:20:46:b6:22:7c:79:24:6a:3e:ad:7b:32:c3:e8:8f:fc:ac
CKA_CLASS
CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Code Signing RSA Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\215\336\270\040\106\266\042\174\171\044\152\076\255\173\062\303
\350\217\374\254
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\000\135\311\343\262\300\220\340\141\232\102\300\051\241\153\272
END
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\123\101\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\025\302\256\052\115\231\232\143\214\323\272\023\031\166
\010\365
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "HARICA Code Signing ECC Root CA 2021"
Issuer: CN=HARICA Code Signing ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:4c:8a:63:1d:a9:63:8f:05:a2:fb:76:14:ff:5b:a2:cd
Subject: CN=HARICA Code Signing ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:04:36 2021
Not Valid After: Mon Feb 13 11:04:35 2045
Fingerprint (MD5): 9d:dd:7d:39:b4:1c:95:fa:82:e0:c3:11:38:ba:69:84
Fingerprint (SHA1): e4:36:e5:37:b7:13:42:b6:2e:8e:00:30:5a:d9:a3:d1:d7:33:47:e9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE

CKA_MODIFIABLE
CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Code Signing ECC Root CA 2021"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\114\212\143\035\251\143\217\005\242\373\166\024\377\133
\242\315
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\146\060\202\001\355\240\003\002\001\002\002\020\114
\212\143\035\251\143\217\005\242\373\166\024\377\133\242\315\060
\012\006\010\052\206\110\316\075\004\003\003\060\165\061\013\060
\011\006\003\125\004\006\023\002\107\122\061\067\060\065\006\003
\125\004\012\014\056\110\145\154\154\145\156\151\143\040\101\143
\141\144\145\155\151\143\040\141\156\144\040\122\145\163\145\141
\162\143\150\040\111\156\163\164\151\164\165\164\151\157\156\163
\040\103\101\061\055\060\053\006\003\125\004\003\014\044\110\101
\122\111\103\101\040\103\157\144\145\040\123\151\147\156\151\156
\147\040\105\103\103\040\122\157\157\164\040\103\101\040\062\060
\062\061\060\036\027\015\062\061\060\062\061\071\061\061\060\064
\063\066\132\027\015\064\065\060\062\061\063\061\061\060\064\063
\065\132\060\165\061\013\060\011\006\003\125\004\006\023\002\107
\122\061\067\060\065\006\003\125\004\012\014\056\110\145\154\154
\145\156\151\143\040\101\143\141\144\145\155\151\143\040\141\156
\144\040\122\145\163\145\141\162\143\150\040\111\156\163\164\151
\164\165\164\151\157\156\163\040\103\101\061\055\060\053\006\003

\125\004\003\014\044\110\101\122\111\103\101\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\061\060\166\060\020\006\007\052
\206\110\316\075\002\001\006\005\053\201\004\000\042\003\142\000
\004\103\237\274\134\102\152\103\341\254\113\270\016\137\200\006
\343\005\167\213\177\013\171\327\141\240\220\277\362\123\050\243
\130\272\224\300\146\152\034\131\332\200\130\201\000\114\274\311
\171\230\020\014\307\035\013\343\223\334\205\071\150\331\277\247
\103\322\061\314\202\202\047\272\210\321\322\055\126\067\367\072
\332\156\071\334\161\020\145\356\070\013\207\172\003\272\060\137
\144\243\102\060\100\060\017\006\003\125\035\023\001\001\377\004
\005\060\003\001\001\377\060\035\006\003\125\035\016\004\026\004
\024\152\161\301\163\152\223\102\246\227\162\136\273\220\137\202
\222\017\053\326\353\060\016\006\003\125\035\017\001\001\377\004
\004\003\002\001\206\060\012\006\010\052\206\110\316\075\004\003
\003\003\147\000\060\144\002\060\036\245\325\013\104\225\020\344
\147\174\116\205\136\271\105\111\002\163\260\262\034\263\247\042
\321\000\141\100\017\263\207\067\026\215\000\355\266\213\125\045
\006\224\220\334\327\347\165\237\002\060\177\164\153\361\112\337
\360\367\204\173\362\305\171\060\003\110\362\036\040\042\127\144
\124\127\064\200\167\267\077\043\117\264\365\200\230\302\301\126
\133\240\347\326\241\217\365\014\157\035
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Trust for "HARICA Code Signing ECC Root CA 2021"
Issuer: CN=HARICA Code Signing ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Serial Number:4c:8a:63:1d:a9:63:8f:05:a2:fb:76:14:ff:5b:a2:cd
Subject: CN=HARICA Code Signing ECC Root CA 2021,O=Hellenic Academic and Research Institutions CA,C=GR
Not Valid Before: Fri Feb 19 11:04:36 2021
Not Valid After: Mon Feb 13 11:04:35 2045
Fingerprint (MD5): 9d:dd:7d:39:b4:1c:95:fa:82:e0:c3:11:38:ba:69:84
Fingerprint (SHA1): e4:36:e5:37:b7:13:42:b6:2e:8e:00:30:5a:d9:a3:d1:d7:33:47:e9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "HARICA Code Signing ECC Root CA 2021"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\344\066\345\067\267\023\102\266\056\216\000\060\132\331\243\321
\327\063\107\351

END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\235\335\175\071\264\034\225\372\202\340\303\021\070\272\151\204
END
CKA_ISSUER MULTILINE_OCTAL
\060\165\061\013\060\011\006\003\125\004\006\023\002\107\122\061
\067\060\065\006\003\125\004\012\014\056\110\145\154\154\145\156
\151\143\040\101\143\141\144\145\155\151\143\040\141\156\144\040
\122\145\163\145\141\162\143\150\040\111\156\163\164\151\164\165
\164\151\157\156\163\040\103\101\061\055\060\053\006\003\125\004
\003\014\044\110\101\122\111\103\101\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\105\103\103\040\122\157\157\164\040
\103\101\040\062\060\062\061
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\114\212\143\035\251\143\217\005\242\373\166\024\377\133
\242\315
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Microsoft Identity Verification Root Certificate Authority 2020"
Issuer: CN=Microsoft Identity Verification
 Root Certificate Authority 2020,O=Microsoft Corporation,C=US
Serial Number:54:98:d2:d1:d4:5b:19:95:48:13:79:c8:11:c0:87:99
Subject: CN=Microsoft Identity Verification Root Certificate Authority 2020,O=Microsoft Corporation,C=US
Not Valid Before: Thu Apr 16 18:36:16 2020
Not Valid After: Sun Apr 16 18:44:40 2045
Fingerprint (MD5): be:95:4f:16:01:21:22:44:8c:a8:bc:27:96:02:ac:f5
Fingerprint (SHA1): f4:00:42:e2:e5:f7:e8:ef:81:89:fe:d1:55:19:ae:ce:42:c3:bf:a2
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Identity Verification Root Certificate Authority 2020"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\167\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\110\060\106\006\003\125\004\003\023\077\115\151\143\162\157\163
\157\146\164\040\111\144\145\156\164\151\164\171\040\126\145\162
\151\146\151\143\141\164\151\157\156\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157

\162\151\164\171\040\062\060\062\060
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\167\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061
\110\060\106\006\003\125\004\003\023\077\115\151\143\162\157\163
\157\146\164\040\111\144\145\156\164\151\164\171\040\126\145\162
\151\146\151\143\141\164\151\157\156\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\124\230\322\321\324\133\031\225\110\023\171\310\021\300
\207\231
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\314\060\202\003\264\240\003\002\001\002\002\020\124
\230\322\321\324\133\031\225\110\023\171\310\021\300\207\231\060
\015\006\011\052\206\110\206\367\015\001\001\014\005\000\060\167
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\036\060
\034\006\003\125\004\012\023\025\115\151\143\162\157\163\157\146
\164\040\103\157\162\160\157\162\141\164\151\157\156\061\110\060
\106\006\003\125\004\003\023\077\115\151\143\162\157\163\157\146
\164\040\111\144\145\156\164\151\164\171\040\126\145\162\151\146
\151\143\141\164\151\157\156\040\122\157\157\164\040\103\145\162
\164\151\146\151\143\141\164\145\040\101\165\164\150\157\162\151
\164\171\040\062\060\062\060\060\036\027\015\062\060\060\064\061
\066\061\070\063\066\061\066\132\027\015\064\065\060\064\061\066
\061\070\064\064\064\060\132\060\167\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\036\060\034\006\003\125\004\012\023
\025\115\151\143\162\157\163\157\146\164\040\103\157\162\160\157
\162\141\164\151\157\156\061\110\060\106\006\003\125\004\003\023
\077\115\151\143\162\157\163\157\146\164\040\111\144\145\156\164
\151\164\171\040\126\145\162\151\146\151\143\141\164\151\157\156
\040\122\157\157\164\040\103\145\162\164\151\146\151\143\141\164
\145\040\101\165\164\150\157\162\151\164\171\040\062\060\062\060
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\263\221\052\007\203\006\147\375\236\235\340\307\300\267\244
\346\102\004\177\017\246\333\137\373\325\132\327\105\240\373\167
\013\360\200\363\246\155\132\115\171\123\330\240\206\204\127\105
\040\307\242\124\373\307\242\277\212\307\156\065\363\242\025\304
\057\116\343\112\205\226\111\015\377\276\231\330\024\366\274\047
\007\356\102\233\053\365\013\222\006\344\375\151\023\145\250\221
\162\362\230\204\353\203\075\016\344\327\161\022\110\041\313\015

\355\366\107\111\267\233\371\311\307\027\266\204\117\377\270\254
\232\327\163\147\111\205\343\206\275\067\100\320\045\206\324\336
\265\302\155\142\152\325\251\170\274\055\157\111\371\345\154\024
\024\375\024\307\323\145\026\067\336\313\156\274\136\051\215\375
\142\233\025\054\326\005\346\271\211\062\063\243\142\307\327\326
\122\147\010\304\056\364\126\053\236\013\207\314\354\247\264\246
\252\353\005\315\031\127\245\072\013\004\047\034\221\147\236\055
\142\055\057\036\276\332\300\040\313\004\031\312\063\373\211\276
\230\342\162\240\162\065\276\171\341\234\203\157\344\155\027\157
\220\363\075\000\206\165\070\216\320\340\111\232\273\333\323\370
\060\312\325\127\210\150\115\162\323\277\155\177\161\330\375\275
\015\256\222\144\110\267\133\157\171\046\265\315\233\225\041\204
\321\357\017\062\075\173\127\214\363\105\007\114\174\340\136\030
\016\065\166\213\155\236\313\066\164\253\005\370\340\163\135\062
\126\224\147\227\045\012\306\065\075\224\227\347\301\104\213\200
\375\301\370\364\164\031\345\060\366\006\373\041\127\076\006\034
\213\153\025\206\047\111\173\202\223\312\131\350\165\107\350\077
\070\364\307\123\171\240\266\264\342\134\121\357\275\137\070\301
\023\346\170\014\225\132\056\305\100\131\050\314\017\044\300\354
\272\011\167\043\231\070\246\266\034\332\307\272\040\266\327\067
\330\177\067\257\010\343\073\161\333\156\163\033\175\231\162\260
\344\206\063\131\164\265\026\000\173\120\155\306\206\023\332\375
\304\071\202\075\044\000\232\140\332\272\224\300\005\121\054\064
\254\120\231\023\207\273\263\005\200\262\115\060\002\134\270\046
\203\135\264\143\163\357\256\043\225\117\140\050\276\067\325\133
\245\002\003\001\000\001\243\124\060\122\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\035\006\003\125
\035\016\004\026\004\024\310\176\322\152\205\052\033\312\031\230
\004\007\047\317\120\020\117\150\250\242\060\020\006\011\053\006
\001\004\001\202\067\025\001\004\003\002\001\000\060\015\006\011
\052\206\110\206\367\015\001\001\014\005\000\003\202\002\001\000
\257\152\335\346\031\347\055\224\103\031\116\313\351\120\225\144
\245\003\221\002\213\342\066\200\073\025\242\122\302\026\031\266
\152\132\135\164\103\060\364\233\377\140\164\011\261\041\036\220
\026\155\305\044\217\134\146\210\143\364\117\314\175\362\022\114
\100\020\213\001\237\332\251\310\256\362\225\033\317\235\005\353
\111\076\164\240\150\133\345\126\054\145\034\202\176\123\332\126
\331\106\027\171\222\105\304\020\066\010\122\051\027\313\057\246
\362\176\324\151\044\212\036\217\260\163\015\314\034\112\253\262
\252\355\247\221\143\001\144\042\250\062\270\176\062\050\263\147
\163\055\221\264\334\061\001\013\367\107\012\246\361\327\112\355
\126\140\304\054\010\243\173\100\260\274\164\047\122\207\326\276
\210\335\067\212\211\156\147\210\035\365\311\135\240\376\266\253
\072\200\327\032\227\074\027\066\042\101\036\254\115\325\203\346
\074\070\275\117\060\351\124\251\323\266\004\303\062\166\141\273
\260\030\305\053\030\263\300\200\325\267\225\260\136\121\115\042
\374\354\130\252\350\330\224\264\245\056\355\222\336\347\030\174

\041\127\335\125\143\367\277\155\315\037\322\246\167\050\160\307
\342\133\072\133\010\322\133\116\310\000\226\263\341\203\066\257
\206\012\145\134\164\366\352\354\172\152\164\240\360\113\356\357
\224\243\254\120\362\207\355\327\072\060\203\311\373\175\127\276
\345\343\370\101\312\345\144\256\263\243\354\130\354\205\232\314
\357\271\352\363\126\030\271\134\163\232\257\305\167\027\203\131
\333\067\032\030\162\124\245\101\322\266\043\165\243\103\232\345
\167\174\226\171\267\101\215\277\354\334\200\240\237\321\167\165
\130\137\065\023\340\045\032\147\013\175\316\045\372\007\012\344
\141\041\330\324\034\345\007\306\066\231\364\226\320\306\025\376
\116\315\327\256\213\235\333\026\375\004\306\222\275\324\210\346
\251\243\252\273\367\144\070\073\137\314\014\320\065\276\164\031
\003\246\305\252\114\242\141\066\202\076\035\363\053\274\227\135
\333\113\170\073\055\365\073\357\140\043\350\365\354\013\043\066
\225\257\230\146\277\123\323\173\270\151\112\052\226\146\151\304
\224\306\364\137\156\254\230\170\210\200\006\134\242\262\355\242
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Microsoft Identity Verification Root Certificate Authority 2020"
Issuer: CN=Microsoft Identity Verification Root Certificate Authority 2020,O=Microsoft Corporation,C=US
Serial Number:54:98:d2:d1:d4:5b:19:95:48:13:79:c8:11:c0:87:99
Subject: CN=Microsoft Identity Verification Root Certificate Authority 2020,O=Microsoft Corporation,C=US
Not Valid Before: Thu Apr 16 18:36:16 2020
Not Valid After: Sun Apr 16 18:44:40 2045
Fingerprint (MD5): be:95:4f:16:01:21:22:44:8c:a8:bc:27:96:02:ac:f5
Fingerprint (SHA1): f4:00:42:e2:e5:f7:e8:ef:81:89:fe:d1:55:19:ae:ce:42:c3:bf:a2
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Microsoft Identity Verification Root Certificate Authority 2020"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\364\000\102\342\345\367\350\357\201\211\376\321\125\031\256\316
\102\303\277\242
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\276\225\117\026\001\041\042\104\214\250\274\047\226\002\254\365
END
CKA_ISSUER MULTILINE_OCTAL
\060\167\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\036\060\034\006\003\125\004\012\023\025\115\151\143\162\157\163
\157\146\164\040\103\157\162\160\157\162\141\164\151\157\156\061

\110\060\106\006\003\125\004\003\023\077\115\151\143\162\157\163
\157\146\164\040\111\144\145\156\164\151\164\171\040\126\145\162
\151\146\151\143\141\164\151\157\156\040\122\157\157\164\040\103
\145\162\164\151\146\151\143\141\164\145\040\101\165\164\150\157
\162\151\164\171\040\062\060\062\060
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\124\230\322\321\324\133\031\225\110\023\171\310\021\300
\207\231
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED
 CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "Entrust Code Signing Root Certification Authority - CSBR1"
Issuer: CN=Entrust Code Signing Root Certification Authority - CSBR1,O=Entrust\, Inc.,C=US
Serial Number:7f:f1:a8:f9:f4:3a:e8:87:6e:2d:c6:ff:5e:43:3d:b2:ee:30:a6:43
Subject: CN=Entrust Code Signing Root Certification Authority - CSBR1,O=Entrust\, Inc.,C=US
Not Valid Before: Fri May 07 13:26:36 2021
Not Valid After: Sun Dec 30 13:26:36 2040
Fingerprint (MD5): 3a:07:e2:0b:54:91:63:95:fd:01:e5:7b:71:aa:46:be
Fingerprint (SHA1): 89:74:24:05:3a:4a:88:7a:c0:98:38:02:91:03:4d:88:5c:87:14:b9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Code Signing Root Certification Authority - CSBR1"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\014\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\102\060\100\006\003\125\004\003
\014\071\105\156\164\162\165\163\164\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\055\040\103\123\102\122\061
END
CKA_ID
 UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\014\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\102\060\100\006\003\125\004\003
\014\071\105\156\164\162\165\163\164\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\157\157\164\040\103\145\162\164

\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\055\040\103\123\102\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\177\361\250\371\364\072\350\207\156\055\306\377\136\103
\075\262\356\060\246\103
END
CKA_VALUE
 MULTILINE_OCTAL
\060\202\005\242\060\202\003\212\240\003\002\001\002\002\024\177
\361\250\371\364\072\350\207\156\055\306\377\136\103\075\262\356
\060\246\103\060\015\006\011\052\206\110\206\367\015\001\001\015
\005\000\060\151\061\013\060\011\006\003\125\004\006\023\002\125
\123\061\026\060\024\006\003\125\004\012\014\015\105\156\164\162
\165\163\164\054\040\111\156\143\056\061\102\060\100\006\003\125
\004\003\014\071\105\156\164\162\165\163\164\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\122\157\157\164\040\103\145
\162\164\151\146\151\143\141\164\151\157\156\040\101\165\164\150
\157\162\151\164\171\040\055\040\103\123\102\122\061\060\036\027
\015\062\061\060\065\060\067\061\063\062\066\063\066\132\027\015
\064\060\061\062\063\060\061\063\062\066\063\066\132\060\151\061
\013\060\011\006\003\125\004\006\023\002\125\123\061\026\060\024
\006\003\125\004\012\014\015\105\156\164\162\165\163\164\054\040
\111\156\143\056\061\102\060\100\006\003\125\004\003\014\071\105
\156\164\162\165\163\164\040\103\157\144\145\040\123\151\147\156
\151\156\147\040\122\157\157\164\040\103\145\162\164\151\146\151
\143\141\164\151\157\156\040\101\165\164\150\157\162\151\164\171
\040\055\040\103\123\102\122\061\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\247\201\217\367\024\105\266
\142\103\362\330\256\323\045\136\110\117\121\277\305\175\237\120
\034\065\321\326\176\141\052\224\031\155\047\106\244\246\032\135
\367\124\121\152\200\042\306\250\146\165\115\124\203\311\136\150
\033\253\366\133\144\260\255\255\040\275\124\357\106\153\155\002
\347\105\256\165\366\216\212\271\062\056\213\270\167\034\122\115
\171\210\137\245\072\030\311\120\054\227\047\055\277\332\000\175
\143\177\357\062\354\106\207\143\333\232\237\303\132\041\066\173
\371\233\325\312\240\156\162\054\374\341\361\236\160\115\010\126
\025\157\220\253\373\110\272\271\327\301\202\170\205\145\056\177
\265\311\300\342\024\267\067\021\101\006\342\212\340\250\366\345
\176\266\170\005\001\303\140\355\117\007\101\056\012\023\111\343
\220\233\177\335\275\372\254\277\144\121\321\134\233\264\365\134
\347\134\377\073\233\245\240\032\327\175\011\262\302\267\377\156
\034\274\310\175\346\351\053\374\162\263\024\351\112\125\022\204
\234\104\045\165\035\366\052\360\117\245\040\075\150\045\353\141
\227\174\017\345\266\075\363\256\303\301\021\274\033\216\314\340
\107\060\136\102\000\206\161\343\130\254\006\312\145\037\173\224
\246\113\127\147\014\176\136\255\170\147\133\125\343\136\353\307

\330\354\114\156\206\313\363\334\370\237\207\252\162\130\022\017
\175\246\370\370\102\071\073\074\054\344\062\115\111\214\340\341
\000\302\070\240\234\372\204\076\101\334\156\126\256\306\032\133
\364\147\150\005\001\315\033\277\256\207\274\235\123\366\056\350
\266\153\344\231\336\305\117\207\130\250\322\145\036\310\037\325
\162\156\356\131\034\127\073\011\162\235\327\312\267\220\306\315
\173\105\222\221\102\003\114\175\077\312\362\252\270\302\016\206
\363\020\237\106\056\244\146\206\150\132\150\030\160\051\070\021
\200\140\153\212\103\243\163\154\343\263\153\067\377\346\235\147
\001\222\206\337\057\110\321\373\120\140\325\134\376\041\323\001
\102\143\376\357\160\264\027\300\217\250\356\323\301\113\137\022
\352\375\375\056\016\207\104\140\343\251\364\302\030\243\343\375
\316\014\204\042\015\363\247\170\332\223\363\333\070\317\271\057
\063\306\377\007\074\136\276\105\323\002\003\001\000\001\243\102
\060\100\060\035\006\003\125\035\016\004\026\004\024\202\272\326
\075\227\316\237\317\161\350\222\067\257\375\263\265\151\065\127
\317\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\206\060\015\006\011\052\206\110\206\367\015\001\001\015\005
\000\003\202\002\001\000\022\357\070\241\210\341\241\243\326\145
\334\107\234\363\274\334\317\254\113\214\074\032\276\053\364\367
\320\147\027\150\206\115\160\250\362\315\320\061\002\127\175\251
\014\212\073\127\071\236\360\156\367\044\042\005\147\321\301\226
\301\276\321\360\370\126\147\013\336\272\327\210\233\215\327\153
\010\166\365\130\221\331\265\303\100\123\032\244\361\205\315\077
\000\116\077\116\223\073\170\271\322\007\122\144\014\206\151\155
\350\124\145\126\027\350\000\123\204\212\363\333\373\263\316\013
\125\142\217\315\114\111\006\070\177\122\303\363\034\327\075\367
\063\312\062\255\301\251\257\157\353\021\313\356\254\121\277\260
\046\232\172\116\043\264\112\366\151\264\102\151\326\240\215\266
\214\107\112\073\040\067\267\101\007\357\057\040\330\146\034\151
\227\250\154\060\174\167\103\136\153\276\046\230\203\017\072\326
\307\160\052\026\106\055\045\124\206\143\145\127\102\367\043\101
\351\120\152\007\103\316\116\265\351\037\150\330\330\326\011\112
\250\350\262\374\220\147\222\344\220\046\363\107\372\326\040\373
\211\200\342\104\163\071\367\212\206\063\013\370\252\251\347\115
\354\334\157\325\317\061\115\253\216\037\220\100\326\174\134\202
\017\256\027\122\161\351\254\347\115\070\355\052\330\166\171\207
\255\027\243\114\253\267\102\127\277\006\254\345\320\115\060\351
\125\117\343\105\312\363\340\152\041\064\215\307\237\034\243\143
\110\222\322\226\007\276\245\107\076\302\052\231\070\247\216\332
\041\174\121\155\334\313\075\007\351\251\275\111\324\135\065\137
\133\214\004\121\352\232\130\220\272\033\257\150\170\261\026\017
\224\051\073\217\233\052\217\311\040\360\161\102\114\134\115\253
\061\214\253\351\177\046\150\151\240\245\026\015\201\304\321\005
\014\303\207\146\345\007\143\252\033\116\377\262\007\101\117\245
\042\106\120\254\146\000\207\122\154\074\262\073\234\227\241\106
\264\133\336\317\302\152\131\125\007\214\243\244\321\167\065\147

\106\004\057\331\070\271\106\257\272\216\033\162\046\002\057\166
\124\357\203\302\057\054\167\160\314\167\020\222\252\003\255\312
\314\340\117\351\203\106\345\263\074\031\157\172\171\207\266\070
\232\275\102\316\244\142
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER
CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "Entrust Code Signing Root Certification Authority - CSBR1"
Issuer: CN=Entrust Code Signing Root Certification Authority - CSBR1,O=Entrust\, Inc.,C=US
Serial Number:7f:f1:a8:f9:f4:3a:e8:87:6e:2d:c6:ff:5e:43:3d:b2:ee:30:a6:43
Subject: CN=Entrust Code Signing Root Certification Authority - CSBR1,O=Entrust\, Inc.,C=US
Not Valid Before: Fri May 07 13:26:36 2021
Not Valid After: Sun Dec 30 13:26:36 2040
Fingerprint (MD5): 3a:07:e2:0b:54:91:63:95:fd:01:e5:7b:71:aa:46:be
Fingerprint (SHA1): 89:74:24:05:3a:4a:88:7a:c0:98:38:02:91:03:4d:88:5c:87:14:b9
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "Entrust Code Signing Root Certification Authority - CSBR1"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\211\164\044\005\072\112\210\172\300\230\070\002\221\003\115\210
\134\207\024\271
END
CKA_CERT_MD5_HASH
MULTILINE_OCTAL
\072\007\342\013\124\221\143\225\375\001\345\173\161\252\106\276
END
CKA_ISSUER MULTILINE_OCTAL
\060\151\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\026\060\024\006\003\125\004\012\014\015\105\156\164\162\165\163
\164\054\040\111\156\143\056\061\102\060\100\006\003\125\004\003
\014\071\105\156\164\162\165\163\164\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\157\157\164\040\103\145\162\164
\151\146\151\143\141\164\151\157\156\040\101\165\164\150\157\162
\151\164\171\040\055\040\103\123\102\122\061
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\177\361\250\371\364\072\350\207\156\055\306\377\136\103
\075\262\356\060\246\103
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST

CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "E-Tugra Global Root CA RSA
v3"
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG
A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After: Sun Mar 12 09:07:17 2045
Fingerprint (MD5): 22:be:10:f6:c2:f8:03:88:73:5f:33:29:47:28:47:a4
Fingerprint (SHA1): e9:a8:5d:22:14:52:1c:5b:aa:0a:b4:be:24:6a:23:8a:c9:ba:e2:a9
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_ID
UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END

CKA_VALUE
MULTILINE_OCTAL
\060\202\005\363\060\202\003\333\240\003\002\001\002\002\024\015
\115\305\315\026\042\225\226\010\176\270\013\177\025\006\064\373
\171\020\064\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\122
\123\101\040\166\063\060\036\027\015\062\060\060\063\061\070\060
\071\060\067\061\067\132\027\015\064\065\060\063\061\062\060\071
\060\067\061\067\132\060\201\200\061\013\060\011\006\003\125\004
\006\023\002\124\122\061\017\060\015\006\003\125\004\007\023\006
\101\156\153\141\162\141\061\031\060\027\006\003\125\004\012\023
\020\105\055\124\165\147\162\141\040\105\102\107\040\101\056\123
\056\061\035\060\033\006\003\125\004\013\023\024\105\055\124\165
\147\162\141\040\124\162\165\163\164\040\103\145\156\164\145\162
\061\046\060\044\006\003\125\004\003\023\035\105\055\124\165\147
\162\141\040\107\154\157\142\141\154\040\122\157\157\164\040\103
\101\040\122\123\101\040\166\063\060\202\002\042\060\015\006\011
\052\206\110\206\367\015\001\001\001\005\000\003\202\002\017\000
\060\202\002\012\002\202\002\001\000\242\146\360\211\267\162\173
\356\011\311\143\322\323\103\335\136\303\246\204\070\112\361\215
\201\273\024\275\107\350\100\027\363\075\303\170\105\162\246\056
\220\336\232\072\324\040\161\312\274\237\035\113\227\012\307\061
\272\076\327\376\045\251\052\216\066\364\321\057\307\267\251\135
\063\334\060\160\370\100\154\113\262\246\061\141\321\064\074\075
\061\172\307\257\304\247\247\204\341\227\244\350\113\366\027\174
\356\074\007\355\342\212\127\334\266\373\370\103\045\120\352\047
\201\250\206\274\217\122\112\226\072\140\032\226\273\375\163\364
\205\375\203\375\177\204\155\064\154\177\152\267\113\001\003\277
\255\151\267\327\062\331\365\127\152\351\206\202\076\245\146\061
\263\026\075\302\363\046\140\062\323\122\036\260\154\244\067\076
\364\365\257\353\341\337\200\006\317\052\101\347\146\011\341\113
\227\347\167\275\041\155\051\266\147\303\055\176\355\326\171\145
\321\317\072\266\321\261\136\126\141\120\172\132\316\116\120\061
\200\003\230\107\347\344\030\174\104\132\306\244\263\073\306\306
\303\072\360\154\303\213\310\244\221\005\363\365\331\266\252\006
\241\267\253\344\261\352\041\024\134\203\244\374\377\266\120\323
\214\022\046\231\166\160\351\300\017\246\164\374\273\320\033\170
\316\162\222\342\050\234\274\346\351\011\330\072\323\211\346\276
\056\167\337\001\012\157\226\366\345\215\074\115\122\166\032\126
\341\163\176\027\254\075\255\154\243\122\022\030\160\346\200\116
\063\362\176\046\062\254\005\215\070\244\346\166\074\237\020\151

\016\155\235\322\301\171\040\153\133\317\063\215\321\224\166\065
\347\135\125\307\267\254\050\253\106\314\347\073\041\265\012\012
\344\112\131\334\201\065\113\104\225\022\012\147\245\241\377\133
\000\007\322\300\314\371\077\374\237\063\362\000\370\214\154\207
\235\006\055\361\357\343\346\006\372\305\146\023\133\374\120\007
\236\161\206\262\332\157\164\060\317\223\123\350\334\042\326\336
\040\037\141\215\243\056\243\170\062\220\154\334\254\062\265\005
\344\365\074\063\015\326\340\207\167\027\114\235\260\330\011\250
\015\127\367\104\205\360\310\004\276\134\135\132\343\027\216\124
\143\151\177\111\164\144\005\214\243\002\003\001\000\001\243\143
\060\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003
\001\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024
\262\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123
\041\320\110\357\060\035\006\003\125\035\016\004\026\004\024\262
\264\256\346\055\367\046\325\252\165\055\166\113\300\033\123\041
\320\110\357\060\016\006\003\125\035\017\001\001\377\004\004\003
\002\001\006\060\015\006\011\052\206\110\206\367\015\001\001\013
\005\000\003\202\002\001\000\211\250\162\177\214\353\316\056\030
\304\020\200\055\020\014\377\373\024\315\004\340\024\074\116\232
\373\237\051\277\042\236\127\271\202\163\022\143\046\265\314\220
\351\322\052\051\356\234\055\314\054\231\276\105\047\344\261\161
\355\344\070\225\061\101\362\175\172\143\170\337\312\066\026\057
\202\210\237\274\021\107\117\166\115\310\055\216\353\337\055\174
\116\073\332\256\366\343\332\135\024\246\256\350\205\104\235\006
\156\216\373\357\172\112\152\055\053\050\030\376\277\220\054\165
\026\237\017\352\226\175\005\356\233\023\245\104\154\370\003\320
\335\043\341\375\003\022\022\010\364\030\064\263\340\067\013\167
\021\001\110\277\141\264\265\370\031\331\313\115\352\243\214\357
\375\360\006\265\155\222\364\112\141\120\204\355\354\111\323\344
\276\150\346\056\343\061\013\124\013\032\222\326\202\330\266\242
\145\074\146\004\371\125\332\154\373\333\265\024\146\115\224\203
\073\315\036\246\053\262\376\167\100\206\253\347\337\012\311\375
\366\335\207\126\030\330\260\054\125\140\226\372\010\176\122\220
\365\113\246\056\207\174\313\040\333\006\076\240\135\003\167\175
\242\074\023\033\051\242\023\125\240\075\024\042\257\157\270\320
\232\033\162\335\005\001\215\206\140\277\244\147\356\265\245\015
\321\177\346\032\053\142\146\303\007\272\347\240\110\034\070\303
\351\105\373\247\177\374\355\002\150\032\312\167\022\167\246\000
\125\050\024\354\326\307\022\242\033\145\102\351\221\350\313\076
\207\211\124\135\331\257\235\227\234\151\347\012\377\017\132\170
\213\143\052\114\175\107\224\077\336\113\351\123\320\060\361\305
\366\236\111\337\073\240\221\243\243\376\315\130\314\352\337\257
\157\050\073\240\151\233\217\354\254\256\053\124\235\233\004\261
\107\040\257\226\022\076\143\224\035\004\347\056\273\206\307\014
\232\210\277\166\107\357\367\260\013\227\146\322\104\317\140\122
\007\341\325\054\112\072\047\141\167\312\327\217\347\207\016\060
\377\014\273\004\342\141\303\242\310\227\141\216\264\060\152\074
\155\302\007\137\112\163\057\077\371\026\212\001\146\357\272\221

\312\122\127\173\256\324\346\017\335\013\172\177\213\236\046\040
\317\073\357\201\161\203\131
END
CKA_NSS_MOZILLA_CA_POLICY
 CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "E-Tugra Global Root CA RSA v3"
Issuer: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:0d:4d:c5:cd:16:22:95:96:08:7e:b8:0b:7f:15:06:34:fb:79:10:34
Subject: CN=E-Tugra Global Root CA RSA v3,OU=E-Tugra Trust Center,O=E-Tugra EBG
A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:07:17 2020
Not Valid After: Sun Mar 12 09:07:17 2045
Fingerprint (MD5): 22:be:10:f6:c2:f8:03:88:73:5f:33:29:47:28:47:a4
Fingerprint (SHA1): e9:a8:5d:22:14:52:1c:5b:aa:0a:b4:be:24:6a:23:8a:c9:ba:e2:a9
CKA_CLASS
 CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA RSA v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\351\250\135\042\024\122\034\133\252\012\264\276\044\152\043\212
\311\272\342\251
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\042\276\020\366\302\370\003\210\163\137\063\051\107\050\107\244
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\122\123\101
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\015\115\305\315\026\042\225\226\010\176\270\013\177\025
\006\064\373\171\020\064
END
CKA_TRUST_SERVER_AUTH

CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "E-Tugra Global Root CA ECC v3"
Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG
A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After: Sun Mar 12 09:46:58 2045
Fingerprint (MD5): 46:bc:81:bb:f1:b5:1e:f7:4b:96:bc:14:e2:e7:27:64
Fingerprint (SHA1): 8a:2f:af:57:53:b1:b0:e6:a1:04:ec:5b:6a:69:71:6d:f6:1c:e2:84
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE
CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206

\346\324\227\210\042\301
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\245\060\202\002\052\240\003\002\001\002\002\024\046
\106\031\167\061\341\117\157\050\066\336\071\121\206\346\324\227
\210\042\301\060\012\006\010\052\206\110\316\075\004\003\003\060
\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122\061
\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162\141
\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165\147
\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033\006
\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124\162
\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006\003
\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154\157
\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103\040
\166\063\060\036\027\015\062\060\060\063\061\070\060\071\064\066
\065\070\132\027\015\064\065\060\063\061\062\060\071\064\066\065
\070\132\060\201\200\061\013\060\011\006\003\125\004\006\023\002
\124\122\061\017\060\015\006\003\125\004\007\023\006\101\156\153
\141\162\141\061\031\060\027\006\003\125\004\012\023\020\105\055
\124\165\147\162\141\040\105\102\107\040\101\056\123\056\061\035
\060\033\006\003\125\004\013\023\024\105\055\124\165\147\162\141
\040\124\162\165\163\164\040\103\145\156\164\145\162\061\046\060
\044\006\003\125\004\003\023\035\105\055\124\165\147\162\141\040
\107\154\157\142\141\154\040\122\157\157\164\040\103\101\040\105
\103\103\040\166\063\060\166\060\020\006\007\052\206\110\316\075
\002\001\006\005\053\201\004\000\042\003\142\000\004\216\230\051
\277\307\020\036\047\333\253\003\314\050\054\330\136\110\031\020
\051\314\313\131\201\314\214\270\222\027\211\203\052\222\366\303
\244\035\114\142\325\237\326\240\106\334\034\274\166\301\343\107
\320\133\023\332\347\245\263\146\110\347\041\232\112\117\206\012
\175\154\352\115\062\200\012\262\172\011\233\151\113\230\201\342
\056\354\002\160\226\037\375\365\106\316\312\334\202\243\143\060
\141\060\017\006\003\125\035\023\001\001\377\004\005\060\003\001
\001\377\060\037\006\003\125\035\043\004\030\060\026\200\024\377
\202\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245
\220\314\365\060\035\006\003\125\035\016\004\026\004\024\377\202
\061\162\076\371\304\146\154\255\070\236\321\260\121\210\245\220
\314\365\060\016\006\003\125\035\017\001\001\377\004\004\003\002
\001\006\060\012\006\010\052\206\110\316\075\004\003\003\003\151
\000\060\146\002\061\000\346\005\130\151\141\345\055\312\015\313
\361\031\010\275\326\375\121\222\032\176\143\124\004\220\221\232
\065\221\071\231\372\007\251\146\223\272\310\150\324\212\077\372
\355\156\026\002\047\267\002\061\000\335\132\027\053\166\035\145
\102\226\246\254\135\212\171\126\330\212\033\337\232\336\137\307
\120\217\261\133\161\014\046\337\152\100\000\354\063\221\041\161
\276\150\344\043\244\331\255\241\067
END
CKA_NSS_MOZILLA_CA_POLICY

CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Trust for "E-Tugra Global Root CA ECC v3"
Issuer: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG A.S.,L=Ankara,C=TR
Serial Number:26:46:19:77:31:e1:4f:6f:28:36:de:39:51:86:e6:d4:97:88:22:c1
Subject: CN=E-Tugra Global Root CA ECC v3,OU=E-Tugra Trust Center,O=E-Tugra EBG
A.S.,L=Ankara,C=TR
Not Valid Before: Wed Mar 18 09:46:58 2020
Not Valid After: Sun Mar 12 09:46:58 2045
Fingerprint (MD5): 46:bc:81:bb:f1:b5:1e:f7:4b:96:bc:14:e2:e7:27:64
Fingerprint (SHA1): 8a:2f:af:57:53:b1:b0:e6:a1:04:ec:5b:6a:69:71:6d:f6:1c:e2:84
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN
CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "E-Tugra Global Root CA ECC v3"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\212\057\257\127\123\261\260\346\241\004\354\133\152\151\161\155
\366\034\342\204
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\106\274\201\273\361\265\036\367\113\226\274\024\342\347\047\144
END
CKA_ISSUER MULTILINE_OCTAL
\060\201\200\061\013\060\011\006\003\125\004\006\023\002\124\122
\061\017\060\015\006\003\125\004\007\023\006\101\156\153\141\162
\141\061\031\060\027\006\003\125\004\012\023\020\105\055\124\165
\147\162\141\040\105\102\107\040\101\056\123\056\061\035\060\033
\006\003\125\004\013\023\024\105\055\124\165\147\162\141\040\124
\162\165\163\164\040\103\145\156\164\145\162\061\046\060\044\006
\003\125\004\003\023\035\105\055\124\165\147\162\141\040\107\154
\157\142\141\154\040\122\157\157\164\040\103\101\040\105\103\103
\040\166\063
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\024\046\106\031\167\061\341\117\157\050\066\336\071\121\206
\346\324\227\210\042\301
END
CKA_TRUST_SERVER_AUTH
CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSL.com Code Signing RSA Root CA 2022"
Issuer: CN=SSL.com Code Signing RSA Root CA 2022,O=SSL Corporation,C=US
Serial Number:10:97:c4:9c:8c:25:43:28:bb:a6:e8:b9:9b:ab:4f:a1
Subject: CN=SSL.com Code Signing RSA Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:32:08 2022
Not Valid After: Sun Aug 19 16:32:07 2046
Fingerprint (MD5): 5b:a8:b3:07:28:99:7b:83:d4:78:17:4b:f3:af:25:18
Fingerprint (SHA1): d4:69:52:84:cd:17:98:d9:cb:16:99:46:4c:06:49:94:c4:e2:bb:fd
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Code Signing
 RSA Root CA 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\122\123\101\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\122\123\101\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER MULTILINE_OCTAL
\002\020\020\227\304\234\214\045\103\050\273\246\350\271\233\253
\117\241
END
CKA_VALUE MULTILINE_OCTAL
\060\202\005\233\060\202\003\203\240\003\002\001\002\002\020\020
\227\304\234\214\045\103\050\273\246\350\271\233\253\117\241\060
\015\006\011\052\206\110\206\367\015\001\001\013\005\000\060\127
\061\013\060\011\006\003\125\004\006\023\002\125\123\061\030\060
\026\006\003\125\004\012\014\017\123\123\114\040\103\157\162\160
\157\162\141\164\151\157\156\061\056\060\054\006\003\125\004\003
\014\045\123\123\114\056\143\157\155\040\103\157\144\145\040\123
\151\147\156\151\156\147\040\122\123\101\040\122\157\157\164\040
\103\101\040\062\060\062\062\060\036\027\015\062\062\060\070\062
\065\061\066\063\062\060\070\132\027\015\064\066\060\070\061\071

\061\066\063\062\060\067\132\060\127\061\013\060\011\006\003\125
\004\006\023\002\125\123\061\030\060\026\006\003\125\004\012\014
\017\123\123\114\040\103\157\162\160\157\162\141\164\151\157\156
\061\056\060\054\006\003\125\004\003\014\045\123\123\114\056\143
\157\155\040\103\157\144\145\040\123\151\147\156\151\156\147\040
\122\123\101\040\122\157\157\164\040\103\101\040\062\060\062\062
\060\202\002\042\060\015\006\011\052\206\110\206\367\015\001\001
\001\005\000\003\202\002\017\000\060\202\002\012\002\202\002\001
\000\214\165\040\310\214\334\116\221\121\006\265\133\357\105\273
\331\376\140\353\112\223\207\354\377\227\217\140\223\236\161\141
\100\352\357\113\313\222\130\330\153\026\334\336\055\210\362\363
\323\004\226\300\045\147\041\345\035\333\237\122\201\366\000\053
\146\220\361\254\036\250\117\141\044\335\166\057\003\307\065\310
\066\254\201\123\140\042\300\121\222\231\357\350\046\056\231\124
\315\011\217\137\134\074\360\253\347\073\263\247\253\006\306\061
\227\276\114\355\364\006\201\061\202\113\120\020\265\240\021\171
\334\130\313\300\345\036\263\301\157\110\134\255\227\012\263\036
\254\056\127\330\275\276\070\120\104\343\063\375\327\301\265\277
\242\116\373\170\264\073\070\230\050\351\126\055\124\200\213\153
\176\035\343\225\206\247\236\027\124\106\133\136\377\237\346\153
\065\212\121\245\246\173\134\012\042\015\302\327\203\057\332\074
\075\362\212\036\375\036\076\241\330\034\117\156\010\122\156\117
\254\037\311\376\237\231\115\273\122\124\261\222\203\133\100\023
\357\024\265\063\221\074\202\244\253\365\252\110\152\351\270\373
\200\100\006\374\345\036\176\077\274\012\253\046\342\305\253\007
\004\327\115\170\265\353\332\153\123\133\123\212\246\362\327\136
\121\042\115\037\314\252\213\272\300\016\202\331\024\272\331\362
\055\367\045\270\313\251\103\322\114\104\036\026\165\314\265\344
\160\037\051\201\125\064\262\076\376\377\321\170\032\100\222\047
\052\150\045\265\322\236\357\274\370\024\113\157\122\043\026\153
\020\211\324\337\272\334\314\030\131\161\251\346\313\330\220\161
\275\040\364\244\152\046\111\225\235\106\030\105\026\211\037\025
\135\250\103\260\140\227\236\327\066\332\072\262\157\113\162\116
\231\166\327\060\067\367\246\235\273\333\135\246\356\174\030\354
\102\371\025\350\016\270\333\154\102\153\020\135\104\014\326\324
\316\202\214\357\053\060\213\161\341\010\362\101\221\143\343\376
\340\300\250\245\215\231\000\101\142\316\102\106\241\235\312\345
\232\234\121\333\140\172\104\125\016\052\052\160\244\231\377\052
\176\140\264\035\226\127\272\073\374\333\277\306\061\200\252\072
\000\031\057\210\037\111\244\353\167\100\367\114\203\356\202\221
\057\002\003\001\000\001\243\143\060\141\060\017\006\003\125\035
\023\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125
\035\043\004\030\060\026\200\024\307\366\310\013\142\355\024\014
\243\027\266\252\271\036\321\340\203\126\241\135\060\035\006\003
\125\035\016\004\026\004\024\307\366\310\013\142\355\024\014\243
\027\266\252\271\036\321\340\203\126\241\135\060\016\006\003\125
\035\017\001\001\377\004\004\003\002\001\206\060\015\006\011\052
\206\110\206\367\015\001\001\013\005\000\003\202\002\001\000\142

\120\336\062\077\353\066\065\170\215\211\167\110\017\017\243\135
\007\250\272\366\122\077\066\122\316\265\300\171\114\353\135\053
\370\022\254\103\333\347\173\214\051\052\237\153\072\323\174\365
\025\167\227\073\375\041\375\363\310\134\311\076\005\224\257\173
\253\350\215\342\257\015\300\240\033\337\257\013\272\252\264\105
\125\201\310\141\231\141\270\260\232\350\131\314\011\023\331\247
\126\007\206\356\355\240\354\215\001\145\232\231\314\043\242\300
\221\035\135\006\335\015\247\372\074\304\304\131\042\306\233\072
\300\035\151\075\054\266\261\036\212\276\075\202\017\153\061\162
\140\127\220\013\124\212\336\125\012\036\165\111\000\154\266\112
\063\357\106\330\326\313\304\361\174\154\011\226\351\251\341\030
\375\257\377\264\317\147\157\177\007\245\110\215\005\020\226\071
\220\171\132\226\267\343\346\067\070\062\261\306\061\001\044\164
\002\304\313\013\317\272\166\276\134\212\040\303\351\164\147\353
\155\022\234\071\075\340\212\325\053\113\044\343\171\214\110\234
\221\253\327\202\041\070\277\304\263\301\007\356\220\075\255\372
\242\276\051\133\122\061\252\154\263\034\165\363\346\240\330\214
\003\226\210\272\370\312\121\063\141\013\035\325\153\234\023\031
\056\026\317\317\015\207\113\227\304\007\331\013\253\230\221\352
\272\007\203\230\222\100\012\040\315\270\153\232\367\200\376\073
\311\342\371\103\310\050\347\115\227\027\300\167\363\060\352\046
\204\033\325\123\274\060\205\137\151\356\074\264\011\350\261\233
\244\070\202\272\353\300\152\214\155\053\050\060\170\344\062\253
\267\033\341\122\044\000\221\347\113\032\333\241\210\014\156\352
\135\034\107\231\215\161\115\275\336\336\100\231\004\263\100\341
\303\213\252\304\222\030\227\173\374\314\203\200\074\332\051\362
\177\316\304\151\000\233\141\175\155\226\326\025\202\214\365\203
\052\034\367\123\166\162\045\360\051\200\304\062\144\123\017\117
\124\364\127\015\326\013\334\376\162\210\264\137\113\331\036\077
\003\206\057\071\020\066\247\061\305\046\007\225\213\110\161\361
\253\054\006\352\322\034\116\225\215\347\027\352\255\261\106\105
\323\066\375\313\304\141\157\011\042\104\062\047\247\153\150
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

#
Microsoft Code Signing Only Certificate
Trust for "SSL.com Code Signing RSA Root CA 2022"
Issuer: CN=SSL.com Code Signing RSA Root CA 2022,O=SSL Corporation,C=US
Serial Number:10:97:c4:9c:8c:25:43:28:bb:a6:e8:b9:9b:ab:4f:a1
Subject: CN=SSL.com Code Signing RSA Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:32:08 2022
Not Valid After: Sun Aug 19 16:32:07 2046
Fingerprint (MD5): 5b:a8:b3:07:28:99:7b:83:d4:78:17:4b:f3:af:25:18
Fingerprint (SHA1): d4:69:52:84:cd:17:98:d9:cb:16:99:46:4c:06:49:94:c4:e2:bb:fd

CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Code Signing RSA Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\324\151\122\204\315\027\230\331\313\026\231\106\114\006\111\224
\304\342\273\375
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\133\250\263\007\050\231\173\203\324\170\027\113\363\257\045\030
END
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\122\123\101\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER
MULTILINE_OCTAL
\002\020\020\227\304\234\214\045\103\050\273\246\350\271\233\253
\117\241
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
Certificate "SSL.com Code Signing ECC Root CA 2022"
Issuer: CN=SSL.com Code Signing ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:6e:8e:e4:5b:10:4c:c9:0c:7e:b4:d8:88:8f:e5:ec:64
Subject: CN=SSL.com Code Signing ECC Root CA 2022,O=SSL Corporation,C=US
Not
Valid Before: Thu Aug 25 16:31:35 2022
Not Valid After: Sun Aug 19 16:31:34 2046
Fingerprint (MD5): aa:b1:b5:a9:b3:57:91:7d:fa:8f:2e:68:33:fb:55:a5
Fingerprint (SHA1): 0d:9e:9a:b2:07:65:a8:9e:d9:cd:8d:f2:c7:a6:3b:c7:74:95:ef:31
CKA_CLASS CK_OBJECT_CLASS CKO_CERTIFICATE
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Code Signing ECC Root CA 2022"
CKA_CERTIFICATE_TYPE CK_CERTIFICATE_TYPE CKC_X_509
CKA_SUBJECT MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061

\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_ID UTF8 "0"
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER
 MULTILINE_OCTAL
\002\020\156\216\344\133\020\114\311\014\176\264\330\210\217\345
\354\144
END
CKA_VALUE MULTILINE_OCTAL
\060\202\002\113\060\202\001\322\240\003\002\001\002\002\020\156
\216\344\133\020\114\311\014\176\264\330\210\217\345\354\144\060
\012\006\010\052\206\110\316\075\004\003\003\060\127\061\013\060
\011\006\003\125\004\006\023\002\125\123\061\030\060\026\006\003
\125\004\012\014\017\123\123\114\040\103\157\162\160\157\162\141
\164\151\157\156\061\056\060\054\006\003\125\004\003\014\045\123
\123\114\056\143\157\155\040\103\157\144\145\040\123\151\147\156
\151\156\147\040\105\103\103\040\122\157\157\164\040\103\101\040
\062\060\062\062\060\036\027\015\062\062\060\070\062\065\061\066
\063\061\063\065\132\027\015\064\066\060\070\061\071\061\066\063
\061\063\064\132\060\127\061\013\060\011\006\003\125\004\006\023
\002\125\123\061\030\060\026\006\003\125\004\012\014\017\123\123
\114\040\103\157\162\160\157\162\141\164\151\157\156\061\056\060
\054\006\003\125\004\003\014\045\123\123\114\056\143\157\155\040
\103\157\144\145\040\123\151\147\156\151\156\147\040\105\103\103
\040\122\157\157\164\040\103\101\040\062\060\062\062\060\166\060
\020\006\007\052\206\110\316\075\002\001\006\005\053\201\004\000
\042\003\142\000\004\166\310\254\324\326\225\222\174\027\062\345
\313\153\101\371\051\273\261\353\242\166\265\066\330\154\113\215
\345\076\112\127\046\046\307\237\073\137\106\146\047\121\300\054
\143\034\164\335\254\071\323\157\075\016\224\276\276\053\060\222
\316\242\102\126\015\120\324\244\054\161\364\047\141\333\240\201
\077\325\115\126\026\265\314\034\067\313\063\064\021\150\307\074
\173\015\351\224\315\243\143\060\141\060\017\006\003\125\035\023
\001\001\377\004\005\060\003\001\001\377\060\037\006\003\125\035
\043\004\030\060\026\200\024\130\136\026\303\055\263\346\352\243
\111\263\245\276\326\336\256\171\225\153\215\060\035\006\003\125

\035\016\004\026\004\024\130\136\026\303\055\263\346\352\243\111
\263\245\276\326\336\256\171\225\153\215\060\016\006\003\125\035
\017\001\001\377\004\004\003\002\001\206\060\012\006\010\052\206
\110\316\075\004\003\003\003\147\000\060\144\002\060\123\214\163
\061\116\200\134\267\236\073\017\010\130\023\276\331\100\366\361
\277\175\367\231\240\353\314\200\000\015\252\160\066\355\066\043
\173\101\270\024\025\126\166\323\226\343\025\205\144\002\060\044
\344\366\370\275\023\156\072\267\077\334\277\315\170\337\046\200
\127\022\257\150\147\117\377\362\053\261\242\241\231\264\303\223
\033\216\172\313\174\277\024\216\353\352\270\376\341\003\137
END
CKA_NSS_MOZILLA_CA_POLICY
CK_BBOOL CK_FALSE
CKA_NSS_SERVER_DISTRUST_AFTER CK_BBOOL CK_FALSE
CKA_NSS_EMAIL_DISTRUST_AFTER CK_BBOOL CK_FALSE

Microsoft Code Signing Only Certificate
#
Trust for "SSL.com Code Signing ECC Root CA 2022"
Issuer: CN=SSL.com Code Signing ECC Root CA 2022,O=SSL Corporation,C=US
Serial Number:6e:8e:e4:5b:10:4c:c9:0c:7e:b4:d8:88:8f:e5:ec:64
Subject: CN=SSL.com Code Signing ECC Root CA 2022,O=SSL Corporation,C=US
Not Valid Before: Thu Aug 25 16:31:35 2022
Not Valid After: Sun Aug 19 16:31:34 2046
Fingerprint (MD5): aa:b1:b5:a9:b3:57:91:7d:fa:8f:2e:68:33:fb:55:a5
Fingerprint (SHA1): 0d:9e:9a:b2:07:65:a8:9e:d9:cd:8d:f2:c7:a6:3b:c7:74:95:ef:31
CKA_CLASS CK_OBJECT_CLASS CKO_NSS_TRUST
CKA_TOKEN CK_BBOOL CK_TRUE
CKA_PRIVATE CK_BBOOL CK_FALSE
CKA_MODIFIABLE CK_BBOOL CK_FALSE
CKA_LABEL UTF8 "SSL.com Code Signing ECC Root CA 2022"
CKA_CERT_SHA1_HASH MULTILINE_OCTAL
\015\236\232\262\007\145\250\236\331\315\215\362\307\246\073\307
\164\225\357\061
END
CKA_CERT_MD5_HASH MULTILINE_OCTAL
\252\261\265\251\263\127\221\175\372\217\056\150\063\373\125\245
END
CKA_ISSUER MULTILINE_OCTAL
\060\127\061\013\060\011\006\003\125\004\006\023\002\125\123\061
\030\060\026\006\003\125\004\012\014\017\123\123\114\040\103\157
\162\160\157\162\141\164\151\157\156\061\056\060\054\006\003\125
\004\003\014\045\123\123\114\056\143\157\155\040\103\157\144\145
\040\123\151\147\156\151\156\147\040\105\103\103\040\122\157\157
\164\040\103\101\040\062\060\062\062
END
CKA_SERIAL_NUMBER

MULTILINE_OCTAL
\002\020\156\216\344\133\020\114\311\014\176\264\330\210\217\345
\354\144
END
CKA_TRUST_SERVER_AUTH CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_EMAIL_PROTECTION CK_TRUST CKT_NSS_MUST_VERIFY_TRUST
CKA_TRUST_CODE_SIGNING CK_TRUST CKT_NSS_TRUSTED_DELEGATOR
CKA_TRUST_STEP_UP_APPROVED CK_BBOOL CK_FALSE

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/certdata.txt
No license file was found, but licenses were detected in source scan.

/* This Source Code Form is subject to the terms of the Mozilla Public
* License, v. 2.0. If a copy of the MPL was not distributed with this
* file, You can obtain one at http://mozilla.org/MPL/2.0/. */

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/nssckbi.h
No license file was found, but licenses were detected in source scan.

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/certdata2pem.py
No license file was found, but licenses were detected in source scan.

License: MIT AND GPL-2.0-or-later
- update License: field to SPDX

Found in path(s):
* /ca-certificates-2024.2.69_v8.0.303-91.4.el9_4.src.rpm-cosi-expand-archive-J82ASJ1R/ca-certificates.spec

1.190 libevent 2.1.12-8.el9_4

1.190.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: BSD and ISC
License: BSD
License: BSD and MIT

Found in path(s):
* /libevent-c8-zip/libevent/SPECS/libevent.spec

1.191 libmnl 1.0.4-16.el9_4

1.191.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data

prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the

ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object

file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at

least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your

rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that

system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE

LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301

USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.192 glib 2.68.4-14.el9_4.1

1.192.1 Available under license :

This work may be reproduced and distributed in whole or in part, in
any medium, physical or electronic, so as long as this copyright
notice remains intact and unchanged on all copies. Commercial
redistribution is permitted and encouraged, but you may not
redistribute, in whole or in part, under terms more restrictive than
those under which you received it. If you redistribute a modified or
translated version of this work, you must also make the source code to
the modified or translated version available in electronic form
without charge. However, mere aggregation as part of a larger work
shall not count as a modification for this purpose.

All code examples in this work are placed into the public domain,
and may be used, modified and redistributed without restriction.

BECAUSE THIS WORK IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE WORK, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE
WORK "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. SHOULD THE WORK PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY REPAIR OR CORRECTION.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE WORK AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE WORK, EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
PCRE LICENCE

Please see the file LICENCE in the PCRE distribution for licensing details.

End

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages

are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under

copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a

table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all

subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the

object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above

specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or

distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,

BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.193 zlib 1.3.1-r2

1.193.1 Available under license :

Copyright notice:

(C) 1995-2022 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied
warranty. In no event will the authors be held liable for any damages
arising from the use of this software.

Permission is granted to anyone to use this software for any purpose,
including commercial applications, and to alter it and redistribute it
freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not
   claim that you wrote the original software. If you use this software
   in a product, an acknowledgment in the product documentation would be
   appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be
   misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly   Mark Adler
jloup@gzip.org   madler@alumni.caltech.edu
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative

works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.194 gnupg 1.15.1

1.194.1 Available under license :

(21:protected-private-key(3:elg(1:p129:|B36I(s7}+ZJ/pvE;"tg7N ca"Gxvnyu&bB#h'7=89&oG
R<hO)(1:g1:)(1:y128:Ji]WU_UP}AQ\YMhAl|2e{_tcMNDg]{QnWsK 4pY{$bDCs)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:JcE7:6452224)16: i[Q*vK)192:FJA!O!ZAF
biJ&Tsb!t
&9@R\~V+x>?sedDz-W(yqf?u^e?s1saV8<T0:tC5%ZMh?$|,y_e[1D)(12:protected-at15:20130812T105135)))
{
  "op": "keylist",
  "keys": ["bravo@example.net", "alpha@example.net"],
  "with-secret": true
}
(21:protected-private-key(3:elg(1:p129:W#}}l;;m>
;4YV$Qg
LoLy~*Tru*+ID8"-9,:17^g*({ #7)(1:g1:)(1:y128:2o62,Tj/
rRi3sSS iCAYNYbVtAHKi7(UPp)?Od{'R^f)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:fw`E7:5242880)16:aqR)192:5f1a-`{^EV699WoB\,:Rs1*W6Lu iZ
:=ZqURM47;pA3#DL
so8O)Th^P@lP0&.DR;"rkN7)(12:protected-at15:20101008T070216)))
#+TITLE: GPGME Python Bindings HOWTO Examples
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Examples
 :PROPERTIES:
 :CUSTOM_ID: gpgme-python3-examples
 :END:

The contents of this directory are the examples included in the /GNU
Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO/ file. Each
script is explicitly for Python 3 and specifically for Python 3.4 or
later.

Some of these scripts may work with Python 2.7, but there are no
guarantees. They will include the relevant imports from the
=__future__= module to facilitate that if possible.

* Copyright and Licensing
:PROPERTIES:
:CUSTOM_ID: copyright-and-license
:END:

Unless otherwise stated, all the examples in this directory are
released under the same terms as GPGME
itself; that is they are dual
licensed under the terms of both the GNU General Public License
version 2.0 (or any later version) *and* the GNU Lesser General
Public License version 2.1 (or any later version).

** Copyright (C) The GnuPG Project, 2018
:PROPERTIES:
:CUSTOM_ID: copyright
:END:

Copyright The GnuPG Project, 2018.

** License GPL compatible
:PROPERTIES:
:CUSTOM_ID: license
:END:

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even
the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
cython
{
"op": "config",
"component": "gpg"

```
}
;;;; gpgme-package.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify
;;; it under the terms of the GNU General Public License as published
;;; by the Free Software Foundation; either version 2 of the License,
;;; or (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; Conventions:
;;;
;;; gpg-error is used for error handling.
;;;
;;; Standard I/O streams are used for input and output.

(defpackage #:gpgme
 (:use #:common-lisp #:cffi #:gpg-error)
  (:import-from #:trivial-garbage
                #:finalize)
 (:export #:check-version
   #:*version*
   #:context
   #:protocol
   #:armorp
   #:textmodep
   #:+include-certs-default+
   #:include-certs
   #:keylist-mode
   #:signers
   #:sig-notations
   #:with-context
   #:key-data
   #:get-key
   #:op-encrypt
   #:op-decrypt
   #:op-sign
```

```
   #:op-verify
   #:op-import
   #:op-export))
{
  "op": "encrypt",
  "keys": ["bravo@example.net", "alpha@example.net"],
  "data": "Hello world",
  "file_name": "test.txt",
  "armor": false,
  "always-trust": true
}
{
 "type": "signature",
 "base64":       false,
 "data": "*"
}
```

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-05-12 Marcus Brinkmann <marcus@g10code.com>

* gpgme.texi (I/O Callback Example): Fix example code.

* gpgme.texi (Generating Keys): Fix OpenPGP parameters and reference
GPG and GPGSM manual.

2010-01-05 Werner Koch <wk@g10code.com>

* gpgme.texi (Changing Passphrases): New.

2009-07-21 Werner Koch <wk@g10code.com>

* uiserver.texi (UI Server Encrypt): Add --expect-sign option to
PREP_ENCRYPT.

2009-06-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Result Management): New section.

2009-06-16 Werner Koch <wk@g10code.com>

* gpgme.texi (Exporting Keys): Document gpgme_op_export_keys.
(Importing Keys): Document gpgme_op_import_keys.
(Data Buffer Meta-Data): Document URL encodings.

2009-05-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Document selftest error.
(Creating Contexts): Likewise.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
GPGME_ENCRYPT_NO_ENCRYPT_TO.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Information): Replace path by file_name.

2008-11-28 Werner Koch <wk@g10code.com>

* gpgme.texi (Listing Keys): Change description of the return
value to match the code. Spotted by Colin Leroy.

2008-10-15 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Add option
--protocol to the SENDER command.

2008-07-17 Werner Koch <wk@g10code.com>

* module-overview.sk: New.

2008-07-04 Werner Koch <wk@g10code.com>

* gpgme.texi (Algorithms): Add a hint on symmetric only encryption.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancellation): Document gpgme_cancel_async.

2008-06-25
Werner Koch <wk@g10code.com>

* gpgme.texi (Listing Keys): Updated example to the current API.
Noted by Nico Schottelius.

2008-06-05 Werner Koch <wk@g10code.com>

* uiserver.texi (Miscellaneous UI Server Commands): Describe
START_CONFDIALOG.

2008-06-04 Werner Koch <wk@g10code.com>

* gpgme.texi: Use @copying command. Change license to
GPLv3. Include protocol specis from GpgOL and GPGEx. Minor
cleanups.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (File Based Data Buffers): Document the need for
blocking operations.
(Callback Based Data Buffers): Likewise.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Rename snippet function to
init_gpgme.
(I/O Callback Example): Call it here.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Document that data encoding affects some output data
objects now.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocols and Engines):
Document GPGME_PROTOCOL_UNKNOWN.

2007-09-11 Werner Koch <wk@g10code.com>

* gpgme.texi (I/O Callback Example): Typo fix.

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.texi (Verify): Describe chain_model.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgme.texi (Library Version Check): Add remark that the socket
layer will get initialized.

2007-06-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Advanced Key Editing): New section.

2007-05-21 Werner Koch <wk@g10code.com>

* Makefile.am (online): New target.

2007-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Fix documentation of
gpgme_strerror_r.

2006-11-01 Moritz Schulte <moritz@g10code.com>

* gpgme.texi (Data Buffer I/O Operations): Fixed entry for
gpgme_data_seek: OFFSET is not a pointer; some s/whence/offset/.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Destroying Data Buffers): Clarify that
gpgme_data_release_and_get_mem destroys DH unconditionally.

2005-03-24
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Make example code compatible
to W32 systems.

2006-06-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix inverted condition in
description.

2005-12-20 Werner Koch <wk@g10code.com>

* gpgme.texi (Verify): Document pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

* gpgme.texi (Key Management): Updated to match the fixes for
subkey fingerprints and theg secret flag.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Destroying Data Buffers): Document gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Add the new member notations of
gpgme_sig_key_t.
(Key Listing Mode): Document GPGME_KEYLIST_MODE_SIG_NOTATIONS.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Enclose all return parameters of deftypefuns in
curly brackets.

* gpgme.texi (Signature Notation Data): New
section.
(Verify): Added more about the notation data structure.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Data Buffer I/O Operations, Data Buffer Meta-Data):
New subsections.

* gpgme.texi: Replace plaintext_filename with file_name.

* gpgme.texi (Key Management): Document is_qualified.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Decrypt): Add plaintext_filename to
gpgme_decrypt_result_t.
(Verify): Likewise for gpgme_verify_result_t.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Add information about new fields in
gpgme_signature_t.

* gpgme.texi (Decrypt): Add gpgme_recipient_t.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Fix return type of
gpgme_set_keylist_mode.
Reported by "Sergio" <ml_sergico@virgilio.it>.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Included Certificates): Document
GPGME_INCLUDE_CERTS_DEFAULT.

2005-01-12 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Configuration): New section.
(Crypto Engine): New subsection.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* lesser.texi (Library Copying): Change from @appendixsec to
@appendix.
* gpgme.texi (Features): Change reference to GPL to one to LGPL.

* Makefile.am: Change license to LGPL.
(gpgme_TEXINFOS): Replace gpl.texi with lesser.texi.

* gpgme.texi: Change license to LGPL (also for documentation of
GPGME's license).
* lesser.texi: New file.
* gpl.texi: File removed.

* gpgme.texi (Creating Contexts): Fix cut&paste error. Reported
by Noel Torres <envite@rolamasao.org>.

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme_TEXINFOS): Remove fdl.texi.
* gpgme.texi: Do not include fdl.texi. Change license to GPL.
* fdl.texi: File removed.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Change type of keylist_mode in
gpgme_key_t to gpgme_keylist_mode_t.

2004-09-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix last change.

2004-09-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document
GPG_ERR_NOT_IMPLEMENTED.

* gpgme.texi: Update copyright year for tex version.

2004-07-29 Moritz Schulte <moritz@g10code.com>

* gpgme.texi (Verify): Fix gpgme_get_key example (ancient
force_update argument was still there).

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Elaborate on the length restrictions
on search patterns.

* gpgme.texi (Decrypt and Verify): Document the NO_DATA error
code.
(Verify): Document the relationship between gpgme_op_verify_result
and the decrypt and verify operations.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.text (Verify): Document GPG_ERR_CERT_REVOKED status.

* gpgme.texi (Decrypt): Add note about new field wrong_key_usage
of gpgme_decrypt_result_t.

* gpgme.texi (Key Management): Add
note about new field
keylist_mode of gpgme_key_t.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Correct type of member wrong_key_usage.

2004-03-29 Moritz Schulte <moritz@duesseldorf.ccc.de>

* gpgme.texi (Verify): Fix type of gpgme_op_verify_result.
* gpgme.texi (Key Listing Mode): Typo fix.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Library Version Check): Fix the instruction when to
set the locale.

2004-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Example Qt): New section by Marc Mutz.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (cancellation): New section.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgme.texi (Key Listing Mode): Doc KEYLIST_MODE_VALIDATE.

2004-02-06 Moritz Schulte <mo@g10code.com>

* gpgme.texi: A couple of small fixes regarding the Largfile
Support section.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Largefile Support): New
section.

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Fix exportable field.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Rename member class in
gpgme_key_sig_t to sig_class.
(Creating a Signature): Likewise for gpgme_signature_t.

2003-12-23 Moritz Schulte <mo@g10code.com>

* gpgme.texi (Listing Keys): Minor clarification for
gpgme_get_key.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Signal Handling): New section.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Correct documentation on memory
synchronization requirement.

* gpgme.texi (Locale): New section.
(Multi Threading): Set locale in example.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add gpgme_strerror_r.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Update documentation.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Header): We don't use the assuan namespace anymore.
Document new thread options.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Change type of member class
to unsigned int.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Get error code from SIG->status in the code
for gpgme_get_sig_status.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Add can_authenticate flag.

* gpgme.texi (Listing Keys): Document GPG_ERR_AMBIGUOUS_NAME for
gpgme_get_key.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (EXTRA_DIST): Remove variable.

* gpgme.texi (Encrypting a Plaintext): Bad passphrase is only
possible with symmetric encryption, change the wording to reflect
that.

* gpgme.texi (Creating a Signature): Document
GPG_ERR_UNUSABLE_SECKEY.

* gpgme.texi (Encrypting a Plaintext): Mention encrypt and sign
operations in result function.
(Creating
a Signature): Likewise.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Remove word duplication.
(Listing Keys): Remove mentioning of force argument.
(Verify): Don't mention r_stat. Fix some typos.
(Decrypt and Verify): Correct info how to get the result. Don't
mention r_stat.
(Manipulating Data Buffers): Fix documentation of return value.
(Listing Keys): Update examples.
(Decrypt): Result might also be available when operation failed.
(Verify): Result might also be available when operation failed.
All spotted by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Sources): Fix cut and paste error.

2003-07-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Management): Clarify difference between can_sign
and can_certify.
(Information About Keys): Likewise for GPGME_ATTR_CAN_SIGN and
GPGME_ATTR_CAN_CERTIFY.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Progress
Meter Callback): Change return type of
gpgme_progress_cb_t to void.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add 2003 to copyright notice.

* gpgme.texi (Header): Fix name space documentation on
libgpg-error.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove reference to
gpgme_recipients_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Crypto Operations): Rename gpgme_invalid_user_id_t
to gpgme_invalid_key_t.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Change error codes to GPG_ERR_* variants.
(Error Handling): Rewritten.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Exporting Keys): Change and document prototypes.
Add new gpgme_op_export_ext and gpgme_op_export_ext_start
variants.
(Selecting Recipients): Section removed.
(Encrypting a Plaintext): Change prototypes and document the
changes.

2003-05-28 Marcus Brinkmann <marcus@g10code.de>

*

gpgme.texi (Exporting Keys): Change argument type from
gpgme_recipient_t to gpgme_user_id_t.
(Encrypting a Plaintext): Likewise.
(Selecting Recipients): Rewritten.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Protocol Selection): Do not use @acronym in @node
because that breaks texi2dvi.

* gpgme.texi (Passphrase Callback): Document new prototype.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Remove Gpgme as namespace prefix. Add
_GPGME to namespace prefix.
* gpgme.texi (Multi Threading): Add note about link order.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document what happens if key is not
found.

* gpgme.texi (Importing Keys): Fix cut and paste error.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Remove reference to
gpgme_get_op_info.
(Detailed Results): Subsection removed.

* gpgme.texi (Key Listing Mode): Add GPGME_KEYLIST_MODE_SIGS.
(Manipulating
Keys): Add obsoleteness note.
(Key Signatures): Likewise.
(Information About Keys): Likewise.
(Key Management): Add new data types GpgmeSubkey, GpgmeKeySig,
GpgmeUserID, and all the information about GpgmeKey.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Remove force_update argument from
gpgme_get_key.

* gpgme.texi (Trust Item Management): Add data members of
GpgmeTrustItem type.
(Information About Trust Items): Add note about obsoleteness.
(Manipulating Trust Items): Add gpgme_trust_item_ref and

gpgme_trust_item_unref.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Rewritten to take into account new and
deprecated functions and data types.

* gpgme.texi (Decrypt): Descript gpgme_op_decrypt_result and
GpgmeDecryptResult.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Add info about
GpgmeEncryptResult and gpgme_op_encrypt_result.

* gpgme.texi
(Creating a Signature): Add info about
GpgmeNewSignature, GpgmeSignResult and gpgme_op_sign_result.
(Crypto Operations): Add GpgmeInvalidUserID.
(Algorithms): New chapter.

* gpgme.texi (Deleting Keys): Document
GPGME_Ambiguous_Specification.
(Error Values): Remove GPGME_Invalid_Type and GPGME_Invalid_Mode.
Add GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Change GPGME_IMPORT_PRIVATE to
GPGME_IMPORT_SECRET.

* gpgme.texi (Importing Keys): Remove note about gpgme_get_op_info.
(Detailed Results): Remove note about import.

* gpgme.texi (Importing Keys): Add documentation
for
GpgmeImportStatus, GpgmeImportResult and gpgme_op_import_result.

* gpgme.texi (Generating Keys): Fix documentation of public and
secret arguments.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document changed gpgme_op_genkey
and new gpgme_op_genkey_result function. Document
GpgmeGenKeyResult data type.

* gpgme.texi (Error Values): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* gpgme.texi (Decrypt): Likewise.
(Decrypt and Verify): Likewise.
(Creating a Signature): Likewise.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
(Encrypting a Plaintext): Likewise.

* gpgme.texi (Error Values): Remove GPGME_Busy and GPGME_No_Request.
(Listing Keys): Likewise.
(Listing Trust Items): Likewise.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Cancelling an Operation): Removed.
(Passphrase
Callback): Document new type for GpgmePassphraseCb.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Engine Information): Rename member part to
file_name.

* gpgme.texi (Protocols and Engines): Document
gpgme_get_protocol_name.

* gpgme.texi (Engine Information): Rewritten.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (I/O Callback Interface): Document new even
GPGME_EVENT_START.
(Waiting For Completion): Document new possible return values.
(I/O Callback Interface): Document return type of GpgmeIOCb.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Hooking Up Into Idle Time): Section removed.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Drop R_STAT argument in gpgme_op_verify.
* gpgme.texi (Decrypt and Verify): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document that
GPGME_ATTR_IS_SECRET is not representable
as a string anymore.

2002-12-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Signatures): New section.
(Listing Keys): Add gpgme_get_key.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Memory Based Data Buffers): New subsection.
(File Based Data Buffers): Likewise.
(Callback Based Data Buffers): Likewise.
(Manipulating Data Buffers): Update interfaces. Add
gpgme_data_seek.
* gpgme.texi (Engine Version Check): Remove gpgme_check_engine.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document the new interface.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document new argument to
gpgme_op_genkey.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Fix prototype of gpgme_get_sig_key.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Selecting Signers): Fix reference count.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Header): Document name space.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Document gpgme_op_import_ext.

* gpgme.texi (Importing Keys): Undocument EOF.

2002-08-14 Werner Koch <wk@gnupg.org>

* gpgme.texi (Information About Keys): Changed GPGME_ATTR_TYPE.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Say that secret keys might not be
deleted.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Document (badly) the new
key attributes.

* gpgme.texi (Manipulating Data Buffers): Mention that backend
tries to detect encoding automatically.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): Update this section.
(Waiting For Completion): Likewise for this subsection.
(Cancelling an Operation): Likewise for this subsection.
(Using External Event Loops): New subsection with several
subsubsections.

2002-06-28
Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Multi Threading): Remove item about the need to
synchronize anything against gpgme_wait (except gpgme_wait
itself).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Information About Keys): Fix documentation for IDX.
(Information About Trust Items): Likewise.

2002-06-26 Werner Koch <wk@gnupg.org>

* gpgme.texi (Importing Keys): Document the return value -1 of
gpgme_op_import.

2002-06-20 Werner Koch <wk@gnupg.org>

 * gpgme.texi (Verify): Explain the new whatidx variable.

2002-06-10 Werner Koch <wk@gnupg.org>

 * gpgme.texi (Verify): Document attribute GPGME_ATTR_ERRTOK.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Multi Threading): Document new autodetection.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

 * Makefile.am (DISTCLEANFILES): New variable.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi: Some typographical corrections
throughout.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Using Automake): New section.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Multi Threading): Escape { and }.

2002-05-09 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.texi (Overview): Replace note about thread-safeness.
(Multi Threading): New section.

2002-05-03 Werner Koch <wk@gnupg.org>

 * gpgme.texi (Manipulating Data Buffers): Changed some data types
to void*.
(Protocol Selection): Added gpgme_get_protocol.
(Verify): Updated to include the new attribute functions and
status codes.

2002-04-27 Werner Koch <wk@gnupg.org>

 * gpgme.texi (Manipulating Data Buffers): New type GpgmeDataEncoding.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Document that either return
argument can be NULL.
(Progress Meter Callback): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase Callback): Fix small
typo. Document the
new function gpgme_get_passphrase_cb.
(Progress Meter Callback): Document the new function
gpgme_get_progress_cb.

2002-04-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Fix function name. Reported
by Wichert Ackerman <wichert@debian.org>.

2002-03-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (direntry): End index entry with a full stop.
Patch submitted by Jose Carlos Garcia Sogo <jsogo@debian.org>.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Fix syntax error in last change.

2002-03-08 Werner Koch <wk@gnupg.org>

* gpgme.texi (Detailed Results): Import does also return info.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document symmetric
encryption.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Error Strings): Add example.
* gpgme.texi (Listing Keys): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

*
gpgme.texi (Information About Keys): Document GPGME_ATTR_EXPIRE.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Verify): Document verification of normal and
cleartext signatures.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Listing Keys): Document gpgme_op_keylist_ext_start.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
GPGME_Invalid_Recipients.
(Error Values): Likewise.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Encrypting a Plaintext): Document
gpgme_op_encrypt_sign and gpgme_op_encrypt_sign_start.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating a Signature): Add a note about
certificates to include.
(Included Certificates): New section.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Detailed Results): Remove literal tags.
(Generating Keys): Update documentation.

* gpgme.texi (Generating Keys):
Fix syntax error.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Waiting For Completion): Adjust doc to changes in
the code.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Key Listing Mode): Update documentation.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating Keys): Document error at creation
failure.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Deleting Keys): Document new error values.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Importing Keys): Add reference to gpgme_get_op_info.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Some spell checking.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: Add all the gpgme_op_*_start functions.
Fill the concept index with many, many entries.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Run Control): New section.
(Verify): Document gpgme_get_notation.
(More Information):
New section describing gpgme_get_op_info.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Passphrase callback): Change GpgmePassphraseCb's
R_HD type from void* to void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Creating data buffers): Change
gpgme_data_new_from_filepart's LENGTH type from off_t to size_t.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi (Generating keys): New subsection.
(Exporting keys): Likewise.
(Importing keys): Likewise.
(Deleting keys): Likewise.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.texi: g10Code -> g10 Code

* gpgme.texi (Top): Complete detailmenu.

* gpgme.texi: Convert embarrassing cruft to the real thing.

2002-01-16 Marcus Brinkmann <marcus@g10code.de>

* ChangeLog: New file.
* gpgme.texi: Likewise.
* gpl.texi: Likewise.
* fdl.texi: Likewise.
* Makefile.am (info_TEXINFOS): New variable.
(gpgme_TEXINFOS): Likewise.

Copyright (C) 2002, 2003, 2004, 2005,
2006, 2007, 2008, 2009, 2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
(private-key
(oid.1.2.840.113549.1.1.1
(n
#00e0ce96f90b6c9e02f3922beada93fe50a875eac6bcc18bb9a9cf2e84965caa2d1ff95a7f542465c6c0c19d276e4526ce048868a7a914fd343cc3a87dd74291ffc565506d5bbb25cbac6a0e2dd1f8bcaab0d4a29c2f37c950f363484bf269f7891440464baf79827e03a36e70b814938eebdc63e964247be75dc58b014b7ea251#)
(e #010001#)
(d
#046129F2489D71579BE0A75FE029BD6CDB574EBF57EA8A5B0FDA942CAB943B117D7BB95E5D28875E0F9FC5FCC06A72F6D502464DABDED78EF6B716177B83D5BDC543DC5D3FED932E59F5897E92E6F58A0F33424106A3B6FA2CBF877510E4AC21C3EE47851E97D12996222AC3566D4CCB0B83D164074ABF7DE655FC2446DA1781#)
(p
#00e861b700e17e8afe6837e7512e35b6ca11d0ae47d8b85161c67baf64377213fe52d772f2035b3ca830af41d8a4120e1c1c70d12cc22f00d28d31dd48a8d424f1#)
(q
#00f7a7ca5367c661f8e62df34f0d05c10c88e5492348dd7bddc942c9a8f369f935a07785d2db805215ed786e4285df1658eed3ce84f469b81b50d358407b4ad361#)
(u
#304559a9ead56d2309d203811a641bb1a09626bc8eb36fffa23c968ec5bd891eebbafc73ae666e01ba7c8990bae06cc2bbe10b75e69fcacb353a6473079d8e9b#)
)
)
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as

published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme). Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: Top, Next: Introduction, Up: (dir)

Main Menu
****

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version 1.14.1-beta35 of the
GPGME library.

* Menu:

* Introduction:: How to use this manual.
* Preparation:: What you should
do before using the library.
* Protocols and Engines:: Supported crypto protocols.

* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from GPGME.
* Contexts:: Handling GPGME contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share GnuPG Made Easy.
* Copying:: The GNU General Public License says how you
can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

The Detailed Node Listing

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS):: How to use GPGME with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How GPGME affects signal handling.
* Multi-Threading:: How GPGME can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about
the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file
based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring

the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting ASCII armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys::
Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data::
How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate GPGME in GTK+.
* I/O Callback Example GDK:: How to integrate GPGME in GDK.
* I/O Callback Example Qt:: How to integrate GPGME in Qt.

File:
gpgme.info, Node: Introduction, Next: Preparation, Prev: Top, Up: Top

1 Introduction
****

GnuPG Made Easy (GPGME) is a C language library that allows to add
support for cryptography to a program. It is designed to make access to
public key crypto engines like GnuPG or GpgSM easier for applications.
GPGME provides a high-level crypto API for encryption, decryption,
signing, signature verification and key management.

GPGME uses GnuPG and GpgSM as its backends to support OpenPGP and the
Cryptographic Message Syntax (CMS).

* Menu:

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use GPGME.
* Overview:: Basic architecture of the GPGME library.

File: gpgme.info, Node: Getting Started, Next: Features, Up: Introduction

1.1 Getting Started
==========

This manual documents the GPGME library programming interface. All functions and data types provided
by the library are explained.

The reader is assumed to possess basic knowledge about cryptography in general, and public key cryptography in particular. The underlying cryptographic engines that are used by the library are not explained, but where necessary, special features or requirements by an engine are mentioned as far as they are relevant to GPGME or its users.

This manual can be used in several ways. If read from the beginning to the end, it gives a good introduction into the library and how it can be used in an application. Forward references are included where necessary. Later on, the manual can be used as a reference manual to get just the information needed about any particular interface of the library. Experienced programmers might want to start looking at the examples at the end of the manual, and then only read up those parts of the interface which are unclear.

The documentation for the language bindings is currently not included in this manual. Those
languages bindings follow the general programming
model of GPGME but may provide some extra high level abstraction on top of the GPGME style API. For now please see the README files in the lang/ directory of the source distribution.

File: gpgme.info, Node: Features, Next: Overview, Prev: Getting Started, Up: Introduction

1.2 Features
============

GPGME has a couple of advantages over other libraries doing a similar job, and over implementing support for GnuPG or other crypto engines into your application directly.

its free software
: Anybody can use, modify, and redistribute it under the terms of the GNU Lesser General Public License (*note Library Copying::).

its flexible
: GPGME provides transparent support for several cryptographic protocols by different engines. Currently, GPGME supports the OpenPGP protocol using GnuPG as the backend, and the Cryptographic Message Syntax using GpgSM as the backend.

its easy

GPGME hides the differences
between the protocols and engines from
the programmer behind an easy-to-use interface. This way the
programmer can focus on the other parts of the program, and still
integrate strong cryptography in his application. Once support for
GPGME has been added to a program, it is easy to add support for
other crypto protocols once GPGME backends provide them.

its language friendly
GPGME comes with languages bindings for several common programming
languages: Common Lisp, C++, Python 2, and Python 3.

File: gpgme.info, Node: Overview, Prev: Features, Up: Introduction

1.3 Overview
============

GPGME provides a data abstraction that is used to pass data to the
crypto engine, and receive returned data from it. Data can be read from
memory or from files, but it can also be provided by a callback
function.

The actual cryptographic operations are always set within a context.
A context provides configuration parameters that define the behaviour of
all
operations performed within it. Only one operation per context is
allowed at any time, but when one operation is finished, you can run the
next operation in the same context. There can be more than one context,
and all can run different operations at the same time.

Furthermore, GPGME has rich key management facilities including
listing keys, querying their attributes, generating, importing,
exporting and deleting keys, and acquiring information about the trust
path.

With some precautions, GPGME can be used in a multi-threaded
environment, although it is not completely thread safe and thus needs
the support of the application.

File: gpgme.info, Node: Preparation, Next: Protocols and Engines, Prev: Introduction, Up: Top

2 Preparation
****

To use GPGME, you have to perform some changes to your sources and the
build system. The necessary changes are small and explained in the

following sections. At the end of this chapter, it is described how the library is initialized,
 and how the requirements of the library are
verified.

* Menu:

* Header::   What header file you need to include.
* Building the Source::   Compiler options to be used.
* Largefile Support (LFS)::   How to use GPGME with LFS.
* Using Automake::   Compiler options to be used the easy way.
* Using Libtool::   Avoiding compiler options entirely.
* Library Version Check::   Getting and verifying the library version.
* Signal Handling::   How GPGME affects signal handling.
* Multi-Threading::   How GPGME can be used in an MT environment.

File: gpgme.info, Node: Header, Next: Building the Source, Up: Preparation

2.1 Header

All interfaces (data types and functions) of the library are defined in the header file gpgme.h. You must include this in all programs using the library, either directly or through some other header file, like this:

```
#include <gpgme.h>
```

 The name space
 of GPGME is gpgme_* for function names and data types and GPGME_* for other symbols. Symbols internal to GPGME take the form _gpgme_* and _GPGME_*.

 Because GPGME makes use of the GPG Error library, using GPGME will also use the GPG_ERR_* name space directly, and the gpg_err*, gpg_str*, and gpgrt_* name space indirectly.

File: gpgme.info, Node: Building the Source, Next: Largefile Support (LFS), Prev: Header, Up: Preparation

2.2 Building the Source

If you want to compile a source file including the gpgme.h header file, you must make sure that the compiler can find it in the directory hierarchy. This is accomplished by adding the path to the directory in which the header file is located to the compilers include file search

path (via the -I option).

However, the path to the include file is determined at the time the source is configured. To solve this problem, gpgme ships with a small helper program gpgme-config that knows about the path to the include file and other configuration options. The options that need to be added to the compiler invocation at compile time are output by the --cflags option to gpgme-config. The following example shows how it can be used at the command line:

```
gcc -c foo.c `gpgme-config --cflags`
```

Adding the output of gpgme-config --cflags to the compiler command line will ensure that the compiler can find the GPGME header file.

A similar problem occurs when linking the program with the library. Again, the compiler has to find the library files. For this to work, the path to the library files has to be added to the library search path (via the -L option). For this, the option --libs to gpgme-config can be used. For convenience, this option also outputs all other options that are required to link the program with GPGME (in particular, the -lgpgme option). The example shows how to link foo.o with the GPGME library to a program foo.

```
gcc -o foo foo.o `gpgme-config --libs`
```

Of course you can also combine both examples to a single command by specifying both options to gpgme-config:

```
gcc -o foo foo.c `gpgme-config --cflags --libs`
```

If you need to detect the installed language bindings you can use list them using:

```
gpgme-config --print-lang
```

or test for the availability using

```
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
```

File: gpgme.info, Node: Largefile Support (LFS), Next: Using Automake, Prev: Building the Source, Up: Preparation

2.3 Largefile Support (LFS)

GPGME is compiled with largefile support by default, if it is available on the system. This means that GPGME supports files larger than two gigabyte in size, if the underlying operating system can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes
has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those new functions have the same name as their smallfile counterparts, but with a suffix of 64.

An example: The data type off_t is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type off64_t is provided, which is 64 bit wide. Or you can replace the existing off_t data type with its 64 bit wide counterpart. All occurrences of off_t are then automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum
file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for GPGME, because some data types it uses in its interfaces are affected by that. For example, the off_t data type is used in the gpgme_data_seek function, to match its POSIX counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow
for a transitional period.

On POSIX platforms GPGME is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the gpgme.h header file. All types in this header files refer to their largefile counterparts, if they are different from any default types on the system.

On 32 and 64 bit Windows platforms off_t is declared as 32 bit signed integer. There is no specific support for LFS in the C library. The recommendation from Microsoft is to use the native interface (CreateFile et al.) for large files. Released binary versions of GPGME (libgpgme-11.dll) have always been build with a 32 bit off_t. To avoid an ABI break we stick to this convention for 32 bit Windows by using long there. GPGME versions for 64 bit Windows have never been released and thus we are able to use int64_t instead of off_t there. For easier migration the typedef gpgme_off_t has been defined. The reason we cannot use off_t directly is that some toolchains (e.g. mingw64) introduce a POSIX compatible hack for off_t. Some widely used toolkits make use of this hack and in turn GPGME would need to use it also. However, this would introduce an ABI break and existing software making use of libgpgme might suffer from a severe break. Thus with version 1.4.2 we redefined all functions using off_t to use gpgme_off_t which is defined as explained above. This way we keep the ABI well defined and independent of any toolchain hacks. The bottom line is that LFS support in GPGME is only available on 64 bit versions of Windows.

On POSIX platforms you can enable largefile support, if it is different from the default on the system the application is compiled on, by using the Autoconf macro AC_SYS_LARGEFILE. If you do this, then you dont need to worry about anything else: It will just work. In this case you might also want to use AC_FUNC_FSEEKO to take advantage of some new interfaces, and AC_TYPE_OFF_T (just in case).

If you do not use Autoconf, you can define the preprocessor symbol _FILE_OFFSET_BITS to 64 _before_ including any header files, for example by specifying the option -D_FILE_OFFSET_BITS=64 on the compiler command line. You will also want to define the preprocessor symbol LARGEFILE_SOURCE to 1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough about the issue to invent your own solution. Just keep in mind that the GPGME header file expects that largefile support is enabled, if it is available. In particular, we do not support dual mode (_LARGEFILE64_SOURCE).

File: gpgme.info, Node: Using Automake, Next: Using Libtool, Prev: Largefile Support (LFS), Up: Preparation

2.4 Using Automake

It is much easier if you use GNU Automake instead of writing your own
Makefiles. If you do that you do not have to worry about finding and
invoking the gpgme-config script at all. GPGME
 provides an extension
to Automake that does all the work for you.

-- Macro: AM_PATH_GPGME ([MINIMUM-VERSION], [ACTION-IF-FOUND],
       [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTH ([MINIMUM-VERSION], [ACTION-IF-FOUND],
       [ACTION-IF-NOT-FOUND])
-- Macro: AM_PATH_GPGME_PTHREAD ([MINIMUM-VERSION], [ACTION-IF-FOUND],
       [ACTION-IF-NOT-FOUND])
   Check whether GPGME (at least version MINIMUM-VERSION, if given)
   exists on the host system. If it is found, execute
   ACTION-IF-FOUND, otherwise do ACTION-IF-NOT-FOUND, if given.

   Additionally, the function defines GPGME_CFLAGS to the flags
   needed for compilation of the program to find the gpgme.h header
   file, and GPGME_LIBS to the linker flags needed to link the
   program to the GPGME library. If the used helper script does not
   match the target type you are building for a warning is printed and
   the string libgcrypt is appended to the variable
   gpg_config_script_warn.

   AM_PATH_GPGME_PTH
 checks for the version of GPGME that can be
   used with GNU Pth, and defines GPGME_PTH_CFLAGS and
   GPGME_PTH_LIBS.

   AM_PATH_GPGME_PTHREAD checks for the version of GPGME that can be
   used with the native pthread implementation, and defines
   GPGME_PTHREAD_CFLAGS and GPGME_PTHREAD_LIBS. Since version
   1.8.0 this is no longer required to GPGME_PTHREAD as GPGME itself
   is thread safe.

   This macro searches for gpgme-config along the PATH. If you are
   cross-compiling, it is useful to set the environment variable
   SYSROOT to the top directory of your target. The macro will then
   first look for the helper program in the bin directory below that
   top directory. An absolute directory name must be used for
   SYSROOT. Finally, if the configure command line option
   --with-gpgme-prefix is used, only its value is used for the top

directory below which the helper script is expected.

You can use the defined Autoconf variables
like this in your
Makefile.am:

```
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
```

File: gpgme.info, Node: Using Libtool, Next: Library Version Check, Prev: Using Automake, Up: Preparation

2.5 Using Libtool

The easiest way is to just use GNU Libtool. If you use libtool, and
link to libgpgme.la, libgpgme-pth.la or libgpgme-pthread.la
respectively, everything will be done automatically by Libtool.

File: gpgme.info, Node: Library Version Check, Next: Signal Handling, Prev: Using Libtool, Up: Preparation

2.6 Library Version Check

-- Function: const char * gpgme_check_version
(const char *REQUIRED_VERSION)
The function gpgme_check_version has four purposes. It can be
used to retrieve the version number of the library. In addition it
can verify that the version number is higher than a certain
required version number. In either case, the function initializes
some sub-systems,
and for this reason alone it must be invoked
early in your program, before you make use of the other functions
in GPGME. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get
initialized.

If REQUIRED_VERSION is NULL, the function returns a pointer to a
statically allocated string containing the version number of the
library.

If REQUIRED_VERSION is not NULL, it should point to a string
containing a version number, and the function checks that the
version of the library is at least as high as the version number
provided. In this case, the function returns a pointer to a
statically allocated string containing the version number of the

library. If REQUIRED_VERSION is not a valid version number, or if the version requirement is not met, the function returns NULL.

If you use a version of a library that is backwards compatible with older releases, but contains
additional interfaces which your
program uses, this function provides a run-time check if the necessary features are provided by the installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors are returned later when invoking gpgme_new or gpgme-data_new, so that a detailed error code can be returned (historically, gpgme_check_version does not return a detailed error code).

-- Function: int gpgme_set_global_flag (const char *NAME,
const char *VALUE)

SINCE: 1.4.0

On some systems it is not easy to set environment variables and thus hard to use GPGMEs internal trace facility for debugging. This function has been introduced as an alternative way to enable debugging and for a couple of other rarely used tweaks. It is important to assure that only one thread accesses GPGME functions between a call to this function and after the return from the call
to
gpgme_check_version.

All currently supported features require that this function is called as early as possible even before gpgme_check_version. The features are identified by the following values for NAME:

debug
To enable debugging use the string debug for NAME and VALUE identical to the value used with the environment variable GPGME_DEBUG.

disable-gpgconf
Using this feature with any VALUE disables the detection of the gpgconf program and thus forces GPGME to fallback into the simple OpenPGP only mode. It may be used to force the use of GnuPG-1 on systems which have both GPG versions installed. Note that in general the use of gpgme_set_engine_info is a better way to select a specific engine version.

gpgconf-name

gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are GNU/GnuPG/gpgconf and GNU/GnuPG/gpg. Under

Unix the leading directory part is ignored. Under Windows the leading directory part is used as the default installation directory; the .exe suffix is added by GPGME. Use forward slashed even under Windows.

require-gnupg
Set the minimum version of the required GnuPG engine. If that version is not met, GPGME fails early instead of trying to use the existent version. The given version must be a string with major, minor, and micro number. Example: "2.1.0".

w32-inst-dir
On Windows GPGME needs to know its installation directory to find its spawn helper. This is in general no problem because a DLL has this information. Some applications however link statically to GPGME and thus GPGME can only figure out the installation directory of this application which may be wrong in certain cases. By supplying an installation directory as

value to this flag, GPGME will assume that that directory is the installation directory. This flag has no effect on non-Windows platforms.

This function returns 0 on success. In contrast to other functions the non-zero return value on failure does not convey any error code. For setting debug the only possible error cause is an out of memory condition; which would exhibit itself later anyway. Thus the return value may be ignored.

After initializing GPGME, you should set the locale information to the locale required for your output terminal. This locale information is needed for example for the curses and Gtk pinentry. Here is an example of a complete initialization:

```
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
{
  /* Initialize the locale environment.  */
  setlocale (LC_ALL, "");
  gpgme_check_version (NULL);
  gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
```

```
 #ifdef LC_MESSAGES
  gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
}
```

Note that you are highly recommended to initialize the locale settings like this. GPGME can not do this for you because it would not be thread safe. The conditional on LC_MESSAGES is only necessary for portability to W32 systems.

File: gpgme.info, Node: Signal Handling, Next: Multi-Threading, Prev: Library Version Check, Up: Preparation

2.7 Signal Handling

The GPGME library communicates with child processes (the crypto engines). If a child process dies unexpectedly, for example due to a bug, or system problem, a SIGPIPE signal will be delivered to the application. The default action is to abort the program. To protect against this, gpgme_check_version sets the SIGPIPE signal action to SIG_IGN, which means that the signal will be ignored.

GPGME will only do that if the signal action for SIGPIPE is SIG_DEF at the time gpgme_check_version is called. If it is something different, GPGME will take no action.

This means that if your application does not install any signal handler for SIGPIPE, you dont need to take any precautions. If you do install a signal handler for SIGPIPE, you must be prepared to handle any SIGPIPE events that occur due to GPGME writing to a defunct pipe. Furthermore, if your application is multi-threaded, and you install a signal action for SIGPIPE, you must make sure you do this either before gpgme_check_version is called or afterwards.

File: gpgme.info, Node: Multi-Threading, Prev: Signal Handling, Up: Preparation

2.8 Multi-Threading

The GPGME library is mostly thread-safe, and can be used in a multi-threaded environment but there are some requirements for multi-threaded use:

The function gpgme_check_version must be called before any other function in the library, because it initializes the thread support

subsystem in GPGME. To achieve this in multi-threaded programs, you must synchronize the memory with respect to other threads that also want to use GPGME. For this, it is sufficient to call gpgme_check_version before creating the other threads using GPGME(1).

Any gpgme_data_t and gpgme_ctx_t object must only be accessed by one thread at a time. If multiple threads want to deal with the same object, the caller has to make sure that operations on that object are fully synchronized.

Only one thread at any time is allowed to call gpgme_wait. If multiple threads call this function, the caller must make sure that all invocations are fully synchronized. It is safe to start asynchronous operations while a thread is running in gpgme_wait.

The function gpgme_strerror is not thread safe. You have to use gpgme_strerror_r instead.

---------- Footnotes ----------

(1) At least this is true for POSIX threads, as pthread_create is a function that synchronizes memory with respects to other threads. There are many functions which have this property, a complete list can be found in POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the definition of the term Memory Synchronization. For other thread packages other, more relaxed or more strict rules may apply.

File: gpgme.info, Node: Protocols and Engines, Next: Algorithms, Prev: Preparation, Up: Top

3 Protocols and Engines

GPGME supports several cryptographic protocols, however, it does not implement them. Rather it uses backends (also called engines) which implement the protocol. GPGME uses inter-process communication to pass data back and forth between the application and the backend, but the details of the communication protocol and invocation of the backend is completely hidden by the interface. All complexity is handled by GPGME. Where an exchange of information between the application and the backend is necessary, GPGME provides the necessary callback function hooks and further interfaces.

-- Data type: enum gpgme_protocol_t

The gpgme_protocol_t type specifies the set of possible protocol values that are supported by GPGME. The following protocols are supported:

GPGME_PROTOCOL_OpenPGP
GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

GPGME_PROTOCOL_GPGCONF
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_ASSUAN
SINCE: 1.2.0

This specifies the raw Assuan protocol.

GPGME_PROTOCOL_G13
SINCE: 1.3.0

Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_UISERVER
Under development. Please ask on <gnupg-devel@gnupg.org> for help.

GPGME_PROTOCOL_SPAWN
SINCE: 1.5.0

Special protocol for use with gpgme_op_spawn.

GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the used protocol is not known to the application. Currently, GPGME does not accept this value in any operation, though, except for gpgme_get_protocol_name.

-- Function: const char * gpgme_get_protocol_name (gpgme_protocol_t PROTOCOL)
The function gpgme_get_protocol_name returns a statically allocated string describing the protocol PROTOCOL, or NULL if the protocol number is not valid.

* Menu:

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan:: Support for the raw Assuan protocol.

File: gpgme.info,
Node: Engine Version Check, Next: Engine Information, Up: Protocols and Engines

3.1 Engine Version Check
========================

-- Function: const char * gpgme_get_dirinfo (cons char *WHAT)
SINCE: 1.5.0

The function gpgme_get_dirinfo returns a statically allocated
string with the value associated to WHAT. The returned values are
the defaults and wont change even after gpgme_set_engine_info
has been used to configure a different engine. NULL is returned
if no value is available. Commonly supported values for WHAT are:

homedir
Return the default home directory.

sysconfdir
Return the name of the system configuration directory

bindir
Return the name of the directory with GnuPG program files.

libdir
Return the name of the directory with GnuPG related library
files.

libexecdir
Return the name of the directory with GnuPG helper program
files.

datadir
Return the name of the directory with GnuPG shared data.

localedir
Return the name of the directory with GnuPG locale data.

agent-socket
Return the name of the socket to connect to the gpg-agent.

agent-ssh-socket
Return the name of the socket to connect to the ssh-agent component of gpg-agent.

dirmngr-socket
Return the name of the socket to connect to the dirmngr.

uiserver-socket
Return the name of the socket to connect to the user interface server.

gpgconf-name
Return the file name of the engine configuration tool.

gpg-name
Return the file name of the OpenPGP engine.

gpgsm-name
Return the file name of the CMS engine.

g13-name
Return the name of the file container encryption engine.

gpg-wks-client-name
Return the name of the Web Key Service tool.

-- Function: gpgme_error_t gpgme_engine_check_version (gpgme_protocol_t PROTOCOL)
The function gpgme_engine_check_version verifies that the engine implementing the protocol PROTOCOL is installed in the expected path and meets the version requirement of GPGME.

This function returns the error code GPG_ERR_NO_ERROR if the engine is available and GPG_ERR_INV_ENGINE if it is not.

File: gpgme.info, Node: Engine Information, Next: Engine Configuration, Prev: Engine Version Check, Up: Protocols and Engines

3.2 Engine Information

-- Data type: gpgme_engine_info_t
The gpgme_engine_info_t type specifies a pointer to a structure

describing a crypto engine. The structure contains the following elements:

gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked list, or NULL if this is the last element.

gpgme_protocol_t protocol
This is the protocol for which the crypto engine is used. You
can convert this to a string with gpgme_get_protocol_name for printing.

const char *file_name
This is a string holding the file name of the executable of the crypto engine. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

const char *home_dir
This is a string holding the directory name of the crypto engines configuration directory. If it is NULL, then the default directory is used. See gpgme_get_dirinfo on how to get the default directory.

const char *version
This is a string containing the version number of the crypto engine. It might be NULL if the version number can not be determined, for example because the executable doesnt exist or is invalid.

const char *req_version
This is a string containing the minimum required version number
of the crypto engine for GPGME to work correctly. This is the version number that gpgme_engine_check_version verifies against. Currently, it is never NULL, but using NULL is reserved for future use, so always check before you use it.

-- Function: gpgme_error_t gpgme_get_engine_info (gpgme_engine_info_t *INFO)
The function gpgme_get_engine_info returns a linked list of engine info structures in INFO. Each info structure describes the defaults of one configured backend.

The memory for the info structures is allocated the first time this function is invoked, and must not be freed by the caller.

This function returns the error code GPG_ERR_NO_ERROR if successful, and a system error if the memory could not be allocated.

Here is an example how you can provide more diagnostics if you receive an error message which indicates that the crypto engine is invalid.

```
  gpgme_ctx_t ctx;
  gpgme_error_t
err;

  [...]

  if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
    {
      gpgme_engine_info_t info;
      err = gpgme_get_engine_info (&info);
      if (!err)
        {
          while (info && info->protocol != gpgme_get_protocol (ctx))
            info = info->next;
          if (!info)
            fprintf (stderr, "GPGME compiled without support for protocol %s",
                     gpgme_get_protocol_name (info->protocol));
          else if (info->file_name && !info->version)
            fprintf (stderr, "Engine %s not installed properly",
                     info->file_name);
          else if (info->file_name && info->version && info->req_version)
            fprintf (stderr, "Engine %s version %s installed, "
                     "but at least version %s required", info->file_name,
                     info->version, info->req_version);
          else
            fprintf (stderr, "Unknown problem with engine
for protocol %s",
                     gpgme_get_protocol_name (info->protocol));
        }
    }
```

File: gpgme.info, Node: Engine Configuration, Next: OpenPGP, Prev: Engine Information, Up: Protocols and Engines

3.3 Engine Configuration

You can change the configuration of a backend engine, and thus change

the executable program and configuration directory to be used. You can make these changes the default or set them for some contexts individually.

-- Function: gpgme_error_t gpgme_set_engine_info
(gpgme_protocol_t PROTO, const char *FILE_NAME,
const char *HOME_DIR)
SINCE: 1.1.0

The function gpgme_set_engine_info changes the default configuration of the crypto engine implementing the protocol PROTO.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this crypto engine. If HOME_DIR is

NULL, the engines default will be used.

The new defaults are not applied to already created GPGME contexts.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

The functions gpgme_ctx_get_engine_info and gpgme_ctx_set_engine_info can be used to change the engine configuration per context. *Note Crypto Engine::.

File: gpgme.info, Node: OpenPGP, Next: Cryptographic Message Syntax, Prev: Engine Configuration, Up: Protocols and Engines

3.4 OpenPGP
==========

OpenPGP is implemented by GnuPG, the GNU Privacy Guard. This is the first protocol that was supported by GPGME.

The OpenPGP protocol is specified by GPGME_PROTOCOL_OpenPGP.

File: gpgme.info, Node: Cryptographic Message Syntax, Next: Assuan, Prev: OpenPGP, Up: Protocols and Engines

3.5 Cryptographic Message Syntax
==============================

CMS is implemented by GpgSM, the S/MIME implementation for GnuPG.

The CMS protocol is specified by
GPGME_PROTOCOL_CMS.

File: gpgme.info, Node: Assuan, Prev: Cryptographic Message Syntax, Up: Protocols and Engines

3.6 Assuan
==========

Assuan is the RPC library used by the various GnuPG components. The
Assuan protocol allows one to talk to arbitrary Assuan servers using
GPGME. *Note Using the Assuan protocol::.

The ASSUAN protocol is specified by GPGME_PROTOCOL_ASSUAN.

File: gpgme.info, Node: Algorithms, Next: Error Handling, Prev: Protocols and Engines, Up: Top

4 Algorithms
****

The crypto backends support a variety of algorithms used in public key
cryptography.(1) The following sections list the identifiers used to
denote such an algorithm.

* Menu:

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

---------- Footnotes ----------

(1) Some engines also provide symmetric only encryption; see the
description of the encryption function on how to use this.

File:
gpgme.info, Node: Public Key Algorithms, Next: Hash Algorithms, Up: Algorithms

4.1 Public Key Algorithms
=========================

Public key algorithms are used for encryption, decryption, signing and
verification of signatures.

-- Data type: enum gpgme_pubkey_algo_t
The gpgme_pubkey_algo_t type specifies the set of all public key
algorithms that are supported by GPGME. Possible values are:

GPGME_PK_RSA
This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

GPGME_PK_RSA_E
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for encryption and decryption only.

GPGME_PK_RSA_S
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman) algorithm for signing and verification only.

GPGME_PK_DSA
This value indicates DSA, the Digital Signature Algorithm.

GPGME_PK_ELG
This value indicates ElGamal.

GPGME_PK_ELG_E

This value also indicates ElGamal and is used specifically in GnuPG.

GPGME_PK_ECC
SINCE: 1.5.0

This value is a generic indicator for ellipic curve algorithms.

GPGME_PK_ECDSA
SINCE: 1.3.0

This value indicates ECDSA, the Elliptic Curve Digital Signature Algorithm as defined by FIPS 186-2 and RFC-6637.

GPGME_PK_ECDH
SINCE: 1.3.0

This value indicates ECDH, the Eliptic Curve Diffie-Hellmann encryption algorithm as defined by RFC-6637.

GPGME_PK_EDDSA
SINCE: 1.7.0

This value indicates the EdDSA algorithm.

-- Function: const char * gpgme_pubkey_algo_name

(gpgme_pubkey_algo_t ALGO)
The function gpgme_pubkey_algo_name returns a pointer to a statically allocated string containing a description of the public key algorithm ALGO. This string can be used to output the name of the public key algorithm to the user.

If ALGO is not a valid public key algorithm, NULL is returned.

-- Function: char * gpgme_pubkey_algo_string (gpgme_subkey_t KEY)
SINCE: 1.7.0

The function gpgme_pubkey_algo_string is a convenience function to build and return an algorithm string in the same way GnuPG does (e.g. rsa2048 or ed25519). The caller must free the result using gpgme_free. On error (e.g. invalid argument or memory exhausted), the function returns NULL and sets ERRNO.

File: gpgme.info, Node: Hash Algorithms, Prev: Public Key Algorithms, Up: Algorithms

4.2 Hash Algorithms
==========

Hash (message digest) algorithms are used to compress a long message to make it suitable for public key cryptography.

-- Data type: enum gpgme_hash_algo_t
The gpgme_hash_algo_t type specifies the set of all hash algorithms that are supported by GPGME. Possible values are:

GPGME_MD_MD5
GPGME_MD_SHA1
GPGME_MD_RMD160
GPGME_MD_MD2
GPGME_MD_TIGER
GPGME_MD_HAVAL
GPGME_MD_SHA256
GPGME_MD_SHA384
GPGME_MD_SHA512
GPGME_MD_SHA224
SINCE: 1.5.0

GPGME_MD_MD4
GPGME_MD_CRC32
GPGME_MD_CRC32_RFC1510
GPGME_MD_CRC24_RFC2440

-- Function: const char * gpgme_hash_algo_name (gpgme_hash_algo_t ALGO)

The function gpgme_hash_algo_name returns a pointer to a statically allocated string containing a description of the hash algorithm ALGO. This string can be used to output the name of the hash algorithm to the user.

If ALGO is not a valid hash algorithm, NULL is returned.

File: gpgme.info, Node: Error Handling, Next: Exchanging Data, Prev: Algorithms, Up: Top

5 Error Handling

Many functions in GPGME can return an error if they fail. For this reason, the application should always catch the error condition and take appropriate measures, for example by releasing the resources and passing the error up to the caller, or by displaying a descriptive message to the user and cancelling the operation.

Some error values do not indicate a system error or an error in the operation, but the result of an operation that failed properly. For example, if you try to decrypt a tempered message, the decryption will fail. Another error value actually means that the end of a data buffer or list has been reached. The following descriptions explain for many error codes what they mean usually. Some error values have specific meanings if returned by a certain functions. Such cases are described in the documentation of those functions.

GPGME uses the libgpg-error library. This allows to share the error codes with other components of the GnuPG system, and thus pass error values transparently from the crypto engine, or some helper application of the crypto engine, to the user. This way no information is lost. As a consequence, GPGME does not use its own identifiers for error codes, but uses those provided by libgpg-error. They usually start with GPG_ERR_.

However, GPGME does provide aliases for the functions defined in libgpg-error, which might be preferred for name space consistency.

* Menu:

* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.
* Error Strings:: How to get a descriptive string from a value.

File: gpgme.info, Node: Error Values, Next: Error Sources, Up: Error Handling

5.1 Error Values

-- Data type: gpgme_err_code_t
   The gpgme_err_code_t type is an alias for the libgpg-error type
   gpg_err_code_t. The error code indicates the type of an error,
   or the reason why an operation failed.

   A list of important error codes can be found in the next section.

-- Data type: gpgme_err_source_t
   The gpgme_err_source_t type is an alias for the libgpg-error
   type gpg_err_source_t. The error source
 has not a precisely
   defined meaning. Sometimes it is the place where the error
   happened, sometimes it is the place where an error was encoded into
   an error value. Usually the error source will give an indication
   to where to look for the problem. This is not always true, but it
   is attempted to achieve this goal.

   A list of important error sources can be found in the next section.

-- Data type: gpgme_error_t
   The gpgme_error_t type is an alias for the libgpg-error type
   gpg_error_t. An error value like this has always two components,
   an error code and an error source. Both together form the error
   value.

   Thus, the error value can not be directly compared against an error
   code, but the accessor functions described below must be used.
   However, it is guaranteed that only 0 is used to indicate success
   (GPG_ERR_NO_ERROR), and that in this case all other parts of the
   error value are set to 0, too.

   Note
 that in GPGME, the error source is used purely for
   diagnostical purposes. Only the error code should be checked to
   test for a certain outcome of a function. The manual only
   documents the error code part of an error value. The error source
   is left unspecified and might be anything.

-- Function: static inline gpgme_err_code_t gpgme_err_code
        (gpgme_error_t ERR)
   The static inline function gpgme_err_code returns the
   gpgme_err_code_t component of the error value ERR. This function

must be used to extract the error code from an error value in order to compare it with the GPG_ERR_* error code macros.

-- Function: static inline gpgme_err_source_t gpgme_err_source (gpgme_error_t ERR)
The static inline function gpgme_err_source returns the gpgme_err_source_t component of the error value ERR. This function must be used to extract the error source from an error value in order to compare it with the GPG_ERR_SOURCE_* error source macros.

-- Function: static inline gpgme_error_t gpgme_err_make (gpgme_err_source_t SOURCE, gpgme_err_code_t CODE)
The static inline function gpgme_err_make returns the error value consisting of the error source SOURCE and the error code CODE.

This function can be used in callback functions to construct an error value to return it to the library.

-- Function: static inline gpgme_error_t gpgme_error (gpgme_err_code_t CODE)
The static inline function gpgme_error returns the error value consisting of the default error source and the error code CODE.

For GPGME applications, the default error source is GPG_ERR_SOURCE_USER_1. You can define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h to change this default.

This function can be used in callback functions to construct an error value to return it to the library.

The libgpg-error library provides error codes for all system error numbers it knows about. If ERR is an unknown error number, the error code GPG_ERR_UNKNOWN_ERRNO is used. The following functions can be used to construct error values from system errnor numbers.

-- Function: gpgme_error_t gpgme_err_make_from_errno (gpgme_err_source_t SOURCE, int ERR)
The function gpgme_err_make_from_errno is like gpgme_err_make, but it takes a system error like errno instead of a gpgme_err_code_t error code.

-- Function: gpgme_error_t gpgme_error_from_errno (int ERR)
The function gpgme_error_from_errno is like gpgme_error, but it takes a system error like errno instead of a gpgme_err_code_t error code.

Sometimes you might want to map system error numbers to error codes directly, or map an error code representing a system error back to the system error number. The following functions can be used to do that.

-- Function: gpgme_err_code_t gpgme_err_code_from_errno (int ERR)
The function gpgme_err_code_from_errno returns the error code for the system error ERR. If ERR is not a known system error, the function returns GPG_ERR_UNKNOWN_ERRNO.

-- Function: int gpgme_err_code_to_errno (gpgme_err_code_t ERR)
The function gpgme_err_code_to_errno returns the system error for the error code ERR. If ERR is not an error code representing a system error, or if this system error is not defined on this system, the function returns 0.

File: gpgme.info, Node: Error Sources, Next: Error Codes, Prev: Error Values, Up: Error Handling

5.2 Error Sources
==========

The library libgpg-error defines an error source for every component of the GnuPG system. The error source part of an error value is not well defined. As such it is mainly useful to improve the diagnostic error message for the user.

If the error code part of an error value is 0, the whole error value will be 0. In this case the error source part is of course GPG_ERR_SOURCE_UNKNOWN.

The list of error sources that might occur in applications using GPGME is:

GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is 0.

GPG_ERR_SOURCE_GPGME
The error source is GPGME itself. This is the default for errors that occur in the GPGME library.

GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the OpenPGP protocol.

GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is the crypto engine used for the CMS protocol.

GPG_ERR_SOURCE_GCRYPT
The error source is libgcrypt, which is used by crypto engines to perform cryptographic operations.

GPG_ERR_SOURCE_GPGAGENT
The error source is gpg-agent, which is used by crypto engines to perform operations with the secret key.

GPG_ERR_SOURCE_PINENTRY
The error source is pinentry, which is used by gpg-agent to query the passphrase to unlock a secret key.

GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by gpg-agent to delegate operations with the secret key to a SmartCard.

GPG_ERR_SOURCE_KEYBOX
The error source is libkbx, a library used by the crypto engines to manage local keyrings.

GPG_ERR_SOURCE_USER_1
GPG_ERR_SOURCE_USER_2
GPG_ERR_SOURCE_USER_3
GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be used by other software. For example, applications using GPGME can use them to mark error values coming from callback handlers. Thus GPG_ERR_SOURCE_USER_1 is the default for errors created with gpgme_error and gpgme_error_from_errno, unless you define GPGME_ERR_SOURCE_DEFAULT before including gpgme.h.

File: gpgme.info, Node: Error Codes, Next: Error Strings, Prev: Error Sources, Up: Error Handling

5.3 Error Codes

The library libgpg-error defines many error values. Most of them are not used by GPGME directly, but might be returned by GPGME because it received them from the crypto engine. The below list only includes such error codes that have a specific meaning in GPGME, or which are so

common that you should know about them.

GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is 0. Also, it is guaranteed that an error value made from the error code 0 will be 0 itself (as a whole). This means that the error source information is lost for this error code, however, as this error code indicates that no error occurred, this is generally not a problem.

GPG_ERR_GENERAL
This value means that something went wrong, but either there is not enough information about the problem to return a more useful error value, or there is no separate error value for this type of problem.

GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO
where FOO is the symbol for
the system error.

GPG_ERR_INV_VALUE
This value means that some user provided data was out of range. This can also refer to objects. For example, if an empty gpgme_data_t object was expected, but one containing data was provided, this error value is returned.

GPG_ERR_UNUSABLE_PUBKEY
This value means that some recipients for a message were invalid.

GPG_ERR_UNUSABLE_SECKEY
This value means that some signers were invalid.

GPG_ERR_NO_DATA
This value means that a gpgme_data_t object which was expected to have content was found empty.

GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is

not implemented. This error should never happen. It can only occur if you use certain values or configuration options which do not work, but for which we think that they should work at some later time.

GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase when requested.

GPG_ERR_CANCELED
This value means that the operation was canceled.

GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired protocol is currently not available. This can either be because the sources were configured to exclude support for this engine, or because the engine is not installed properly.

GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify a unique key.

GPG_ERR_WRONG_KEY_USAGE
This value indicates that a key is not used appropriately.

GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

GPG_ERR_NO_CRL_KNOWN
This value indicates
that no certificate revocation list is known
for the certificate.

GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the

issuer certificate is missing.

GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its certificate chain is not good, for example it could be too long.

GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic algorithm is not supported by the crypto backend.

GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not available.

GPG_ERR_USER_1
GPG_ERR_USER_2
...
GPG_ERR_USER_16
These error codes are not used by any GnuPG component and can be freely used by other software. Applications using GPGME might use them to mark specific errors returned by callback handlers if no suitable error codes (including the system errors) for these errors exist already.

File: gpgme.info, Node: Error Strings, Prev: Error Codes, Up: Error Handling

5.4 Error Strings

-- Function: const char * gpgme_strerror (gpgme_error_t ERR)
The function gpgme_strerror returns a pointer to a statically allocated string containing a description of the error code contained in the error value ERR. This string can be used to output a diagnostic message to the user.

This function is not thread safe. Use gpgme_strerror_r in multi-threaded programs.

-- Function: int gpgme_strerror_r (gpgme_error_t ERR, char *BUF, size_t BUFLEN)
The function gpgme_strerror_r returns the error string for ERR in the user-supplied buffer BUF of size BUFLEN.

This function is, in
contrast to gpgme_strerror, thread-safe if a thread-safe
strerror_r function is provided by the system. If the function
succeeds, 0 is returned and BUF contains the string describing the
error. If the buffer was not large enough, ERANGE is returned and
BUF contains as much of the beginning of the error string as fits
into the buffer.

-- Function: const char * gpgme_strsource (gpgme_error_t ERR)
The function gpgme_strerror returns a pointer to a statically
allocated string containing a description of the error source
contained in the error value ERR. This string can be used to
output a diagnostic message to the user.

The following example illustrates the use of gpgme_strerror:

```
gpgme_ctx_t ctx;
gpgme_error_t err = gpgme_new (&ctx);
if (err)
  {
    fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",
             argv[0], gpgme_strsource (err), gpgme_strerror (err));
    exit (1);
  }
```

File: gpgme.info, Node: Exchanging Data, Next: Contexts, Prev: Error Handling, Up: Top

6 Exchanging Data

A lot of data has to be exchanged between the user and the crypto
engine, like plaintext messages, ciphertext, signatures and information
about the keys. The technical details about exchanging the data
information are completely abstracted by GPGME. The user provides and
receives the data via gpgme_data_t objects, regardless of the
communication protocol between GPGME and the crypto engine in use.

-- Data type: gpgme_data_t
The gpgme_data_t type is a handle for a container for generic
data, which is used by GPGME to exchange data with the user.

gpgme_data_t objects do not provide notifications on events. It is
assumed that read and write operations are blocking until data is
available. If this is undesirable, the application must ensure that all
GPGME data operations always have data available, for example
by using
memory buffers or files rather than pipes or sockets. This might be

relevant, for example, if the external event loop mechanism is used.

-- Data type: gpgme_off_t
SINCE: 1.4.1

On POSIX platforms the gpgme_off_t type is an alias for off_t;
it may be used interchangeable. On Windows platforms gpgme_off_t
is defined as a long (i.e. 32 bit) for 32 bit Windows and as a 64
bit signed integer for 64 bit Windows.

-- Data type: gpgme_ssize_t
The gpgme_ssize_t type is an alias for ssize_t. It has only
been introduced to overcome portability problems pertaining to the
declaration of ssize_t by different toolchains.

* Menu:

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

File: gpgme.info, Node: Creating Data Buffers, Next: Destroying Data Buffers, Up: Exchanging Data

6.1 Creating Data Buffers
==========

Data
objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all objects.

* Menu:

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

File: gpgme.info, Node: Memory Based Data Buffers, Next: File Based Data Buffers, Up: Creating Data Buffers

6.1.1 Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is
convenient, but only practical for an amount of data that is a fraction
of the available physical memory. The data has to be copied from its
source and to its destination, which can often be avoided by using one
of the other data object

-- Function: gpgme_error_t gpgme_data_new (gpgme_data_t *DH)
The function gpgme_data_new creates a new gpgme_data_t object

and returns a handle for it in DH. The data object is memory based
and initially empty.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH is not a
valid pointer, and GPG_ERR_ENOMEM if not enough memory is
available.

-- Function: gpgme_error_t gpgme_data_new_from_mem (gpgme_data_t *DH,
const char *BUFFER, size_t SIZE, int COPY)
The function gpgme_data_new_from_mem creates a new gpgme_data_t
object and fills it with SIZE bytes starting from BUFFER.

If COPY is not zero, a private copy of the data is made. If COPY
is zero, the data is taken from the specified buffer as needed, and
the user has to ensure that the buffer remains valid for the whole
life span of the data object.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
BUFFER is not a valid pointer, and
GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_file (gpgme_data_t *DH,
const char *FILENAME, int COPY)
The function gpgme_data_new_from_file creates a new
gpgme_data_t object and fills it with the content of the file
FILENAME.

If COPY is not zero, the whole file is read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for COPY might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
FILENAME is not a valid pointer, GPG_ERR_NOT_IMPLEMENTED if CODE
is zero, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_filepart
(gpgme_data_t *DH, const char *FILENAME,

FILE *FP,
off_t OFFSET, size_t LENGTH)
The function gpgme_data_new_from_filepart creates a new gpgme_data_t object and fills it with a part of the file specified by FILENAME or FP.

Exactly one of FILENAME and FP must be non-zero, the other must be zero. The argument that is not zero specifies the file from which LENGTH bytes are read into the data object, starting from OFFSET.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, GPG_ERR_INV_VALUE if DH and exactly one of FILENAME and FP is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available.

File: gpgme.info, Node: File Based Data Buffers, Next: Callback Based Data Buffers, Prev: Memory Based Data Buffers, Up: Creating Data Buffers

6.1.2 File Based Data Buffers

File based data objects operate directly on file descriptors or streams.
Only a small amount of data is stored
in core at any time, so the size
of the data objects is not limited by GPGME.

-- Function: gpgme_error_t gpgme_data_new_from_fd (gpgme_data_t *DH,
int FD)
The function gpgme_data_new_from_fd creates a new gpgme_data_t object and uses the file descriptor FD to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the file descriptor than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data object was successfully created, and GPG_ERR_ENOMEM if not enough memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_stream

(gpgme_data_t *DH, FILE *STREAM)
The function gpgme_data_new_from_stream creates a new
gpgme_data_t object and uses the I/O stream STREAM to read from
(if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might
read a bit more from the stream than is actually needed by the
crypto engine in the desired operation because of internal
buffering.

Note that GPGME assumes that the stream is in blocking mode.
Errors during I/O operations, except for EINTR, are usually fatal
for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_new_from_estream
(gpgme_data_t *DH, gpgrt_stream_t STREAM)
The function gpgme_data_new_from_estream creates
a new
gpgme_data_t object and uses the gpgrt stream STREAM to read from
(if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might
read a bit more from the stream than is actually needed by the
crypto engine in the desired operation because of internal
buffering.

Note that GPGME assumes that the stream is in blocking mode.
Errors during I/O operations, except for EINTR, are usually fatal
for crypto operations.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

File: gpgme.info, Node: Callback Based Data Buffers, Prev: File Based Data Buffers, Up: Creating Data Buffers

6.1.3 Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your
application, you can

implement the functions a data object provides
yourself and create a data object from these callback functions.

-- Data type: ssize_t (*gpgme_data_read_cb_t) (void *HANDLE,
    void *BUFFER, size_t SIZE)
The gpgme_data_read_cb_t type is the type of functions which GPGME calls if it wants to read data from a user-implemented data object. The function should read up to SIZE bytes from the current read position into the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: ssize_t (*gpgme_data_write_cb_t) (void *HANDLE,
    const void *BUFFER, size_t SIZE)
The gpgme_data_write_cb_t type is the type of functions which GPGME calls if it wants to write data to a user-implemented data object. The function should write up to SIZE bytes to the current write position from the space starting at BUFFER. The HANDLE is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes written, and -1 on error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: off_t (*gpgme_data_seek_cb_t) (void *HANDLE,
    off_t OFFSET, int WHENCE)
The gpgme_data_seek_cb_t type is the type of functions which GPGME calls if it wants to change the current read/write position in a user-implemented data object, just like the lseek function.

The function
should return the new read/write position, and -1 on
error. If an error occurs, ERRNO should be set to describe the type of the error.

-- Data type: void (*gpgme_data_release_cb_t) (void *HANDLE)
The gpgme_data_release_cb_t type is the type of functions which

GPGME calls if it wants to destroy a user-implemented data object.
The HANDLE is provided by the user at data object creation time.

-- Data type: struct gpgme_data_cbs
This structure is used to store the data callback interface
functions described above. It has the following members:

gpgme_data_read_cb_t read
This is the function called by GPGME to read data from the
data object. It is only required for input data object.

gpgme_data_write_cb_t write
This is the function called by GPGME to write data to the data
object. It is only required for output data object.

gpgme_data_seek_cb_t seek
This is the function called by GPGME
to change the current
read/write pointer in the data object (if available). It is
optional.

gpgme_data_release_cb_t release
This is the function called by GPGME to release a data object.
It is optional.

-- Function: gpgme_error_t gpgme_data_new_from_cbs (gpgme_data_t *DH,
gpgme_data_cbs_t CBS, void *HANDLE)
The function gpgme_data_new_from_cbs creates a new gpgme_data_t
object and uses the user-provided callback functions to operate on
the data object.

The handle HANDLE is passed as first argument to the callback
functions. This can be used to identify this data object.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, and GPG_ERR_ENOMEM if not enough
memory is available.

File: gpgme.info, Node: Destroying Data Buffers, Next: Manipulating Data Buffers, Prev: Creating Data Buffers, Up: Exchanging Data

6.2 Destroying Data Buffers

-- Function: void gpgme_data_release (gpgme_data_t DH)
The function gpgme_data_release destroys the data object with the
handle DH. It releases all associated resources that were not

provided by the user in the first place.

-- Function: char * gpgme_data_release_and_get_mem (gpgme_data_t DH,
size_t *LENGTH)
The function gpgme_data_release_and_get_mem is like
gpgme_data_release, except that it returns the data buffer and
its length that was provided by the object.

The user has to release the buffer with gpgme_free. In case the
user provided the data buffer in non-copy mode, a copy will be made
for this purpose.

In case an error returns, or there is no suitable data buffer that
can be returned to the user, the function will return NULL. In
any case, the data object DH is destroyed.

-- Function: void gpgme_free (void *BUFFER)
SINCE: 1.1.1

The function gpgme_free releases
the memory returned by
gpgme_data_release_and_get_mem and gpgme_pubkey_algo_string.
It should be used instead of the system libraries free function
in case different allocators are used by a program. This is often
the case if gpgme is used under Windows as a DLL.

File: gpgme.info, Node: Manipulating Data Buffers, Prev: Destroying Data Buffers, Up: Exchanging Data

6.3 Manipulating Data Buffers
==========

Data buffers contain data and meta-data. The following operations can
be used to manipulate both.

* Menu:

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

File: gpgme.info, Node: Data Buffer I/O Operations, Next: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.1 Data Buffer I/O Operations

-- Function: ssize_t gpgme_data_read
(gpgme_data_t DH, void *BUFFER,
size_t LENGTH)
The function gpgme_data_read reads up to LENGTH bytes from the data object with the handle DH into the space starting at BUFFER.

If no error occurs, the actual amount read is returned. If the end of the data object is reached, the function returns 0.

In all other cases, the function returns -1 and sets ERRNO.

-- Function: ssize_t gpgme_data_write (gpgme_data_t DH,
const void *BUFFER, size_t SIZE)
The function gpgme_data_write writes up to SIZE bytes starting from BUFFER into the data object with the handle DH at the current write position.

The function returns the number of bytes actually written, or -1 if an error occurs. If an error occurs, ERRNO is set.

-- Function: off_t gpgme_data_seek (gpgme_data_t DH, off_t OFFSET,
int WHENCE)
The function gpgme_data_seek changes the current read/write position.

The WHENCE argument specifies how
the OFFSET should be interpreted.
It must be one of the following symbolic constants:

SEEK_SET
Specifies that OFFSET is a count of characters from the beginning of the data object.

SEEK_CUR
Specifies that OFFSET is a count of characters from the current file position. This count may be positive or negative.

SEEK_END
Specifies that OFFSET is a count of characters from the end of the data object. A negative count specifies a position within the current extent of the data object; a positive count specifies a position past the current end. If you set the position past the current end, and actually write data, you will extend the data object with zeros up to that position.

If successful, the function returns the resulting file position, measured in bytes from the beginning of the data object. You can

use this feature together with SEEK_CUR
to read the current
read/write position.

If the function fails, -1 is returned and ERRNO is set.

File: gpgme.info, Node: Data Buffer Meta-Data, Next: Data Buffer Convenience, Prev: Data Buffer I/O Operations, Up: Manipulating Data Buffers

6.3.2 Data Buffer Meta-Data

-- Function: char * gpgme_data_get_file_name (gpgme_data_t DH)
SINCE: 1.1.0

The function gpgme_data_get_file_name returns a pointer to a string containing the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

If no error occurs, the string containing the file name is returned. Otherwise, NULL will be returned.

-- Function: gpgme_error_t gpgme_data_set_file_name (gpgme_data_t DH, const char *FILE_NAME)
SINCE: 1.1.0

The function gpgme_data_set_file_name sets the file
name
associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

The function returns the error code GPG_ERR_INV_VALUE if DH is not a valid pointer and GPG_ERR_ENOMEM if not enough memory is available.

-- Data type: enum gpgme_data_encoding_t
The gpgme_data_encoding_t type specifies the encoding of a gpgme_data_t object. For input data objects, the encoding is useful to give the backend a hint on the type of data. For output data objects, the encoding can specify the output data format on certain operations. Please note that not all backends support all encodings on all operations. The following data types are available:

GPGME_DATA_ENCODING_NONE
This specifies that the encoding is not known. This is the default for a new data object. The backend will try its best to detect the encoding automatically.

GPGME_DATA_ENCODING_BINARY
This specifies that the data is encoding in binary form; i.e. there is no special encoding.

GPGME_DATA_ENCODING_BASE64
This specifies that the data is encoded using the Base-64 encoding scheme as used by MIME and other protocols.

GPGME_DATA_ENCODING_ARMOR
This specifies that the data is encoded in an armored form as used by OpenPGP and PEM.

GPGME_DATA_ENCODING_MIME
SINCE: 1.7.0

This specifies that the data is encoded as a MIME part.

GPGME_DATA_ENCODING_URL
SINCE: 1.2.0

The data is a list of linefeed delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URL0
SINCE: 1.2.0

The data is a list of binary zero delimited URLs. This is only useful with gpgme_op_import.

GPGME_DATA_ENCODING_URLESC

SINCE: 1.2.0

The data is a list of linefeed delimited URLs with all control and space characters percent escaped. This mode is is not yet implemented.

-- Function: gpgme_data_encoding_t gpgme_data_get_encoding (gpgme_data_t DH)
The function gpgme_data_get_encoding returns the encoding of the data object with the handle DH. If DH is not a valid pointer (e.g. NULL) GPGME_DATA_ENCODING_NONE is returned.

-- Function: gpgme_error_t gpgme_data_set_encoding
(gpgme_data_t DH, gpgme_data_encoding_t ENC)
The function gpgme_data_set_encoding changes the encoding of the data object with the handle DH to ENC.

-- Function: gpgme_error_t gpgme_data_set_flag (gpgme_data_t DH,
const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the data object can be controlled with flags set by this function. The properties are identified by the following values for NAME:

size-hint
The value is a decimal number with the length gpgme shall assume for this data object. This is useful if the data is provided by callbacks or via file descriptors but the applications knows the total size of the data. If this is set the OpenPGP engine may use this to decide on buffer allocation strategies and to provide a total value for its progress information.

This function returns 0 on success.

File: gpgme.info, Node: Data Buffer Convenience, Prev: Data Buffer Meta-Data, Up: Manipulating Data Buffers

6.3.3 Data Buffer Convenience Functions

-- Data type: enum gpgme_data_type_t
SINCE: 1.4.3

The gpgme_data_type_t type is used to return the detected type of the content of a data buffer.

GPGME_DATA_TYPE_INVALID
This is returned by gpgme_data_identify if it was not possible to identify the data. Reasons for this might be a non-seekable stream
or a memory problem. The value is 0.
GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary signature, a detached one or a cleartext signature.

GPGME_DATA_TYPE_PGP_ENCRYPTED
SINCE: 1.7.0

The data is an OpenPGP encrypted message.
GPGME_DATA_TYPE_PGP_SIGNATURE
SINCE: 1.7.0

The data is an OpenPGP detached signature.
GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be encrypted data.
GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
GPGME_DATA_TYPE_X509_CERT
The data is a X.509 certificate
GPGME_DATA_TYPE_PKCS12
The data is a PKCS#12 message. This is commonly used to exchange private keys for X.509.

-- Function: gpgme_data_type_t gpgme_data_identify (gpgme_data_t DH)
SINCE: 1.4.3

The function gpgme_data_identify returns the type of the data with the handle DH. If it is not possible to perform the identification, the function returns zero (GPGME_DATA_TYPE_INVALID). Note that depending on how the data object has been created the identification may not be possible or the data object may change its internal state (file pointer moved). For file or memory based data object, the state should not change.

File: gpgme.info, Node: Contexts, Next: UI Server Protocol, Prev: Exchanging Data, Up: Top

7 Contexts

All cryptographic operations in GPGME are performed within a context, which contains the internal state of the operation as well as configuration parameters. By using several contexts you can run several cryptographic operations in parallel, with different configuration.

-- Data type: gpgme_ctx_t
The gpgme_ctx_t type is a handle for a GPGME context, which is used to hold the configuration, status and result of cryptographic operations.

* Menu:

* Creating Contexts:: Creating new GPGME contexts.
* Destroying Contexts:: Releasing GPGME contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with GPGME.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations
* Run Control:: Controlling how operations are run.

File: gpgme.info, Node: Creating Contexts, Next: Destroying Contexts, Up: Contexts

7.1 Creating Contexts

-- Function: gpgme_error_t gpgme_new (gpgme_ctx_t *CTX)
The function gpgme_new creates a new gpgme_ctx_t object and returns a handle
for it in CTX.

The function returns the error code GPG_ERR_NO_ERROR if the context was successfully created, GPG_ERR_INV_VALUE if CTX is not a valid pointer, and GPG_ERR_ENOMEM if not enough memory is available. Also, it returns GPG_ERR_NOT_OPERATIONAL if gpgme_check_version was not called to initialize GPGME, and GPG_ERR_SELFTEST_FAILED if a selftest failed. Currently, the only selftest is for Windows MingW32 targets to see if -mms-bitfields was used (as required).

File: gpgme.info, Node: Destroying Contexts, Next: Result Management, Prev: Creating Contexts, Up: Contexts

7.2 Destroying Contexts

-- Function: void gpgme_release (gpgme_ctx_t CTX)
The function gpgme_release destroys the context with the handle CTX and releases all associated resources.

File: gpgme.info, Node: Result Management, Next: Context Attributes, Prev: Destroying Contexts, Up: Contexts

7.3 Result Management
==========

The
 detailed result of an operation is returned in operation-specific
structures such as gpgme_decrypt_result_t. The corresponding
retrieval functions such as gpgme_op_decrypt_result provide static
access to the results after an operation completes. Those structures
shall be considered read-only and an application must not allocate such
a structure on its own. The following interfaces make it possible to
detach a result structure from its associated context and give it a
lifetime beyond that of the current operation or context.

-- Function: void gpgme_result_ref (void *RESULT)
   SINCE: 1.2.0

   The function gpgme_result_ref acquires an additional reference
   for the result RESULT, which may be of any type gpgme_*_result_t.
   As long as the user holds a reference, the result structure is
   guaranteed to be valid and unmodified.

-- Function: void gpgme_result_unref (void *RESULT)
   SINCE: 1.2.0

   The function gpgme_result_unref releases a reference for
 the
   result RESULT. If this was the last reference, the result
   structure will be destroyed and all resources associated to it will
   be released.

  Note that a context may hold its own references to result structures,
typically until the context is destroyed or the next operation is
started. In fact, these references are accessed through the
gpgme_op_*_result functions.

File: gpgme.info, Node: Context Attributes, Next: Key Management, Prev: Result Management, Up: Contexts

7.4 Context Attributes
==========

* Menu:

* Protocol Selection::   Selecting the protocol used by a context.
* Crypto Engine::   Configuring the crypto engine.
* Setting the Sender::   How to tell the engine the sender.
* ASCII Armor::   Requesting ASCII armored output.

* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing
the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
* Additional Logs:: Additional logs of a context.

File: gpgme.info, Node: Protocol Selection, Next: Crypto Engine, Up: Context Attributes

7.4.1 Protocol Selection

-- Function: gpgme_error_t gpgme_set_protocol (gpgme_ctx_t CTX,
gpgme_protocol_t PROTO)
The function gpgme_set_protocol sets the protocol used within the
context CTX to PROTO. All crypto operations will be performed by
the crypto engine configured for that protocol. *Note
Protocols
and Engines::.

Setting the protocol with gpgme_set_protocol does intentionally
not check if the crypto engine for that protocol is available and
installed correctly. *Note Engine Version Check::.

The function returns the error code GPG_ERR_NO_ERROR if the
protocol could be set successfully, and GPG_ERR_INV_VALUE if
PROTOCOL is not a valid protocol.

-- Function: gpgme_protocol_t gpgme_get_protocol (gpgme_ctx_t CTX)
The function gpgme_get_protocol retrieves the protocol currently
use with the context CTX.

File: gpgme.info, Node: Crypto Engine, Next: Setting the Sender, Prev: Protocol Selection, Up: Context Attributes

7.4.2 Crypto Engine

The following functions can be used to set and retrieve the
configuration of the crypto engines of a specific context. The default

can also be retrieved without any particular context. *Note Engine Information::. The default can also be changed globally. *Note Engine Configuration::.

-- Function: gpgme_engine_info_t gpgme_ctx_get_engine_info (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_ctx_get_engine_info returns a linked list of engine info structures. Each info structure describes the configuration of one configured backend, as used by the context CTX.

The result is valid until the next invocation of gpgme_ctx_set_engine_info for this particular context.

This function can not fail.

-- Function: gpgme_error_t gpgme_ctx_set_engine_info (gpgme_ctx_t CTX, gpgme_protocol_t PROTO, const char *FILE_NAME, const char *HOME_DIR)
SINCE: 1.1.0

The function gpgme_ctx_set_engine_info changes the configuration of the crypto engine implementing the protocol PROTO for the context CTX.

FILE_NAME is the file name of the executable program implementing this protocol, and HOME_DIR is the directory name of the configuration directory for this crypto engine. If HOME_DIR is NULL, the engines default will be used.

Currently this function must be used before starting the first crypto operation. It is unspecified if and when the changes will take effect if the function is called after starting the first operation on the context CTX.

This function returns the error code GPG_ERR_NO_ERROR if successful, or an error code on failure.

File: gpgme.info, Node: Setting the Sender, Next: ASCII Armor, Prev: Crypto Engine, Up: Context Attributes

7.4.3 How to tell the engine the sender.

Some engines can make use of the senders address, for example to figure out the best user id in certain trust models. For verification and signing of mails, it is thus suggested to let the engine know the sender ("From:") address. GPGME provides two functions to accomplish that. Note that the esoteric use of multiple "From:" addresses is not supported.

-- Function: gpgme_error_t
gpgme_set_sender (gpgme_ctx_t CTX,
int ADDRESS)

SINCE: 1.8.0

The function gpgme_set_sender specifies the sender address for use in sign and verify operations. ADDRESS is expected to be the addr-spec part of an address but my also be a complete mailbox address, in which case this function extracts the addr-spec from it. Using NULL for ADDRESS clears the sender address.

The function returns 0 on success or an error code on failure. The most likely failure is that no valid addr-spec was found in ADDRESS.

-- Function: const char * gpgme_get_sender (gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_get_sender returns the current sender address from the context, or NULL if none was set. The returned value is valid as long as the CTX is valid and gpgme_set_sender has not been called again.

File: gpgme.info, Node: ASCII Armor, Next: Text Mode, Prev: Setting the Sender, Up: Context Attributes

7.4.4
ASCII Armor

-- Function: void gpgme_set_armor (gpgme_ctx_t CTX, int YES)
The function gpgme_set_armor specifies if the output should be ASCII armored. By default, output is not ASCII armored.

ASCII armored output is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_armor (gpgme_ctx_t CTX)
The function gpgme_get_armor returns 1 if the output is ASCII

armored, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Text Mode, Next: Offline Mode, Prev: ASCII Armor, Up: Context Attributes

7.4.5 Text Mode

-- Function: void gpgme_set_textmode (gpgme_ctx_t CTX, int YES)
The function gpgme_set_textmode specifies if canonical text mode should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that the updated RFC 3156 mandates that the mail user agent does some preparations so that
text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored by all other engines.

Canonical text mode is disabled if YES is zero, and enabled otherwise.

-- Function: int gpgme_get_textmode (gpgme_ctx_t CTX)
The function gpgme_get_textmode returns 1 if canonical text mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Offline Mode, Next: Pinentry Mode, Prev: Text Mode, Up: Context Attributes

7.4.6 Offline Mode

-- Function: void gpgme_set_offline (gpgme_ctx_t CTX, int YES)
SINCE: 1.6.0

The function gpgme_set_offline specifies if offline mode should be used. Offline mode is disabled if YES is zero, and enabled otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its backend engine. It may eventually be extended to be more stricter and for example
completely disable the use of Dirmngr for any
engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall be used to do additional validation that might require

connecting external services (e.g. CRL / OCSP checks). Here the offline mode only affects the keylist mode GPGME_KEYLIST_MODE_VALIDATE.

For the OpenPGP protocol offline mode entirely disables the use of the Dirmngr and will thus guarantee that no network connections are done as part of an operation on this context. It has only an effect with GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

-- Function: int gpgme_get_offline (gpgme_ctx_t CTX)
SINCE: 1.6.0

The function gpgme_get_offline returns 1 if offline mode is enabled, and 0 if it is not, or if CTX is not a valid pointer.

File: gpgme.info, Node: Pinentry Mode, Next: Included Certificates, Prev: Offline Mode, Up: Context Attributes

7.4.7
Pinentry Mode

-- Function: gpgme_error_t gpgme_set_pinentry_mode (gpgme_ctx_t CTX, gpgme_pinentry_mode_t MODE)

SINCE: 1.4.0

The function gpgme_set_pinentry_mode specifies the pinentry mode to be used.

For GnuPG >= 2.1 this option is required to be set to GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback mechanism in GPGME through gpgme_set_passphrase_cb.

-- Function: gpgme_pinentry_mode_t gpgme_get_pinentry_mode (gpgme_ctx_t CTX)
SINCE: 1.4.0

The function gpgme_get_pinenty_mode returns the mode set for the context.

-- Data type: enum gpgme_pinentry_mode_t
SINCE: 1.4.0

The gpgme_minentry_mode_t type specifies the set of possible pinentry modes that are supported by GPGME if GnuPG >= 2.1 is used.

The following modes are supported:

GPGME_PINENTRY_MODE_DEFAULT
SINCE: 1.4.0

Use the default of the agent, which is ask.

GPGME_PINENTRY_MODE_ASK
SINCE: 1.4.0

Force the use of the Pinentry.

GPGME_PINENTRY_MODE_CANCEL
SINCE: 1.4.0

Emulate use of Pinentrys cancel button.

GPGME_PINENTRY_MODE_ERROR
SINCE: 1.4.0

Return a Pinentry error No Pinentry.

GPGME_PINENTRY_MODE_LOOPBACK
SINCE: 1.4.0

Redirect Pinentry queries to the caller. This enables the use of gpgme_set_passphrase_cb because pinentry queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires allow-loopback-pinentry to be enabled in the gpg-agent.conf or an agent started with that option.

File: gpgme.info, Node: Included Certificates, Next: Key Listing Mode, Prev: Pinentry Mode, Up: Context Attributes

7.4.8 Included Certificates

-- Function: void gpgme_set_include_certs (gpgme_ctx_t CTX, int NR_OF_CERTS)

The function gpgme_set_include_certs specifies how many certificates should be included in an S/MIME signed message. By default, only the senders certificate is included. The possible values of NR_OF_CERTS are:

GPGME_INCLUDE_CERTS_DEFAULT
SINCE: 1.0.3

Fall back to the default of the crypto backend. This is the default for GPGME.

-2
Include all certificates except the root certificate.

-1
Include all certificates.

0
Include no certificates.

1
Include the senders certificate only.

n
Include the first n certificates of the certificates path, starting from the senders certificate. The number n must be positive.

Values of NR_OF_CERTS smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by all other engines.

-- Function: int gpgme_get_include_certs (gpgme_ctx_t CTX)
The function gpgme_get_include_certs returns the number of certificates to include into an S/MIME signed message.

File: gpgme.info, Node: Key Listing Mode, Next: Passphrase Callback, Prev: Included Certificates, Up: Context Attributes

7.4.9 Key Listing Mode

-- Function: gpgme_error_t gpgme_set_keylist_mode (gpgme_ctx_t CTX, gpgme_keylist_mode_t MODE)
The function gpgme_set_keylist_mode changes the default behaviour of the key listing functions. The value in MODE is a bitwise-or combination of one or multiple of the following bit values:

GPGME_KEYLIST_MODE_LOCAL
The GPGME_KEYLIST_MODE_LOCAL symbol specifies that the local keyring should be searched for keys in the keylisting operation. This is the default.

Using only this option results in a --list-keys.

GPGME_KEYLIST_MODE_EXTERN

The GPGME_KEYLIST_MODE_EXTERN symbol specifies that an external source should be searched for keys in the keylisting operation. The type of external source is dependent on the crypto engine used and whether it is combined with GPGME_KEYLIST_MODE_LOCAL. For example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a --search-keys for GPGME_PROTOCOL_OpenPGP and something similar to --list-external-keys for GPGME_PROTOCOL_CMS.

GPGME_KEYLIST_MODE_LOCATE

This is a shortcut for the combination of GPGME_KEYLIST_MODE_LOCAL and GPGME_KEYLIST_MODE_EXTERN, which results in a --locate-keys for GPGME_PROTOCOL_OpenPGP.

GPGME_KEYLIST_MODE_SIGS

The GPGME_KEYLIST_MODE_SIGS symbol specifies that the key signatures should be included in the listed keys.

GPGME_KEYLIST_MODE_SIG_NOTATIONS

SINCE: 1.1.1

The GPGME_KEYLIST_MODE_SIG_NOTATIONS symbol specifies that the signature notations on key signatures should be included in the listed keys. This only works if GPGME_KEYLIST_MODE_SIGS is also enabled.

GPGME_KEYLIST_MODE_WITH_TOFU

SINCE: 1.7.0

The GPGME_KEYLIST_MODE_WITH_TOFU symbol specifies that information pertaining to the TOFU trust model should be included in the listed keys.

GPGME_KEYLIST_MODE_WITH_KEYGRIP

SINCE: 1.14.0

The GPGME_KEYLIST_MODE_WITH_KEYRIP symbol specifies that the keygrip is always included in the listing. The default depends on the version of the backend and the used protocol.

GPGME_KEYLIST_MODE_WITH_SECRET

SINCE: 1.5.1

The GPGME_KEYLIST_MODE_WITH_SECRET returns information about
the presence of a corresponding secret key in a public key
listing. A public key listing with this mode is slower than a
standard listing but can be used instead of a second run to
list the secret keys.
This is only supported for GnuPG
versions >= 2.1. Note that using this option also makes sure
that the keygrip is available in the output.

GPGME_KEYLIST_MODE_EPHEMERAL
SINCE: 1.2.0

The GPGME_KEYLIST_MODE_EPHEMERAL symbol specifies that keys
flagged as ephemeral are included in the listing.

GPGME_KEYLIST_MODE_VALIDATE
SINCE: 0.4.5

The GPGME_KEYLIST_MODE_VALIDATE symbol specifies that the
backend should do key or certificate validation and not just
get the validity information from an internal cache. This
might be an expensive operation and is in general not useful.
Currently only implemented for the S/MIME backend and ignored
for other backends.

At least one of GPGME_KEYLIST_MODE_LOCAL and
GPGME_KEYLIST_MODE_EXTERN must be specified. For future binary
compatibility, you should get the current mode with
gpgme_get_keylist_mode and
modify it by setting or clearing the
appropriate bits, and then using that calculated value in the
gpgme_set_keylisting_mode operation. This will leave all other
bits in the mode value intact (in particular those that are not
used in the current version of the library).

The function returns the error code GPG_ERR_NO_ERROR if the mode
could be set correctly, and GPG_ERR_INV_VALUE if CTX is not a
valid pointer or MODE is not a valid mode.

-- Function: gpgme_keylist_mode_t gpgme_get_keylist_mode
(gpgme_ctx_t CTX)
The function gpgme_get_keylist_mode returns the current key
listing mode of the context CTX. This value can then be modified
and used in a subsequent gpgme_set_keylist_mode operation to only
affect the desired bits (and leave all others intact).

The function returns 0 if CTX is not a valid pointer, and the
current mode otherwise. Note that 0 is not a valid mode value.

File: gpgme.info, Node: Passphrase
Callback, Next: Progress Meter Callback, Prev: Key Listing Mode, Up: Context Attributes

7.4.10 Passphrase Callback

-- Data type: gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const
char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD,
int FD)
The gpgme_passphrase_cb_t type is the type of functions usable as
passphrase callback function.

The argument UID_HINT might contain a string that gives an
indication for which user ID the passphrase is required. If this
is not available, or not applicable (in the case of symmetric
encryption, for example), UID_HINT will be NULL.

The argument PASSPHRASE_INFO, if not NULL, will give further
information about the context in which the passphrase is required.
This information is engine and operation specific.

If this is the repeated attempt to get the passphrase, because
previous attempts failed, then PREV_WAS_BAD is 1,
otherwise it will
be 0.

The user must write the passphrase, followed by a newline
character, to the file descriptor FD. The function
gpgme_io_writen should be used for the write operation. Note
that if the user returns 0 to indicate success, the user must at
least write a newline character before returning from the callback.

If an error occurs, return the corresponding gpgme_error_t value.
You can use the error code GPG_ERR_CANCELED to abort the
operation. Otherwise, return 0.

Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not
with the 2.0.x series. See gpgme_set_pinentry_mode for more
details on 2.1.x usage.

-- Function: void gpgme_set_passphrase_cb (gpgme_ctx_t CTX,
gpgme_passphrase_cb_t PASSFUNC, void *HOOK_VALUE)
The function gpgme_set_passphrase_cb sets the function that is
used when a passphrase needs to be provided by the user to
PASSFUNC. The function PASSFUNC needs to

implemented by the user,
and whenever it is called, it is called with its first argument
being HOOK_VALUE. By default, no passphrase callback function is
set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase
from a trusted agent (a daemon process), rather than having each
user to implement their own passphrase query. Some engines do not
even support an external passphrase callback at all, in this case
the error code GPG_ERR_NOT_SUPPORTED is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to
GPGME_PINENTRY_MODE_LOOPBACK to enable the passphrase callback.
See gpgme_set_pinentry_mode.

The user can disable the use of a passphrase callback function by
calling gpgme_set_passphrase_cb with PASSFUNC being NULL.

-- Function: void gpgme_get_passphrase_cb (gpgme_ctx_t CTX,
gpgme_passphrase_cb_t *PASSFUNC, void **HOOK_VALUE)
The function gpgme_get_passphrase_cb returns the function that is
used when a passphrase needs to be provided by the user in
*PASSFUNC, and the first argument for this function in *HOOK_VALUE.
If no passphrase callback is set, or CTX is not a valid pointer,
NULL is returned in both variables.

PASSFUNC or HOOK_VALUE can be NULL. In this case, the
corresponding value will not be returned.

File: gpgme.info, Node: Progress Meter Callback, Next: Status Message Callback, Prev: Passphrase Callback, Up: Context Attributes

7.4.11 Progress Meter Callback

-- Data type: void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT,
int TYPE, int CURRENT, int TOTAL)
The gpgme_progress_cb_t type is the type of functions usable as
progress callback function.

The arguments are specific to the crypto engine. More information
about the progress information returned from the GnuPG engine can
be
found in the GnuPG source code in the file doc/DETAILS in the
section PROGRESS.

-- Function: void gpgme_set_progress_cb (gpgme_ctx_t CTX,
gpgme_progress_cb_t PROGFUNC, void *HOOK_VALUE)
The function gpgme_set_progress_cb sets the function that is used when progress information about a cryptographic operation is available. The function PROGFUNC needs to implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no progress callback function is set.

Setting a callback function allows an interactive program to display progress information about a long operation to the user.

The user can disable the use of a progress callback function by calling gpgme_set_progress_cb with PROGFUNC being NULL.

-- Function: void gpgme_get_progress_cb (gpgme_ctx_t CTX,
gpgme_progress_cb_t *PROGFUNC, void **HOOK_VALUE)
The function gpgme_get_progress_cb returns the function that is used to inform the user about the progress made in *PROGFUNC, and the first argument for this function in *HOOK_VALUE. If no progress callback is set, or CTX is not a valid pointer, NULL is returned in both variables.

PROGFUNC or HOOK_VALUE can be NULL. In this case, the corresponding value will not be returned.

File: gpgme.info, Node: Status Message Callback, Next: Context Flags, Prev: Progress Meter Callback, Up: Context Attributes

7.4.12 Status Message Callback

-- Data type: gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS)
The gpgme_status_cb_t type is the type of function usable as a status message callback function.

The argument KEYWORD is the name of the status message while the ARGS argument contains any arguments for the status message.

If an error occurs, return the corresponding gpgme_error_t value. Otherwise, return 0.

-- Function: void gpgme_set_status_cb (gpgme_ctx_t CTX,
gpgme_status_cb_t STATUSFUNC, void *HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_set_status_cb sets the function that is used when a status message is received from gpg to STATUSFUNC. The function STATUSFUNC needs to be implemented by the user, and whenever it is called, it is called with its first argument being HOOK_VALUE. By default, no status message callback function is set.

The user can disable the use of a status message callback function by calling gpgme_set_status_cb with STATUSFUNC being NULL.

-- Function: void gpgme_get_status_cb (gpgme_ctx_t CTX, gpgme_status_cb_t *STATUSFUNC, void **HOOK_VALUE)

SINCE: 1.6.0

The function gpgme_get_status_cb returns the function that is used to process status messages from gpg in *STATUSFUNC, and the first argument for this function in *HOOK_VALUE. If no status message callback
is set, or CTX is not a valid pointer, NULL is returned in both variables.

File: gpgme.info, Node: Context Flags, Next: Locale, Prev: Status Message Callback, Up: Context Attributes

7.4.13 Context Flags

-- Function: gpgme_error_t gpgme_set_ctx_flag (gpgme_ctx_t CTX, const char *NAME, const char *VALUE)

SINCE: 1.7.0

Some minor properties of the context can be controlled with flags set by this function. The properties are identified by the following values for NAME:

"redraw"
: This flag is normally not changed by the caller because GPGME sets and clears it automatically: The flag is cleared before an operation and set if an operation noticed that the engine has launched a Pinentry. A Curses based application may use this information to redraw the screen; for example:

```
err = gpgme_op_keylist_start (ctx, "foo@example.org", 0);
while
```

```
(!err)
                {
                  err = gpgme_op_keylist_next (ctx, &key);
                  if (err)
                    break;
                  show_key (key);
                  gpgme_key_release (key);
                }
              if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
                redraw_screen ();
              gpgme_release (ctx);
```

"full-status"
Using a VALUE of "1" the status callback set by gpgme_set_status_cb returns all status lines with the exception of PROGRESS lines. With the default of "0" the status callback is only called in certain situations.

"raw-description"
Setting the VALUE to "1" returns human readable strings in a raw format. For example the non breaking space characters ("~") will not be removed from the description field of the gpgme_tofu_info_t object.

"export-session-key"

Using a VALUE of "1" specifies that the context should try to export the symmetric session key when decrypting data. By default, or when using an empty string or "0" for VALUE, session keys are not exported.

"override-session-key"
The string given in VALUE is passed to the GnuPG engine to override the session key for decryption. The format of that session key is specific to GnuPG and can be retrieved during a decrypt operation when the context flag "export-session-key" is enabled. Please be aware that using this feature with GnuPG < 2.1.16 will leak the session key on many platforms via ps(1).

"auto-key-retrieve"
Setting the VALUE to "1" asks the backend to automatically retrieve a key for signature verification if possible. Note that this option makes a "web bug" like behavior possible. Keyserver or Web Key Directory operators can see which keys you request, so by sending you a message signed by a brand new key (which you naturally will not have on your local keyring),

the operator can tell both your IP address and the time when
you verified the signature.

"auto-key-import"
Setting the VALUE to "1" forces the GPG backend to
automatically import a missing key for signature verification
from the signature.

"include-key-block"
Setting the VALUE to "1" forces the GPG backend to embed the
signing key as well as an encryption subkey into the the
signature.

"request-origin"
The string given in VALUE is passed to the GnuPG engines to
request restrictions based on the origin of the request.
Valid values are documented in the GnuPG manual and the gpg
man page under the option --request-origin. Requires at
least GnuPG 2.2.6 to have an effect.

"no-symkey-cache"
For OpenPGP disable the passphrase cache used for symmetrical
en- and decryption. This cache is based on the message
specific salt value. Requires at least GnuPG 2.2.7 to have an
effect.

"ignore-mdc-error"
This flag passes the option --ignore-mdc-error to gpg. This
can be used to force decryption of a message which failed due
to a missing integrity check. This flag must be used with
great caution and only if it is a known non-corrupted old
message and the decryption result of the former try had the
decryption result flag legacy_cipher_nomdc set. For
failsafe reasons this flag is reset after each operation.

"auto-key-locate"
The string given in VALUE is passed to gpg. This can be used
to change the behavior of a GPGME_KEYLIST_MODE_LOCATE
keylisting. Valid values are documented in the GnuPG manual
and the gpg
man page under the option --auto-key-locate.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through auto-key-locate are
automatically imported in the keyring.

trust-model
SINCE: 1.11.2

Change the trust-model for all GnuPG engine operations. An
empty string sets the trust-model back to the users default.
If the trust-model is not supported by GnuPG the behavior is
undefined and will likely cause all operations to fail.
Example: "tofu+pgp".

This options should be used carefully with a strict version
requirement. In some versions of GnuPG setting the
trust-model changes the default trust-model for future
operations. A change in the trust-model also can have
unintended side effects, like rebuilding the trust-db.

"extended-edit"
This flag passes the option --expert to gpg key edit. This
can be used to get additional
callbacks in gpgme_op_edit.

This function returns 0 on success.

-- Function: const char * gpgme_get_ctx_flag (gpgme_ctx_t CTX,
const char *NAME)

SINCE: 1.8.0

The value of flags settable by gpgme_set_ctx_flag can be
retrieved by this function. If NAME is unknown the function
returns NULL. For boolean flags an empty string is returned for
False and the string "1" is returned for True; either atoi(3) or a
test for an empty string can be used to get the boolean value.

File: gpgme.info, Node: Locale, Next: Additional Logs, Prev: Context Flags, Up: Context Attributes

7.4.14 Locale

A locale setting can be associated with a context. This locale is
passed to the crypto engine, and used for applications like the PIN
entry, which is displayed to the user when entering a passphrase is
required.

The default locale is used to initialize the locale setting of all
contexts created afterwards.

-- Function: gpgme_error_t
gpgme_set_locale (gpgme_ctx_t CTX,
int CATEGORY, const char *VALUE)

SINCE: 0.4.3

The function gpgme_set_locale sets the locale of the context CTX, or the default locale if CTX is a null pointer.

The locale settings that should be changed are specified by CATEGORY. Supported categories are LC_CTYPE, LC_MESSAGES, and LC_ALL, which is a wildcard you can use if you want to change all the categories at once.

The value to be used for the locale setting is VALUE, which will be copied to GPGMEs internal data structures. VALUE can be a null pointer, which disables setting the locale, and will make PIN entry and other applications use their default setting, which is usually not what you want.

Note that the settings are only used if the application runs on a text terminal, and that the settings should fit the configuration of the output terminal. Normally, it is sufficient to initialize the default
value at startup.

The function returns an error if not enough memory is available.

File: gpgme.info, Node: Additional Logs, Prev: Locale, Up: Context Attributes

7.4.15 Additional Logs

Additional logs can be associated with a context. These logs are engine specific and can be be obtained with gpgme_op_getauditlog.

-- Function: gpgme_error_t gpgme_op_getauditlog (gpgme_ctx_t CTX,
gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

The function gpgme_op_getauditlog is used to obtain additional logs as specified by FLAGS into the OUTPUT data. If

The function returns the error code GPG_ERR_NO_ERROR if a log could be queried from the engine, and GPG_ERR_NOT_IMPLEMENTED if the log specified in FLAGS is not available for this engine. If no log is available GPG_ERR_NO_DATA is returned.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_AUDITLOG_DIAG
SINCE: 1.11.2

Obtain diagnostic output which would be written to stderr in interactive use of the engine. This can be used to provide additional diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will be empty and GPG_ERR_NO_DATA will be returned.

Implemented for: GPGME_PROTOCOL_OpenPGP

GPGME_AUDITLOG_DEFAULT
SINCE: 1.11.2

This flag has the value 0 for compatibility reasons. Obtains additional information from the engine by issuing the GETAUDITLOG command. For GPGME_PROTOCOL_CMS this provides additional information about the X509 certificate chain.

Implemented for: GPGME_PROTOCOL_CMS

GPGME_AUDITLOG_HTML
SINCE: 1.1.1

Same as GPGME_AUDITLOG_DEFAULT but in HTML.

Implemented for: GPGME_PROTOCOL_CMS

-- Function: gpgme_error_t
gpgme_op_getauditlog_start (gpgme_ctx_t CTX,
gpgme_data_t OUTPUT, unsigned int FLAGS)
SINCE: 1.1.1

This is the asynchronous variant of gpgme_op_getauditlog.

File: gpgme.info, Node: Key Management, Next: Crypto Operations, Prev: Context Attributes, Up: Contexts

7.5 Key Management

Some of the cryptographic operations require that recipients or signers are specified. This is always done by specifying the respective keys that should be used for the operation. The following section describes how such keys can be selected and manipulated.

* Menu:

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

File: gpgme.info, Node: Key objects, Next: Listing Keys, Up: Key Management

7.5.1 Key objects

The keys are represented in GPGME by structures which may only be read by the application but never be allocated or changed. They are valid as long as the key object itself is valid.

-- Data type: gpgme_key_t

The gpgme_key_t type is a pointer to a key object. It has the following members:

gpgme_keylist_mode_t keylist_mode
SINCE: 0.9.0

The keylist mode that was active when the key was retrieved.

unsigned int revoked : 1
This is true if the key is revoked.

unsigned int expired : 1
This is true if the key is expired.

unsigned int disabled : 1
This is true if the key is disabled.

unsigned int invalid : 1
This is true if the key is invalid. This might have several reasons, for a example for the S/MIME backend, it will be set

during key listings if the key could not be validated due to
missing certificates or unmatched policies.

unsigned int can_encrypt : 1
This is true if the key (ie one of its subkeys) can be used
for encryption.

unsigned int can_sign : 1
This is true if the key (ie one of its subkeys) can be used to
create data signatures.

unsigned int can_certify : 1
This is true if the key (ie one of its subkeys) can be used to
create key certificates.

unsigned int can_authenticate : 1
SINCE: 0.4.5

This is true
if the key (ie one of its subkeys) can be used
for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the key can be used for qualified signatures
according to local government regulations.

unsigned int secret : 1
This is true if the key is a secret key. Note, that this will
always be true even if the corresponding subkey flag may be
false (offline/stub keys). This is only set if a listing of
secret keys has been requested or if
GPGME_KEYLIST_MODE_WITH_SECRET is active.

unsigned int origin : 5
SINCE: 1.8.0

Reserved for the origin of this key.

gpgme_protocol_t protocol
This is the protocol supported by this key.

char *issuer_serial
If protocol is GPGME_PROTOCOL_CMS, then this is the issuer
serial.

char *issuer_name

If protocol is GPGME_PROTOCOL_CMS, then this is the issuer name.

char *chain_id
If protocol is GPGME_PROTOCOL_CMS, then this is the chain ID, which can be used to built the certificate chain.

gpgme_validity_t owner_trust
If protocol is GPGME_PROTOCOL_OpenPGP, then this is the owner trust.

gpgme_subkey_t subkeys
This is a linked list with the subkeys of the key. The first subkey in the list is the primary key and usually available.

gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first user ID in the list is the main (or primary) user ID.

char *fpr
SINCE: 1.7.0

This field gives the fingerprint of the primary key. Note that this is a copy of the fingerprint of the first subkey. For an incomplete key (for example from a verification result) a subkey may be missing but this field may be set nevertheless.

unsigned long last_update

SINCE: 1.8.0

Reserved for the time of the last update of this key.

-- Data type: gpgme_subkey_t
SINCE: 1.5.0

The gpgme_subkey_t type is a pointer to a subkey structure. Subkeys are one component of a gpgme_key_t object. In fact, subkeys are those parts that contains the real information about the individual cryptographic keys that belong to the same key object. One gpgme_key_t can contain several subkeys. The first subkey in the linked list is also called the primary key.

The subkey structure has the following members:

gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked

list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the subkey is revoked.

unsigned int expired : 1
This is true if the subkey is expired.

unsigned int disabled : 1
This is true if the subkey is disabled.

unsigned int
invalid : 1
This is true if the subkey is invalid.

unsigned int can_encrypt : 1
This is true if the subkey can be used for encryption.

unsigned int can_sign : 1
This is true if the subkey can be used to create data
signatures.

unsigned int can_certify : 1
This is true if the subkey can be used to create key
certificates.

unsigned int can_authenticate : 1
SINCE: 0.4.5

This is true if the subkey can be used for authentication.

unsigned int is_qualified : 1
SINCE: 1.1.0

This is true if the subkey can be used for qualified
signatures according to local government regulations.

unsigned int is_de_vs : 1
SINCE: 1.8.0

This is true if the subkey complies with the rules for
classified information in Germany at the restricted level
(VS-NfD). This are currently RSA keys of at least 2048 bits or
ECDH/ECDSA
keys using a Brainpool curve.

unsigned int secret : 1
This is true if the subkey is a secret key. Note that it will

be false if the key is actually a stub key; i.e. a secret key operation is currently not possible (offline-key). This is only set if a listing of secret keys has been requested or if GPGME_KEYLIST_MODE_WITH_SECRET is active.

gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

unsigned int length
This is the length of the subkey (in bits).

char *keyid
This is the key ID of the subkey in hexadecimal digits.

char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if available.

char *keygrip
SINCE: 1.7.0

The keygrip of the subkey in hex digit form or NULL if not available.

long int timestamp
This is the creation timestamp of the subkey.
This is -1 if
the timestamp is invalid, and 0 if it is not available.

long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey does not expire.

unsigned int is_cardkey : 1
SINCE: 1.2.0

True if the secret key is stored on a smart card.

char *card_number
SINCE: 1.2.0

The serial number of a smart card holding this key or NULL.

char *curve
For ECC algorithms the name of the curve.

-- Data type: gpgme_user_id_t

A user ID is a component of a gpgme_key_t object. One key can have many user IDs. The first one in the list is the main (or primary) user ID.

The user ID structure has the following members.

gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the user ID is revoked.

unsigned int invalid : 1
This is true if the user ID is invalid.

gpgme_validity_t validity
This specifies the validity of the user ID.

char *uid
This is the user ID string.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

char *address;
The mail address (addr-spec from RFC-5322) of the user ID string. This is general the same as the email part of this structure but might be slightly different. If no mail address is available NULL is stored.

gpgme_tofu_info_t tofu
SINCE: 1.7.0

If not NULL information from the TOFU database pertaining to this user id.

gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

unsigned int origin :

5
SINCE: 1.8.0

Reserved for the origin of this user ID.

unsigned long last_update
SINCE: 1.8.0

Reserved for the time of the last update of this user ID.

char *uidhash;
A string used by gpg to identify a user ID. This string can be used at certain prompts of gpgme_op_edit to select a user ID. Users must be prepared to see a NULL value here. The format of the value is not specified and may depend on the GPGME or GnuPG version.

-- Data type: gpgme_tofu_info_t

SINCE: 1.7.0

The gpgme_tofu_info_t type is a pointer to a tofu info structure. Tofu info structures are one component of a gpgme_user_id_t object, and provide information from the TOFU database pertaining to the user ID.

The tofu info structure has the following members:

gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked list, or NULL if
this is the last element.

unsigned int validity : 3
This is the TOFU validity. It can have the following values:

0
The value 0 indicates a conflict.

1
The value 1 indicates a key without history.

2
The value 2 indicates a key with too little history.

3
The value 3 indicates a key with enough history for basic trust.

4
The value 4 indicates a key with a lot of history.

unsigned int policy : 4
This is the TOFU policy, see gpgme_tofu_policy_t.

unsigned short signcount
This is the number of signatures seen for this binding (or USHRT_MAX if there are more than that).

unsigned short encrcount
This is the number of encryptions done with this binding (or USHRT_MAX if there are more than that).

unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with this binding.

unsigned long signlast
Number of seconds since Epoch when the last signature was seen with this binding.

unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with this binding.

unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with this binding.

char *description
A human-readable string summarizing the TOFU data (or NULL).

-- Data type: gpgme_key_sig_t

The gpgme_key_sig_t type is a pointer to a key signature structure. Key signatures are one component of a gpgme_key_t object, and validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled, because it can be expensive to retrieve all signatures of

a key.

The signature notations on a key signature are only available if

the key was retrieved via a listing operation with the GPGME_KEYLIST_MODE_SIG_NOTATIONS mode enabled, because it can be expensive to retrieve all signature notations.

The key signature structure has the following members:

gpgme_key_sig_t next
This is a pointer to the next key signature structure in the linked list, or NULL if this is the last element.

unsigned int revoked : 1
This is true if the key signature is a revocation signature.

unsigned int expired : 1
This is true if the key signature is expired.

unsigned int invalid : 1
This is true if the key signature is invalid.

unsigned int exportable : 1
This is true if the key signature is exportable.

gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm used to create the signature.

char *keyid
This is the key ID of the key (in hexadecimal digits) used to create the signature.

long int timestamp
This is the creation timestamp of the key signature. This is -1 if the timestamp is invalid, and 0 if it is not available.

long int expires
This is the expiration timestamp of the key signature, or 0 if the key signature does not expire.

gpgme_error_t status
This is the status of the signature and has the same meaning as the member of the same name in a gpgme_signature_t object.

unsigned int sig_class
This specifies the signature class of the key signature. The meaning is specific to the crypto engine.

char *uid

This is the main user ID of the key used to create the signature.

char *name
This is the name component of uid, if available.

char *comment
This is the comment component of uid, if available.

char *email
This is the email component of uid, if available.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

File: gpgme.info, Node: Listing Keys, Next: Information About Keys, Prev: Key objects, Up: Key Management

7.5.2 Listing Keys

-- Function: gpgme_error_t gpgme_op_keylist_start (gpgme_ctx_t CTX, const char *PATTERN, int SECRET_ONLY)

The function gpgme_op_keylist_start initiates a key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys in the list.

If PATTERN is NULL, all available keys are returned. Otherwise, PATTERN contains an engine specific expression that is used to limit the list to all keys matching the pattern. Note that the total length of the pattern is restricted to an engine-specific maximum (a couple of hundred characters are usually accepted). The pattern should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are

reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_ext_start (gpgme_ctx_t CTX,
const char *PATTERN[], int SECRET_ONLY, int RESERVED)

The function gpgme_op_keylist_ext_start initiates an extended key listing operation inside the context CTX. It sets everything up so that subsequent invocations of gpgme_op_keylist_next return the

keys in the list.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are used to limit the list to all keys matching at least one of the patterns verbatim. Note that the total length of all patterns is restricted to an engine-specific maximum (the exact limit also depends on the number of patterns and amount of quoting required, but a couple of hundred characters are usually accepted). Patterns should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If SECRET_ONLY is not 0, the list is restricted to secret keys only.

The value of RESERVED must be 0.

The context will be busy until either all keys are received (and gpgme_op_keylist_next returns GPG_ERR_EOF), or gpgme_op_keylist_end is called to finish the operation.

The function
returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_from_data_start
(gpgme_ctx_t CTX, gpgme_data_t DATA, int RESERVED)

SINCE: 1.8.0

The function gpgme_op_keylist_from_data_start initiates a key listing operation inside the context CTX. In contrast to the other key listing operation the keys are read from the supplied DATA and not from the local key database. The keys are also not imported into the local key database. The function sets everything up so that subsequent invocations of gpgme_op_keylist_next return the keys from DATA.

The value of RESERVED must be 0.

This function requires at least GnuPG version 2.1.14 and currently works only with OpenPGP keys.

The context will be busy until either all keys are received (and gpgme_op_keylist_next
returns GPG_ERR_EOF), or
gpgme_op_keylist_end is called to finish the operation. While the context is busy DATA may not be released.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_keylist_next (gpgme_ctx_t CTX, gpgme_key_t *R_KEY)

The function gpgme_op_keylist_next returns the next key in the list created by a previous gpgme_op_keylist_start operation in the context CTX. The key will have one reference for the user. *Note Manipulating Keys::.

This is the only way to get at gpgme_key_t objects in GPGME.

If the last key in the list has already been returned, gpgme_op_keylist_next returns GPG_ERR_EOF.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer, and GPG_ERR_ENOMEM if there is not enough memory
for the operation.

-- Function: gpgme_error_t gpgme_op_keylist_end (gpgme_ctx_t CTX)

The function gpgme_op_keylist_end ends a pending key list operation in the context CTX.

After the operation completed successfully, the result of the key listing operation can be retrieved with gpgme_op_keylist_result.

The function returns the error code GPG_ERR_INV_VALUE if CTX is not a valid pointer, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

The following example illustrates how all keys containing a certain string (g10code) can be listed with their key ID and the name and

email address of the main user ID:

```
   gpgme_ctx_t ctx;
   gpgme_key_t key;
   gpgme_error_t err = gpgme_new (&ctx);

   if (!err)
     {
       err = gpgme_op_keylist_start (ctx, "g10code", 0);
       while (!err)
         {
           err = gpgme_op_keylist_next (ctx, &key);
           if (err)

 break;
           printf ("%s:", key->subkeys->keyid);
           if (key->uids && key->uids->name)
             printf (" %s", key->uids->name);
           if (key->uids && key->uids->email)
             printf (" <%s>", key->uids->email);
           putchar ('\n');
           gpgme_key_release (key);
         }
       gpgme_release (ctx);
     }
   if (gpg_err_code (err) != GPG_ERR_EOF)
     {
       fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
       exit (1);
     }
```

-- Data type: gpgme_keylist_result_t

This is a pointer to a structure used to store the result of a gpgme_op_keylist_* operation. After successfully ending a key listing operation, you can retrieve the pointer to the result with gpgme_op_keylist_result. The structure contains the following member:

unsigned int truncated : 1

This is true if the crypto backend had to truncate the result, and less than the desired keys could be listed.

-- Function: gpgme_keylist_result_t gpgme_op_keylist_result (gpgme_ctx_t CTX)

The function gpgme_op_keylist_result returns a gpgme_keylist_result_t pointer to a structure holding the result of a gpgme_op_keylist_* operation. The pointer is only valid if

the last operation on the context was a key listing operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

In a simple program, for which a blocking operation is acceptable, the following function can be used to retrieve a single key.

-- Function: gpgme_error_t gpgme_get_key (gpgme_ctx_t CTX, const char *FPR, gpgme_key_t *R_KEY, int SECRET)
The function gpgme_get_key gets the key with the fingerprint (or key ID) FPR from the crypto backend and return it in R_KEY. If SECRET is true, get the secret key. The currently active keylist mode is used to retrieve
the key. The key will have one reference
for the user.

If the key is not found in the keyring, gpgme_get_key returns the error code GPG_ERR_EOF and *R_KEY will be set to NULL.

The function returns the error code GPG_ERR_INV_VALUE if CTX or R_KEY is not a valid pointer or FPR is not a fingerprint or key ID, GPG_ERR_AMBIGUOUS_NAME if the key ID was not a unique specifier for a key, and GPG_ERR_ENOMEM if at some time during the operation there was not enough memory available.

File: gpgme.info, Node: Information About Keys, Next: Manipulating Keys, Prev: Listing Keys, Up: Key Management

7.5.3 Information About Keys

Please see the beginning of this section for more information about gpgme_key_t objects.

-- Data type: gpgme_validity_t
The gpgme_validity_t type is used to specify the validity of a user ID in a key. The following validities are defined:

GPGME_VALIDITY_UNKNOWN
The user
ID is of unknown validity. The string representation
of this validity is ?.

GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this validity is q.

GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this validity is n.

GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this validity is m.

GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this validity is f.

GPGME_VALIDITY_ULTIMATE
The user ID is ultimately valid. The string representation of this validity is u.

File: gpgme.info, Node: Manipulating Keys, Next: Generating Keys, Prev: Information About Keys, Up: Key Management

7.5.4 Manipulating Keys

-- Function: void gpgme_key_ref (gpgme_key_t KEY)
The function gpgme_key_ref acquires an additional reference for the key KEY.

-- Function: void gpgme_key_unref (gpgme_key_t KEY)
The function gpgme_key_unref releases a reference for the key KEY. If this was the last reference, the key will be destroyed and all resources associated to it will be released.

-- Function: gpgme_error_t gpgme_op_setexpire (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS, unsigned int RESERVED);

SINCE: 1.14.1

The function gpgme_op_setexpire sets the expiration time of the key KEY or of the specified subkeys. This function requires at least version 2.1.22 of GnuPG.

KEY specifies the key to operate on.

EXPIRES specifies the expiration time in seconds from now. To be similar to other usages where expiration times are provided in unsigned long this is similar to the key creation date and so it is

in seconds from NOW.

The common case is to use 0 to not set an
expiration time. Note
that this parameter takes an unsigned long value and not a time_t
to avoid problems on systems which use a signed 32 bit time_t.
Note further that the OpenPGP protocol uses 32 bit values for
timestamps and thus can only encode dates up to the year 2106.

SUBFPRS selects the subkey(s) for which the expiration time should
be set. If SUBFPRS is set to NULL, then the expiration time of
the primary key is set. If SUBFPRS is an asterisk (*), then the
expiration times of all non-revoked and not yet expired subkeys are
set. To select more than one subkey put all subkey fingerprints
into one string separated by linefeeds characters (\n).

RESERVED is reserved for later use and must be 0.

-- Function: gpgme_error_t gpgme_op_setexpire_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, unsigned long EXPIRES, const char *SUBFPRS,
unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start
initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_setexpire_start initiates a
gpgme_op_setexpire operation; see there for details. It must be
completed by calling gpgme_wait on the context. *Note Waiting
For Completion::.

File: gpgme.info, Node: Generating Keys, Next: Signing Keys, Prev: Manipulating Keys, Up: Key Management

7.5.5 Generating Keys

GPGME provides a set of functions to create public key pairs. Most of
these functions require the use of GnuPG 2.1 and later; for older GnuPG

versions the gpgme_op_genkey function can be used. Existing code
which wants to update to the new functions or new code which shall
supports older
GnuPG versions may try the new functions first and
provide a fallback to the old function if the error code
GPG_ERR_NOT_SUPPORTED is received.

-- Function: gpgme_error_t gpgme_op_createkey (gpgme_ctx_t CTX,
const char *USERID, const char *ALGO, unsigned long RESERVED,
unsigned long EXPIRES, gpgme_key_t EXTRAKEY,
unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey generates a new key for the
procotol active in the context CTX. As of now this function does
only work for OpenPGP and requires at least version 2.1.13 of
GnuPG.

USERID is commonly the mail address associated with the key. GPGME
does not require a specific syntax but if more than a mail address
is given, RFC-822 style format is suggested. The value is expected
to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses).
This is a required parameter.

ALGO specifies the algorithm for the new key (actually a keypair
of
public and private key). For a list of supported algorithms, see
the GnuPG manual. If ALGO is NULL or the string "default", the
key is generated using the default algorithm of the engine. If the
string "future-default" is used the engine may use an algorithm
which is planned to be the default in a future release of the
engine; however existing implementation of the protocol may not be
able to already handle such future algorithms. For the OpenPGP
protocol, the specification of a default algorithm, without
requesting a non-default usage via FLAGS, triggers the creation of
a primary key plus a secondary key (subkey).

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you supply 0,
a reasonable expiration time is chosen. Use the flag
GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a time_t
to
avoid problems on systems which use a signed 32 bit time_t.
Note further that the OpenPGP protocol uses 32 bit values for
timestamps and thus can only encode dates up to the year 2106.

EXTRAKEY is currently not used and must be set to NULL. A future version of GPGME may use this parameter to create X.509 keys.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_CREATE_SIGN
GPGME_CREATE_ENCR
GPGME_CREATE_CERT
GPGME_CREATE_AUTH
SINCE: 1.7.0

Do not create the key with the default capabilities (key usage) of the requested algorithm but use those explicitly given by these flags: signing, encryption, certification, or authentication. The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been selected only one key is created in the case of the OpenPGP protocol.

GPGME_CREATE_NOPASSWD
SINCE: 1.7.0

Request generation of the key without password protection.

GPGME_CREATE_SELFSIGNED
SINCE: 1.7.0

For an X.509 key do not create a CSR but a self-signed certificate. This has not yet been implemented.

GPGME_CREATE_NOSTORE
SINCE: 1.7.0

Do not store the created key in the local key database. This has not yet been implemented.

GPGME_CREATE_WANTPUB
GPGME_CREATE_WANTSEC
SINCE: 1.7.0

Return the public or secret key as part of the result structure. This has not yet been implemented.

GPGME_CREATE_FORCE
SINCE: 1.7.0

The engine does not allow the creation of a key with a user ID already existing in the local key database. This flag can be used to override this check.

GPGME_CREATE_NOEXPIRE
SINCE: 1.9.0

Request generation of keys that do not expire.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createkey_start (gpgme_ctx_t CTX, const char *USERID, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, gpgme_key_t EXTRAKEY, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createkey_start initiates a gpgme_op_createkey operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_createsubkey (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createsubkey creates and adds a new subkey to the primary OpenPGP key given by KEY. The only allowed protocol in CTX is GPGME_PROTOCOL_OPENPGP. Subkeys (aka secondary keys) are a concept in the OpenPGP protocol to bind several keys to a primary key. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

ALGO specifies the algorithm for the new subkey. For a list of supported algorithms, see the GnuPG manual. If ALGO is NULL or

the string "default", the subkey is generated using the default algorithm for an encryption subkey of the engine. If the string "future-default" is used the engine may use an encryption algorithm which is planned to be the default in a future release of the engine; however existing implementation of the protocol may not be able to already handle such future algorithms.

RESERVED must be set to zero.

EXPIRES specifies the expiration time in seconds. If you supply 0, a reasonable expiration time is chosen. Use the flag GPGME_CREATE_NOEXPIRE to create keys that do not expire. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

FLAGS takes the same values as described above for gpgme_op_createkey.

After the operation completed successfully, information about the created key can be retrieved with gpgme_op_genkey_result.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_createsubkey_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *ALGO, unsigned long RESERVED, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_createsubkey_start initiates a gpgme_op_createsubkey operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_adduid (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid adds a new user ID to the OpenPGP key given by KEY. Adding additional user IDs after key creation is

a feature of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to add to the key. A user ID is commonly the mail address to be associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested.
The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

FLAGS are currently not used and must be set to zero.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_adduid_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_adduid_start initiates a gpgme_op_adduid operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_revuid (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid revokes a user ID from the OpenPGP key given by KEY. Revoking user IDs after key creation is a feature
of the OpenPGP protocol and thus the protocol for the context CTX must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

KEY specifies the key to operate on.

USERID is the user ID to be revoked from the key. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. This is a required parameter.

FLAGS are currently not used and must be set to zero.

Note that the engine wont allow to revoke the last valid user ID.
To change a user ID is better to first add the new user ID, then
revoke the old one, and finally publish the key.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if
the engine does not support the command, or a bunch of other error
codes.

-- Function: gpgme_error_t gpgme_op_revuid_start (gpgme_ctx_t CTX,
gpgme_key_t KEY, const
char *USERID, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_revuid_start initiates a gpgme_op_revuid
operation; see there for details. It must be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_set_ui_flag (gpgme_ctx_t CTX,
gpgme_key_t KEY, const char *USERID, cons char * NAME,
cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag is used to set flags on a user
ID from the OpenPGP key given by KEY. Setting flags on user IDs
after key creation is a feature of the OpenPGP protocol and thus
the protocol for the context CTX must be set to OpenPGP.

KEY specifies the key to operate on. This parameters is required.

USERID is the user ID of the key to be manipulated. This user ID
must be given verbatim because the engine does an exact and case
sensitive match. Thus the uid field from the user ID object

(gpgme_user_id_t) is to be used. This is a required parameter.

NAME names the flag which is to be changed. The only currently
supported flag is:

primary
This sets the primary key flag on the given user ID. All other
primary key flag on other user IDs are removed. VALUE must be
given as NULL. For technical reasons this functions bumps the
creation timestamp of all affected self-signatures up by one
second. At least GnuPG version 2.1.20 is required.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_set_uid_flag_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, cons char * NAME, cons char * VALUE);

SINCE: 1.8.0

The function gpgme_op_set_uid_flag_start initiates a gpgme_op_set_uid_flag operation; see there for details. It must

be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_genkey (gpgme_ctx_t CTX, const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)

The function gpgme_op_genkey generates a new key pair in the context CTX. The meaning of PUBLIC and SECRET depends on the crypto backend.

GPG does not support PUBLIC and SECRET, they should be NULL. GnuPG will generate a key pair and add it to the standard key ring. The fingerprint of the generated key is available with gpgme_op_genkey_result.

GpgSM requires PUBLIC to be a writable data object. GpgSM will generate a secret key (which will be stored by gpg-agent, and return a certificate request in PUBLIC, which then needs to be signed by the certification authority and imported before it can be used. GpgSM does not make the fingerprint available.

The argument PARMS specifies parameters for the key in an string

that looks something like XML. The details about the format of PARMS are specific to the crypto engine used by CTX. The first line of the parameters must be <GnupgKeyParams format="internal"> and the last line must be </GnupgKeyParams>. Every line in between the first and last lines is treated as a Header: Value pair. In particular, no XML escaping is necessary if you need to include the characters <, >, or &.

Here is an example for GnuPG as the crypto engine (all parameters of OpenPGP key generation are documented in the GPG manual):

```
      <GnupgKeyParms format="internal">
      Key-Type: default
      Subkey-Type: default
      Name-Real: Joe Tester
      Name-Comment: with stupid passphrase
      Name-Email: joe@foo.bar
      Expire-Date: 0
      Passphrase: abc
      </GnupgKeyParms>
```

Here is an example for GpgSM as the crypto engine (all parameters of OpenPGP key generation
are documented in the GPGSM manual):

```
      <GnupgKeyParms format="internal">
      Key-Type: RSA
      Key-Length: 1024
      Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
      Name-Email: joe@foo.bar
      </GnupgKeyParms>
```

Strings should be given in UTF-8 encoding. The only format supported for now is internal. The content of the GnupgKeyParms container is passed verbatim to the crypto backend. Control statements are not allowed.

After the operation completed successfully, the result can be retrieved with gpgme_op_genkey_result.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a well-formed string (e.g. does not have the expected tag-like headers and footers), GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not valid, and GPG_ERR_GENERAL if no key was created by the backend.

```
-- Function: gpgme_error_t
gpgme_op_genkey_start (gpgme_ctx_t CTX,
      const char *PARMS, gpgme_data_t PUBLIC, gpgme_data_t SECRET)
```

The function gpgme_op_genkey_start initiates a gpgme_op_genkey operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if PARMS is not a valid XML string, and GPG_ERR_NOT_SUPPORTED if PUBLIC or SECRET is not NULL.

-- Data type: gpgme_genkey_result_t

This is a pointer to a structure used to store the result of a gpgme_op_genkey operation. After successfully generating a key, you can retrieve the pointer to the result with gpgme_op_genkey_result. The structure contains the following members:

unsigned int primary : 1
: This flag is set to 1 if a primary key was created and to 0 if not.

unsigned int sub : 1
: This flag is set to 1 if a subkey was created and to 0 if not.

unsigned int uid : 1
: This flag is set to 1 if a user ID was created and to 0 if not.

char *fpr
: This is the fingerprint of the key that was created. If both a primary and a subkey were generated, the fingerprint of the primary key will be returned. If the crypto engine does not provide the fingerprint, fpr will be a null pointer.

gpgme_data_t pubkey
: SINCE: 1.7.0

This will eventually be used to return the public key. It is currently not used.

gpgme_data_t seckey
: SINCE: 1.7.0

This will eventually be used to return the secret key. It is currently not used.

-- Function: gpgme_genkey_result_t gpgme_op_genkey_result (gpgme_ctx_t CTX)

The function gpgme_op_genkey_result returns a gpgme_genkey_result_t pointer to a structure holding the result of a gpgme_op_genkey operation. The pointer is only valid if the last operation on the context was a gpgme_op_genkey or gpgme_op_genkey_start operation, and if this operation finished

successfully. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Signing Keys, Next: Exporting Keys, Prev: Generating Keys, Up: Key Management

7.5.6 Signing Keys

Key signatures are a unique concept of the OpenPGP protocol. They can be used to certify the validity of a key and are used to create the Web-of-Trust (WoT). Instead of using the gpgme_op_interact function along with a finite state machine, GPGME provides a convenient function to create key signatures when using modern GnuPG versions.

-- Function: gpgme_error_t gpgme_op_keysign (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign adds a new key signature to the public key KEY. This function requires at least version 2.1.12 of GnuPG.

CTX is the usual context which describes the protocol to use (which must be OpenPGP) and has also the list of signer keys to be used for the signature. The common case is to use the default key for signing other keys. If another key or more than one key shall be used for a key signature, gpgme_signers_add can be used. *Note Selecting Signers::.

KEY specifies the key to operate on.

USERID selects the user ID or user IDs to be signed. If USERID is set to NULL all valid user IDs are signed. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. To select more than one user ID put them all into one string separated by linefeeds characters (\n) and set the flag GPGME_KEYSIGN_LFSEP.

EXPIRES specifies the expiration time of the new signature in seconds. The common case is to use 0 to not set an expiration date. However, if the configuration of the engine defines a default expiration for key signatures, that is still used unless

the flag GPGME_KEYSIGN_NOEXPIRE is used. Note that this parameter takes an unsigned long value and not a time_t to avoid problems on systems which use a signed 32 bit time_t. Note further that the OpenPGP protocol uses 32 bit values for timestamps and thus can only encode dates up to the year 2106.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_KEYSIGN_LOCAL
SINCE: 1.7.0

Instead of creating an exportable key signature, create a key signature which is is marked as non-exportable.

GPGME_KEYSIGN_LFSEP
SINCE: 1.7.0

Although linefeeds are uncommon in user IDs this flag is required to explicitly declare that
USERID may contain several
linefeed separated user IDs.

GPGME_KEYSIGN_NOEXPIRE
Force the creation of a key signature without an expiration date. This overrides EXPIRE and any local configuration of the engine.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_keysign_start (gpgme_ctx_t CTX, gpgme_key_t KEY, const char *USERID, unsigned long EXPIRES, unsigned int FLAGS);

SINCE: 1.7.0

The function gpgme_op_keysign_start initiates a gpgme_op_keysign operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

-- Function: gpgme_error_t gpgme_op_revsig (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig revokes key signatures of the public key KEY made with the key SIGNING_KEY. This function requires at least version 2.2.24 of GnuPG.

KEY specifies the key to operate on.

SIGNING_KEY specifies the key whose signatures shall be revoked.

USERID selects the user ID or user IDs whose signatures shall be revoked. If USERID is set to NULL the signatures on all user IDs are revoked. The user ID must be given verbatim because the engine does an exact and case sensitive match. Thus the uid field from the user ID object (gpgme_user_id_t) is to be used. To select more than one user ID put them all into one string separated by linefeeds characters (\n) and set the flag GPGME_REVSIG_LFSEP.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_REVSIG_LFSEP
SINCE: 1.14.1

Although linefeeds are uncommon in user IDs this flag is required to explicitly declare
that USERID may contain several
linefeed separated user IDs.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_revsig_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_key_t SIGNING_KEY, const char *USERID, unsigned int FLAGS);

SINCE: 1.14.1

The function gpgme_op_revsig_start initiates a gpgme_op_revsig operation; see there for details. It must be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

File: gpgme.info, Node: Exporting Keys, Next: Importing Keys, Prev: Signing Keys, Up: Key Management

7.5.7 Exporting Keys

Exporting keys means the same as running gpg with the command --export. However, a mode flag can be used to change the way the

export works. The available mode flags are described below, they may be or-ed together.

GPGME_EXPORT_MODE_EXTERN

If this bit is set, the output is send directly to the default keyserver. This is currently only allowed for OpenPGP keys. It is good practise to not send more than a few dozens key to a keyserver at one time. Using this flag requires that the KEYDATA argument of the export function is set to NULL.

GPGME_EXPORT_MODE_MINIMAL

SINCE: 1.3.1

If this bit is set, the smallest possible key is exported. For OpenPGP keys it removes all signatures except for the latest self-signatures. For X.509 keys it has no effect.

GPGME_EXPORT_MODE_SSH

SINCE: 1.4.0

If this bit is set, the latest authentication key of the requested OpenPGP key is exported in the OpenSSH public key format. This accepts just a single key; to force the export of a specific subkey a fingerprint pattern with an appended exclamation mark may be used.

GPGME_EXPORT_MODE_SECRET

SINCE: 1.6.0

Instead of exporting the public key, the secret key is exported. This may not be combined with GPGME_EXPORT_MODE_EXTERN. For X.509 the export format is PKCS#8.

GPGME_EXPORT_MODE_RAW

SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509 key the export format will be changed to PKCS#1. This flag may not be used with OpenPGP.

GPGME_EXPORT_MODE_PKCS12

SINCE: 1.6.0

If this flag is used with GPGME_EXPORT_MODE_SECRET for an X.509 key the export format will be changed to PKCS#12 which also includes the certificate. This flag may not be used with OpenPGP.

GPGME_EXPORT_MODE_NOUID
SINCE: 1.12.0 - experimental Do not export user ids. Works only with certain gpg version.

-- Function: gpgme_error_t gpgme_op_export (gpgme_ctx_t CTX, const char *PATTERN, gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

If PATTERN is NULL, all available keys are returned. Otherwise, PATTERN contains an engine specific expression that is used to limit the list to all keys matching the pattern.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_start (gpgme_ctx_t CTX, const char *PATTERN, gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export_start initiates a gpgme_op_export operation. It can be completed by calling gpgme_wait on the context.
*Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_ext (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)
The function gpgme_op_export extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

If PATTERN or *PATTERN is NULL, all available keys are returned. Otherwise, PATTERN is a NULL terminated array of strings that are

used to limit the list to all keys matching at least one of the patterns verbatim.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_ext_start (gpgme_ctx_t CTX, const char *PATTERN[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

The function gpgme_op_export_ext_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer.

-- Function: gpgme_error_t gpgme_op_export_keys (gpgme_ctx_t CTX, gpgme_key_t keys[], gpgme_export_mode_t MODE, gpgme_data_t KEYDATA)

SINCE: 1.2.0

The function gpgme_op_export_keys extracts public keys and returns them in the data buffer KEYDATA. The output format of the key data returned is determined by the ASCII armor attribute set for the context CTX, or, if that is not set, by the encoding specified for KEYDATA.

The keys to export are taken form the NULL terminated array KEYS. Only keys of the currently selected protocol of CTX which do have a fingerprint set are considered for export. Other keys specified by the KEYS are ignored. In particular OpenPGP keys retrieved via an external key listing are not included.

MODE is usually 0; other values are described above.

The function returns the error code GPG_ERR_NO_ERROR if the operation completed successfully, GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_export_keys_start
(gpgme_ctx_t CTX,
gpgme_key_t KEYS[], gpgme_export_mode_t MODE,
gpgme_data_t KEYDATA)
SINCE: 1.2.0

The function gpgme_op_export_keys_start initiates a gpgme_op_export_ext operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if KEYDATA is not a valid empty data buffer, GPG_ERR_NO_DATA if no useful keys are in KEYS and passes through any errors that are reported by the crypto engine support routines.

File: gpgme.info, Node: Importing Keys, Next: Deleting Keys, Prev: Exporting Keys, Up: Key Management

7.5.8 Importing Keys

Importing keys means the same as running gpg with the command --import.

-- Function: gpgme_error_t gpgme_op_import (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import
adds the keys in the data buffer
KEYDATA to the key ring of the crypto engine used by CTX. The format of KEYDATA can be ASCII armored, for example, but the details are specific to the crypto engine.

After the operation completed successfully, the result can be retrieved with gpgme_op_import_result.

The function returns the error code GPG_ERR_NO_ERROR if the import was completed successfully, GPG_ERR_INV_VALUE if KEYDATA if CTX or KEYDATA is not a valid pointer, and GPG_ERR_NO_DATA if KEYDATA is an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_start (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA)
The function gpgme_op_import_start initiates a gpgme_op_import operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the

import could be started successfully, GPG_ERR_INV_VALUE if CTX or
KEYDATA
is not a valid pointer, and GPG_ERR_NO_DATA if KEYDATA is
an empty data buffer.

-- Function: gpgme_error_t gpgme_op_import_keys (gpgme_ctx_t CTX,
gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys adds the keys described by the
NULL terminated array KEYS to the key ring of the crypto engine
used by CTX. It is used to actually import and make keys permanent
which have been retrieved from an external source (i.e. using
GPGME_KEYLIST_MODE_EXTERN) earlier. The external keylisting must
have been made with the same context configuration (in particular
the same home directory). (1) Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of CTX are considered
for import. Other keys specified by the KEYS are ignored. As of
now all considered keys must have been retrieved using the same
method, i.e. the used key
listing mode must be identical.

After the operation completed successfully, the result can be
retrieved with gpgme_op_import_result.

To move keys from one home directory to another, export and import
the keydata using gpgme_op_export and gpgme_op_import.

The function returns the error code GPG_ERR_NO_ERROR if the
import was completed successfully, GPG_ERR_INV_VALUE if CTX is
not a valid pointer, GPG_ERR_CONFLICT if the key listing mode
does not match, and GPG_ERR_NO_DATA if no keys are considered for
export.

-- Function: gpgme_error_t gpgme_op_import_keys_start (gpgme_ctx_t CTX,
gpgme_key_t *KEYS)
SINCE: 1.2.0

The function gpgme_op_import_keys_start initiates a
gpgme_op_import_keys operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
import was completed successfully, GPG_ERR_INV_VALUE
if KEYDATA
if CTX or KEYDATA is not a valid pointer, GPG_ERR_CONFLICT if the

key listing mode does not match, and GPG_ERR_NO_DATA if no keys are considered for export.

-- Data type: gpgme_import_status_t
This is a pointer to a structure used to store a part of the result of a gpgme_op_import operation. For each considered key one status is added that contains information about the result of the import. The structure contains the following members:

gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or NULL if this is the last element.

char *fpr
This is the fingerprint of the key that was considered.

gpgme_error_t result
If the import was not successful, this is the error value that caused the import to fail. Otherwise the error code is GPG_ERR_NO_ERROR.

unsigned int status
This is a bit-wise OR of the following flags that give more information about what part of the key was imported. If the key was already known, this might be 0.

GPGME_IMPORT_NEW
The key was new.

GPGME_IMPORT_UID
The key contained new user IDs.

GPGME_IMPORT_SIG
The key contained new signatures.

GPGME_IMPORT_SUBKEY
The key contained new sub keys.

GPGME_IMPORT_SECRET
The key contained a secret key.

-- Data type: gpgme_import_result_t
This is a pointer to a structure used to store the result of a gpgme_op_import operation. After a successful import operation, you can retrieve the pointer to the result with gpgme_op_import_result. The structure contains the following members:

int considered
The total number of considered keys.

int no_user_id
The number of keys without user ID.

int imported
The total number
of imported keys.

int imported_rsa
The number of imported RSA keys.

int unchanged
The number of unchanged keys.

int new_user_ids
The number of new user IDs.

int new_sub_keys
The number of new sub keys.

int new_signatures
The number of new signatures.

int new_revocations
The number of new revocations.

int secret_read
The total number of secret keys read.

int secret_imported
The number of imported secret keys.

int secret_unchanged
The number of unchanged secret keys.

int not_imported
The number of keys not imported.

gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more
information about the keys for which an import was attempted.

int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore
support v3 keys (created with PGP

2.x) and ignores them on
import. This counter provides the number of such skipped v3
keys.

-- Function: gpgme_import_result_t gpgme_op_import_result
(gpgme_ctx_t CTX)
The function gpgme_op_import_result returns a
gpgme_import_result_t pointer to a structure holding the result
of a gpgme_op_import operation. The pointer is only valid if the
last operation on the context was a gpgme_op_import or
gpgme_op_import_start operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.

---------- Footnotes ----------

(1) Thus it is a replacement for the usual workaround of exporting
and then importing a key to make an X.509 key permanent.

File: gpgme.info, Node: Deleting Keys, Next: Changing Passphrases, Prev: Importing Keys, Up: Key Management

7.5.9 Deleting Keys

-- Function: gpgme_error_t gpgme_op_delete_ext
(gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext deletes the key KEY from the key
ring of the crypto engine used by CTX.

FLAGS can be set to the bit-wise OR of the following flags:

GPGME_DELETE_ALLOW_SECRET
SINCE: 1.9.1

If not set, only public keys are deleted. If set, secret keys
are deleted as well, if that is supported.

GPGME_DELETE_FORCE
SINCE: 1.9.1

If set, the user is not asked to confirm the deletion.

The function returns the error code GPG_ERR_NO_ERROR if the key

was deleted successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, GPG_ERR_NO_PUBKEY if KEY could not be found in the keyring, GPG_ERR_AMBIGUOUS_NAME if the key was not specified unambiguously, and GPG_ERR_CONFLICT if the secret key for KEY is available, but ALLOW_SECRET is zero.

-- Function: gpgme_error_t gpgme_op_delete_ext_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)
SINCE: 1.9.1

The function gpgme_op_delete_ext_start initiates a gpgme_op_delete operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

The following functions allow only to use one particular flag.

-- Function: gpgme_error_t gpgme_op_delete (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext, but only the flag GPGME_DELETE_ALLOW_SECRET can be provided.

-- Function: gpgme_error_t gpgme_op_delete_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, int ALLOW_SECRET)
Similar to gpgme_op_delete_ext_start, but only the flag GPGME_DELETE_ALLOW_SECRET can be provided.

File: gpgme.info, Node:
Changing Passphrases, Next: Changing TOFU Data, Prev: Deleting Keys, Up: Key Management

7.5.10 Changing Passphrases

-- Function: gpgme_error_t gpgme_op_passwd (gpgme_ctx_t CTX,
const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd changes the passphrase of the private key associated with KEY. The only allowed value for FLAGS is 0. The backend engine will usually popup a window to ask for the old and the new passphrase. Thus this function is not useful in a server application (where passphrases are not required

anyway).

Note that old gpg engines (before version 2.0.15) do not support this command and will silently ignore it.

-- Function: gpgme_error_t gpgme_op_passwd_start (gpgme_ctx_t CTX, const gpgme_key_t KEY, unsigned int FLAGS)

SINCE: 1.3.0

The function gpgme_op_passwd_start initiates a gpgme_op_passwd operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and an error code if one of the arguments is not valid or the oepration could not be started.

File: gpgme.info, Node: Changing TOFU Data, Next: Advanced Key Editing, Prev: Changing Passphrases, Up: Key Management

7.5.11 Changing TOFU Data

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation model. For resolving conflicts it is necessary to declare the policy for a key. See the GnuPG manual for details on the TOFU implementation.

-- Data type: enum gpgme_tofu_policy_t
SINCE: 1.7.0

The gpgme_tofu_policy_t type specifies the set of possible policy values that are supported by GPGME:

GPGME_TOFU_POLICY_AUTO
Set the policy to auto.
GPGME_TOFU_POLICY_GOOD
Set the policy to good.
GPGME_TOFU_POLICY_BAD
Set the policy to bad.
GPGME_TOFU_POLICY_ASK
Set the policy to ask.
GPGME_TOFU_POLICY_UNKNOWN
Set the policy to unknown.

To change the policy for a key the following functions can be used:

-- Function: gpgme_error_t gpgme_op_tofu_policy (gpgme_ctx_t CTX,
const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy changes the TOFU policy of KEY. The valid values for POLICY are listed above. As of now this function does only work for OpenPGP and requires at least version 2.1.10 of GnuPG.

The function returns zero on success, GPG_ERR_NOT_SUPPORTED if the engine does not support the command, or a bunch of other error codes.

-- Function: gpgme_error_t gpgme_op_tofu_policy_start (gpgme_ctx_t CTX,
const gpgme_key_t KEY, gpgme_tofu_policy_t POLICY)

SINCE: 1.7.0

The function gpgme_op_tofu_policy_start initiates a gpgme_op_tofu_policy operation. It can be
completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully, and an error code if one of the arguments is not valid or the oepration could not be started.

File: gpgme.info, Node: Advanced Key Editing, Prev: Changing TOFU Data, Up: Key Management

7.5.12 Advanced Key Editing

-- Data type: gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE,
const char *STATUS, const char *ARGS, int FD)

SINCE: 1.7.0

The gpgme_interact_cb_t type is the type of functions which GPGME calls if it a key interact operation is on-going. The status keyword STATUS and the argument line ARGS are passed through by GPGME from the crypto engine. An empty string represents EOF. The file descriptor FD is -1 for normal status messages. If STATUS indicates a command rather than a status message, the response to the command should

be written to FD. The HANDLE is provided by the
user at start of operation.

The function should return GPG_ERR_FALSE if it did not handle the status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_interact (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact processes the key KEY interactively, using the interact callback function FNC with the handle HANDLE. The callback is invoked for every status and command request from the crypto engine. The output of the crypto engine is written to the data object OUT.

Note that the protocol between the callback function and the crypto engine is specific to the crypto engine and no further support in implementing this protocol correctly is provided by GPGME.

FLAGS modifies the behaviour of the function; the only defined bit
value is:

GPGME_INTERACT_CARD
SINCE: 1.7.0

This is used for smartcard based keys and uses gpgs --card-edit command.

The function returns 0 if the edit operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, and any error returned by the crypto engine or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_interact_start (gpgme_ctx_t CTX, gpgme_key_t KEY, unsigned int FLAGS, gpgme_interact_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 1.7.0

The function gpgme_op_interact_start initiates a gpgme_op_interact operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns 0 if the operation was started successfully,

and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

File: gpgme.info, Node: Crypto Operations, Next: Miscellaneous, Prev: Key Management, Up: Contexts

7.6 Crypto Operations

Sometimes, the result of a crypto operation returns a list of invalid keys encountered in processing the request. The following structure is used to hold information about such a key.

-- Data type: gpgme_invalid_key_t
This is a pointer to a structure used to store a part of the result of a crypto operation which takes user IDs as one input parameter. The structure contains the following members:

gpgme_invalid_key_t next
This is a pointer to the next invalid key structure in the linked list, or NULL if this is the last element.

char *fpr
The fingerprint or key ID of the invalid key encountered.

gpgme_error_t reason
An error code describing the reason why the key was found invalid.

* Menu:

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

File: gpgme.info, Node: Decrypt, Next: Verify, Up: Crypto Operations

7.6.1 Decrypt

-- Function: gpgme_error_t gpgme_op_decrypt (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt decrypts the ciphertext in the data object CIPHER and stores it into the data object PLAIN.

The function returns the error code GPG_ERR_NO_ERROR if the ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt, GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, and passes through some errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_decrypt_start (gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)

The function gpgme_op_decrypt_start initiates a gpgme_op_decrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CIPHER or PLAIN is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_decrypt_ext (gpgme_ctx_t CTX, gpgme_decrypt_flags_t FLAGS, gpgme_data_t CIPHER, gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext is the same as gpgme_op_decrypt but has an additional argument FLAGS. If FLAGS is 0 both function behave identically.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_DECRYPT_VERIFY
SINCE: 1.8.0

The GPGME_DECRYPT_VERIFY symbol specifies that this function shall exactly act as gpgme_op_decrypt_verify.

GPGME_DECRYPT_UNWRAP
SINCE: 1.8.0

The GPGME_DECRYPT_UNWRAP symbol specifies that the output shall be an OpenPGP message with only the encryption layer removed. This requires GnuPG 2.1.12 and works only for OpenPGP. This is the counterpart to GPGME_ENCRYPT_WRAP.

The function returns the error codes as described for
gpgme_op_decrypt.

-- Function: gpgme_error_t gpgme_op_decrypt_ext_start (
gpgme_ctx_t CTX, gpgme_decrypt_flags_t FLAGS,
gpgme_data_t CIPHER, gpgme_data_t PLAIN)

SINCE: 1.8.0

The function gpgme_op_decrypt_ext_start initiates a
gpgme_op_decrypt_ext operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully,
and GPG_ERR_INV_VALUE if
CIPHER or PLAIN is not a valid pointer.

-- Data type: gpgme_recipient_t
SINCE: 1.1.0

This is a pointer to a structure used to store information about
the recipient of an encrypted text which is decrypted in a
gpgme_op_decrypt operation. This information (except for the
status field) is even available before the operation finished
successfully, for example in a passphrase callback. The structure
contains the following members:

gpgme_recipient_t next
This is a pointer to the next recipient structure in the
linked list, or NULL if this is the last element.

gpgme_pubkey_algo_t
The public key algorithm used in the encryption.

char *keyid
This is the key ID of the key (in hexadecimal digits) used as
recipient.

gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY
if the secret key for this recipient
is not available, and 0
otherwise.

-- Data type: gpgme_decrypt_result_t
This is a pointer to a structure used to store the result of a
gpgme_op_decrypt operation. After successfully decrypting data,

you can retrieve the pointer to the result with gpgme_op_decrypt_result. As with all result structures, it this structure shall be considered read-only and an application must not allocate such a strucure on its own. The structure contains the following members:

char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the algorithm that is not supported.

unsigned int wrong_key_usage : 1
SINCE: 0.9.0 This is true if the key was not used according to its policy.

unsigned int legacy_cipher_nomdc : 1
SINCE: 1.11.2 The message was made by a legacy algorithm without any integrity protection. This might be an old but

legitimate message.

unsigned int is_mime : 1;
SINCE: 1.11.0 The message claims that the content is a MIME object.

unsigned int is_de_vs : 1;
SINCE: 1.10.0 The message was encrypted in a VS-NfD compliant way. This is a specification in Germany for a restricted communication level.

gpgme_recipient_t recipients
SINCE: 1.1.0

This is a linked list of recipients to which this message was encrypted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer.

char *session_key
SINCE: 1.8.0

A textual representation (nul-terminated string) of the session key used in symmetric encryption of the message, if the context has been set to export session keys (see gpgme_set_ctx_flag, "export-session-key"), and a session key was available for the

most recent decryption operation.
Otherwise, this is a null pointer.

You must not try to access this member of the struct unless gpgme_set_ctx_flag (ctx, "export-session-key") returns success or gpgme_get_ctx_flag (ctx, "export-session-key") returns true (non-empty string).

char *symkey_algo
SINCE: 1.11.0

A string with the symmetric encryption algorithm and mode using the format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of OpenPGP is given as "PGPCFB".

-- Function: gpgme_decrypt_result_t gpgme_op_decrypt_result (gpgme_ctx_t CTX)
The function gpgme_op_decrypt_result returns a gpgme_decrypt_result_t pointer to a structure holding the result of a gpgme_op_decrypt operation. The pointer is only valid if the last operation on the context was a gpgme_op_decrypt or gpgme_op_decrypt_start operation. If the operation failed this

might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context.

File: gpgme.info, Node: Verify, Next: Decrypt and Verify, Prev: Decrypt, Up: Crypto Operations

7.6.2 Verify

-- Function: gpgme_error_t gpgme_op_verify (gpgme_ctx_t CTX, gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT, gpgme_data_t PLAIN)
The function gpgme_op_verify verifies that the signature in the data object SIG is a valid signature. If SIG is a detached signature, then the signed text should be provided in SIGNED_TEXT and PLAIN should be a null pointer. Otherwise, if SIG is a normal (or cleartext) signature, SIGNED_TEXT should be a null pointer and PLAIN should be a writable data object that will contain the plaintext after successful verification.

The results of the individual signature verifications can be retrieved with gpgme_op_verify_result.

The function returns the error

code GPG_ERR_NO_ERROR if the
operation could be completed successfully, GPG_ERR_INV_VALUE if
CTX, SIG or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if SIG
does not contain any data to verify, and passes through any errors
that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_verify_start (gpgme_ctx_t CTX,
gpgme_data_t SIG, gpgme_data_t SIGNED_TEXT,
gpgme_data_t PLAIN)
The function gpgme_op_verify_start initiates a gpgme_op_verify
operation. It can be completed by calling gpgme_wait on the
context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully, GPG_ERR_INV_VALUE if
CTX, SIG or PLAIN is not a valid pointer, and GPG_ERR_NO_DATA if
SIG or PLAIN does not contain any data to verify.

-- Data type: gpgme_sig_notation_t
This is a pointer to a structure used to store a part of the result
of a gpgme_op_verify operation. The structure contains the
following members:

gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure
in the linked list, or NULL if this is the last element.

char *name
The name of the notation field. If this is NULL, then the
member value will contain a policy URL.

int name_len
The length of the name field. For strings the length is
counted without the trailing binary zero.

char *value
The value of the notation field. If name is NULL, then
this is a policy URL.

int value_len
The length of the value field. For strings the length is
counted without the trailing binary zero.

gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags
associated with the notation data in an accumulated form which
can be used

as an argument to the function
gpgme_sig_notation_add. The value flags is a bitwise-or
combination of one or multiple of the following bit values:

GPGME_SIG_NOTATION_HUMAN_READABLE
SINCE: 1.1.0

The GPGME_SIG_NOTATION_HUMAN_READABLE symbol specifies
that the notation data is in human readable form

GPGME_SIG_NOTATION_CRITICAL
SINCE: 1.1.0

The GPGME_SIG_NOTATION_CRITICAL symbol specifies that
the notation data is critical.

unsigned int human_readable : 1
This is true if the GPGME_SIG_NOTATION_HUMAN_READABLE flag
is set and false otherwise. This flag is only valid for
notation data, not for policy URLs.

unsigned int critical : 1
This is true if the GPGME_SIG_NOTATION_CRITICAL flag is set
and false otherwise. This flag is valid for notation data and
policy URLs.

-- Data type: gpgme_signature_t
This is a pointer to a structure used to store a part of the result
of a gpgme_op_verify operation. The structure contains the
following members:

gpgme_signature_t next
This is a pointer to the next new signature structure in the
linked list, or NULL if this is the last element.

gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status.
It provides an easy interface to a defined semantic of the
signature status. Checking just one bit is sufficient to see
whether a signature is valid without any restrictions. This
means that you can check for GPGME_SIGSUM_VALID like this:

```
if ((sig.summary & GPGME_SIGSUM_VALID))
{
  ..do stuff if valid..
}
else
{
```

```
  ..do stuff if not fully valid..
}
```

The defined bits are:

GPGME_SIGSUM_VALID
The signature is fully valid.

GPGME_SIGSUM_GREEN
The signature is good but one might want to display some extra information. Check the other bits.

GPGME_SIGSUM_RED
The signature is bad. It might be useful to check other bits and display more information, i.e. a revoked certificate might not render a signature invalid when the message was received prior to the cause for the revocation.

GPGME_SIGSUM_KEY_REVOKED
The key or at least one certificate has been revoked.

GPGME_SIGSUM_KEY_EXPIRED
The key or one of the certificates has expired. It is probably a good idea to display the date of the expiration.

GPGME_SIGSUM_SIG_EXPIRED
The signature has expired.

GPGME_SIGSUM_KEY_MISSING
Cant verify due to a missing key or certificate.

GPGME_SIGSUM_CRL_MISSING
The CRL (or an equivalent mechanism) is not available.

GPGME_SIGSUM_CRL_TOO_OLD
Available CRL is too old.

GPGME_SIGSUM_BAD_POLICY
A policy requirement was not met.

GPGME_SIGSUM_SYS_ERROR
A system error occurred.

GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.

char *fpr
This is the fingerprint or key ID of the signature.

gpgme_error_t status
This is the status of the signature. In particular, the following status codes are of interest:

GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that there is no signature. For the combined result this status means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check the summary field for that.

For example a gpgme_op_decrypt_verify returns a verification result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For the combined result this status means that all signatures are valid and expired.

GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used to verify the signature has been revoked. For the combined result this status means that all signatures

are valid and all keys are revoked.

GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPG_ERR_NO_PUBKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be

checked due to missing keys.

GPG_ERR_GENERAL
This status indicates that there was some other error which prevented the signature verification.

gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

unsigned long timestamp
The creation timestamp of this signature.

unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature
does not expire.

unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

unsigned int pka_trust : 2
This is set to the trust information gained by means of the PKA system. Values are:
0
No PKA information available or verification not possible.
1
PKA verification failed.
2
PKA verification succeeded.
3
Reserved for future use.
Depending on the configuration of the engine, this metric may also be reflected by the validity of the signature.

unsigned int chain_model : 1
SINCE: 1.1.6

This is true if the validity of the signature has been checked using the chain model. In the chain model the time the signature has been created must be within the validity period of the certificate and the time the certificate itself has been created must be within the validity period of the issuing certificate. In contrast the default validation model checks the validity of signature as well at the entire certificate chain at the current time.

gpgme_validity_t validity

The validity of the signature.

gpgme_error_t validity_reason
If a signature is not valid, this provides a reason why.

gpgme_pubkey_algo_t
The public key algorithm used to create this signature.

gpgme_hash_algo_t
The hash algorithm used to create this signature.

char *pka_address
The mailbox from the PKA information or NULL.

gpgme_key_t key
SINCE: 1.7.0

An object describing the key used to create the signature. This key object may be incomplete in that it only conveys information availabale directly with a signature. It may also be NULL if such information is not readily available.

-- Data type: gpgme_verify_result_t
This is a pointer to a structure used to store the result of a gpgme_op_verify operation. After verifying a signature, you can retrieve the pointer to the result with gpgme_op_verify_result. If the operation failed this might be a NULL pointer. The structure contains the following member:

gpgme_signature_t signatures
A linked list with information about all signatures for which a verification was attempted.

char *file_name
This is the filename of the original plaintext message file if it is known, otherwise this is a null pointer. Warning: The filename is not covered by the signature.

unsigned int is_mime : 1;
SINCE: 1.11.0

The message claims that the content is a MIME object. Warning: This flag is not covered by the signature.

-- Function: gpgme_verify_result_t gpgme_op_verify_result
(gpgme_ctx_t CTX)

The function gpgme_op_verify_result returns a
gpgme_verify_result_t pointer to a structure holding the result
of a gpgme_op_verify operation. The pointer is only valid if the
last operation on the context was a gpgme_op_verify,
gpgme_op_verify_start, gpgme_op_decrypt_verify or
gpgme_op_decrypt_verify_start operation, and if this operation
finished successfully (for gpgme_op_decrypt_verify and
gpgme_op_decrypt_verify_start, the error code GPG_ERR_NO_DATA
counts as successful in this context). The returned pointer is
only valid until the next operation is started on the context.

File: gpgme.info, Node: Decrypt and Verify, Next: Sign, Prev: Verify, Up: Crypto Operations

7.6.3 Decrypt and Verify

-- Function: gpgme_error_t gpgme_op_decrypt_verify (gpgme_ctx_t CTX,
gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify decrypts the ciphertext in
the data object CIPHER and
stores it into the data object PLAIN.
If CIPHER contains signatures, they will be verified.

After the operation completed, gpgme_op_decrypt_result and
gpgme_op_verify_result can be used to retrieve more information
about the signatures.

If the error code GPG_ERR_NO_DATA is returned, CIPHER does not
contain any data to decrypt. However, it might still be signed.
The information about detected signatures is available with
gpgme_op_verify_result in this case.

The function returns the error code GPG_ERR_NO_ERROR if the
ciphertext could be decrypted successfully, GPG_ERR_INV_VALUE if
CTX, CIPHER or PLAIN is not a valid pointer, GPG_ERR_NO_DATA if
CIPHER does not contain any data to decrypt,
GPG_ERR_DECRYPT_FAILED if CIPHER is not a valid cipher text,
GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could
not be retrieved, and passes through any errors that are reported
by the crypto engine support
routines.

-- Function: gpgme_error_t gpgme_op_decrypt_verify_start
(gpgme_ctx_t CTX, gpgme_data_t CIPHER, gpgme_data_t PLAIN)
The function gpgme_op_decrypt_verify_start initiates a
gpgme_op_decrypt_verify operation. It can be completed by
calling gpgme_wait on the context. *Note Waiting For

Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, CIPHER, PLAIN or R_STAT is not a valid pointer, and GPG_ERR_NO_DATA if CIPHER does not contain any data to decrypt.

When processing mails it is sometimes useful to extract the actual mail address (the addr-spec) from a string. GPGME provides this helper function which uses the same semantics as the internal functions in GPGME and GnuPG:

-- Function: char * gpgme_addrspec_from_uid (const char *UID)

SINCE: 1.7.1

Return the mail address (called addr-spec in RFC-5322) from the string
UID which is assumed to be a user id (called address in RFC-5322). All plain ASCII characters (i.e. those with bit 7 cleared) in the result are converted to lowercase. Caller must free the result using gpgme_free. Returns NULL if no valid address was found (in which case ERRNO is set to EINVAL) or for other errors.

File: gpgme.info, Node: Sign, Next: Encrypt, Prev: Decrypt and Verify, Up: Crypto Operations

7.6.4 Sign

A signature can contain signatures by one or more keys. The set of keys used to create a signatures is contained in a context, and is applied to all following signing operations in this context (until the set is changed).

* Menu:

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

File: gpgme.info, Node: Selecting Signers, Next: Creating a Signature, Up: Sign

7.6.4.1 Selecting Signers
.....

The key or the keys used to create a signature are stored in the context. The following functions can be used to manipulate this list. If no signer has been set into the context a default key is used for signing.

-- Function: void gpgme_signers_clear (gpgme_ctx_t CTX)
The function gpgme_signers_clear releases a reference for each key on the signers list and removes the list of signers from the context CTX.

Every context starts with an empty list.

-- Function: gpgme_error_t gpgme_signers_add (gpgme_ctx_t CTX,
const gpgme_key_t KEY)
The function gpgme_signers_add adds the key KEY to the list of signers in the context CTX.

Calling this function acquires an additional reference for the key.

-- Function: unsigned int gpgme_signers_count (const gpgme_ctx_t CTX)
SINCE: 1.4.3

The function gpgme_signers_count returns the number of signer keys in the context CTX.

-- Function:
gpgme_key_t gpgme_signers_enum (const gpgme_ctx_t CTX,
int SEQ)
The function gpgme_signers_enum returns the SEQth key in the list of signers in the context CTX. An additional reference is acquired for the user.

If SEQ is out of range, NULL is returned.

File: gpgme.info, Node: Creating a Signature, Next: Signature Notation Data, Prev: Selecting Signers, Up: Sign

7.6.4.2 Creating a Signature
.....

-- Data type: enum gpgme_sig_mode_t
The gpgme_sig_mode_t type is used to specify the desired type of a signature. The following modes are available:

GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the signature.

GPGME_SIG_MODE_DETACH
A detached signature is made.

GPGME_SIG_MODE_CLEAR
A clear text signature is made. The ASCII armor and text mode settings of the context are ignored.

-- Function: gpgme_error_t gpgme_op_sign (gpgme_ctx_t CTX, gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign creates a signature for the text in the data object PLAIN and returns it in the data object SIG. The type of the signature created is determined by the ASCII armor (or, if that is not set, by the encoding specified for SIG), the text mode attributes set for the context CTX and the requested signature mode MODE.

After the operation completed successfully, the result can be retrieved with gpgme_op_sign_result.

If an S/MIME signed message is created using the CMS crypto engine, the number of certificates to include in the message can be specified with gpgme_set_include_certs. *Note Included Certificates::.

The function returns the error code GPG_ERR_NO_ERROR if the signature could be created successfully, GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer, GPG_ERR_NO_DATA if the signature could not be created, GPG_ERR_BAD_PASSPHRASE if the passphrase for the secret key could not be retrieved, GPG_ERR_UNUSABLE_SECKEY if there are invalid signers, and passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_sign_start (gpgme_ctx_t CTX, gpgme_data_t PLAIN, gpgme_data_t SIG, gpgme_sig_mode_t MODE)
The function gpgme_op_sign_start initiates a gpgme_op_sign operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, and GPG_ERR_INV_VALUE if CTX, PLAIN or SIG is not a valid pointer.

-- Data type: gpgme_new_signature_t
This is a pointer to a structure used to store a part of the result

of a gpgme_op_sign operation. The structure contains the following members:

gpgme_new_signature_t next
: This is a pointer to the next new signature structure in the linked list, or NULL if this is the last element.

gpgme_sig_mode_t type
: The type of this signature.

gpgme_pubkey_algo_t pubkey_algo
: The public key algorithm used to create this signature.

gpgme_hash_algo_t hash_algo
: The hash algorithm used to create this signature.

unsigned int sig_class
: The signature class of this signature.

long int timestamp
: The creation timestamp of this signature.

char *fpr
: The fingerprint of the key which was used to create this signature.

-- Data type: gpgme_sign_result_t

This is a pointer to a structure used to store the result of a gpgme_op_sign operation. After successfully generating a signature, you can retrieve the pointer to the result with gpgme_op_sign_result. The structure contains the following members:

gpgme_invalid_key_t invalid_signers
: A linked list with information about all invalid keys for which a signature could not be created.

gpgme_new_signature_t signatures
: A linked list with information about all signatures created.

-- Function: gpgme_sign_result_t gpgme_op_sign_result (gpgme_ctx_t CTX)

The function gpgme_op_sign_result returns a gpgme_sign_result_t pointer to a structure holding the result of a gpgme_op_sign operation. The pointer is only valid if the last operation on the context was a gpgme_op_sign, gpgme_op_sign_start, gpgme_op_encrypt_sign or gpgme_op_encrypt_sign_start operation.

If that operation failed, the function might return a NULL
pointer. The returned pointer is only valid until the next
operation is started on the context.

File: gpgme.info, Node: Signature Notation Data, Prev: Creating a Signature, Up: Sign

7.6.4.3 Signature Notation Data
.....

Using the following
functions, you can attach arbitrary notation data to
a signature. This information is then available to the user when the
signature is verified.

-- Function: void gpgme_sig_notation_clear (gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_clear removes the notation data
from the context CTX. Subsequent signing operations from this
context will not include any notation data.

Every context starts with an empty notation data list.

-- Function: gpgme_error_t gpgme_sig_notation_add (gpgme_ctx_t CTX,
const char *NAME, const char *VALUE,
gpgme_sig_notation_flags_t FLAGS)
SINCE: 1.1.0

The function gpgme_sig_notation_add adds the notation data with
the name NAME and the value VALUE to the context CTX.

Subsequent signing operations will include this notation data, as
well as any other notation data that was added since the creation
of the context or the last gpgme_sig_notation_clear operation.

The arguments NAME and VALUE must be NUL-terminated strings in
human-readable form. The flag GPGME_SIG_NOTATION_HUMAN_READABLE
is implied (non-human-readable notation data is currently not
supported). The strings must be in UTF-8 encoding.

If NAME is NULL, then VALUE should be a policy URL.

The function gpgme_sig_notation_add returns the error code
GPG_ERR_NO_ERROR if the notation data could be added
successfully, GPG_ERR_INV_VALUE if CTX is not a valid pointer, or
if NAME, VALUE and FLAGS are an invalid combination. The function

also passes through any errors that are reported by the crypto engine support routines.

-- Function: gpgme_sig_notation_t gpgme_sig_notation_get (const gpgme_ctx_t CTX)
SINCE: 1.1.0

The function gpgme_sig_notation_get returns the linked list of notation data structures that are contained in the context CTX.

If CTX is not a valid pointer, or there is no notation data added for this context, NULL is returned.

File: gpgme.info, Node: Encrypt, Prev: Sign, Up: Crypto Operations

7.6.5 Encrypt

One plaintext can be encrypted for several recipients at the same time. The list of recipients is created independently of any context, and then passed to the encryption operation.

* Menu:

* Encrypting a Plaintext:: How to encrypt a plaintext.

File: gpgme.info, Node: Encrypting a Plaintext, Up: Encrypt

7.6.5.1 Encrypting a Plaintext
.....

-- Function: gpgme_error_t gpgme_op_encrypt (gpgme_ctx_t CTX, gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt encrypts the plaintext in the data object PLAIN for the recipients RECP and stores the ciphertext in the data object CIPHER. The type of the ciphertext created is determined by the ASCII armor (or, if that is not set, by the encoding specified
for CIPHER) and the text mode attributes set for the context CTX.

RECP must be a NULL-terminated array of keys. The user must keep references for all keys during the whole duration of the call (but see gpgme_op_encrypt_start for the requirements with the asynchronous variant).

The value in FLAGS is a bitwise-or combination of one or multiple
of the following bit values:

GPGME_ENCRYPT_ALWAYS_TRUST
The GPGME_ENCRYPT_ALWAYS_TRUST symbol specifies that all the
recipients in RECP should be trusted, even if the keys do not
have a high enough validity in the keyring. This flag should
be used with care; in general it is not a good idea to use any
untrusted keys.

GPGME_ENCRYPT_NO_ENCRYPT_TO
SINCE: 1.2.0

The GPGME_ENCRYPT_NO_ENCRYPT_TO symbol specifies that no
default or hidden default recipients as configured in the
crypto backend should be included. This
can be useful for
managing different user profiles.

GPGME_ENCRYPT_NO_COMPRESS
SINCE: 1.5.0

The GPGME_ENCRYPT_NO_COMPRESS symbol specifies that the
plaintext shall not be compressed before it is encrypted.
This is in some cases useful if the length of the encrypted
message may reveal information about the plaintext.

GPGME_ENCRYPT_PREPARE
GPGME_ENCRYPT_EXPECT_SIGN
The GPGME_ENCRYPT_PREPARE symbol is used with the UI Server
protocol to prepare an encryption (i.e. sending the
PREP_ENCRYPT command). With the GPGME_ENCRYPT_EXPECT_SIGN
symbol the UI Server is advised to also expect a sign command.

GPGME_ENCRYPT_SYMMETRIC
SINCE: 1.7.0

The GPGME_ENCRYPT_SYMMETRIC symbol specifies that the output
should be additionally encrypted symmetrically even if
recipients are provided. This feature is only supported for
the OpenPGP
crypto engine.

GPGME_ENCRYPT_THROW_KEYIDS
SINCE: 1.8.0

The GPGME_ENCRYPT_THROW_KEYIDS symbols requests that the

identifiers for the decrption keys are not included in the
ciphertext. On the receiving side, the use of this flag may
slow down the decryption process because all available secret
keys must be tried. This flag is only honored for OpenPGP
encryption.

GPGME_ENCRYPT_WRAP
SINCE: 1.8.0

The GPGME_ENCRYPT_WRAP symbol specifies that the input is an
OpenPGP message and not a plain data. This is the counterpart
to GPGME_DECRYPT_UNWRAP.

GPGME_ENCRYPT_WANT_ADDRESS
SINCE: 1.11.0

The GPGME_ENCRYPT_WANT_ADDRESS symbol requests that all
supplied keys or key specifications include a syntactically
valid mail address. If this is not the case the operation is
not even tried and the error code GPG_ERR_INV_USER_ID
is
returned. Only the address part of the key specification is
conveyed to the backend. As of now the key must be specified
using the RECPSTRING argument of the extended encrypt
functions. This feature is currently only supported for the
OpenPGP crypto engine.

If GPG_ERR_UNUSABLE_PUBKEY is returned, some recipients in RECP
are invalid, but not all. In this case the plaintext might be
encrypted for all valid recipients and returned in CIPHER (if this
happens depends on the crypto engine). More information about the
invalid recipients is available with gpgme_op_encrypt_result.

If RECP is NULL, symmetric rather than public key encryption is
performed. Symmetrically encrypted cipher text can be deciphered
with gpgme_op_decrypt. Note that in this case the crypto backend
needs to retrieve a passphrase from the user. Symmetric encryption
is currently only supported for the OpenPGP
crypto backend.

The function returns the error code GPG_ERR_NO_ERROR if the
ciphertext could be created successfully, GPG_ERR_INV_VALUE if
CTX, RECP, PLAIN or CIPHER is not a valid pointer,
GPG_ERR_UNUSABLE_PUBKEY if RECP contains some invalid recipients,
GPG_ERR_BAD_PASSPHRASE if the passphrase for the symmetric key
could not be retrieved, and passes through any errors that are
reported by the crypto engine support routines.

-- Function: gpgme_error_t gpgme_op_encrypt_start (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)

The function gpgme_op_encrypt_start initiates a gpgme_op_encrypt operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

References to the keys only need to be held for the duration of this call. The user can release its references to the keys after this function returns, even
if the operation is not yet finished.

The function returns the error code GPG_ERR_NO_ERROR if the operation could be started successfully, GPG_ERR_INV_VALUE if CTX, RSET, PLAIN or CIPHER is not a valid pointer, and GPG_ERR_UNUSABLE_PUBKEY if RSET does not contain any valid recipients.

-- Function: gpgme_error_t gpgme_op_encrypt_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. Leading and trailing white space is remove from each line in RECPSTRING. The keys
are then passed verbatim to the backend engine.

For the OpenPGP backend several special keywords are supported to modify the operation. These keywords are given instead of a key specification. The currently supported keywords are:

--hidden
--no-hidden
These keywords toggle between normal and hidden recipients for all following key specifications. When a hidden recipient is requested the gpg option -R (or -F in file mode) is used instead of -r (-f in file mode).

--file
--no-file

These keywords toggle between regular and file mode for all following key specification. In file mode the option -f or -F is passed to gpg. At least GnuPG version 2.1.14 is required to handle these options. The GPGME_ENCRYPT_WANT_ADDRESS flag is ignored in file mode.

--

This keyword disables all keyword detection up to the end of the string. All keywords are treated as verbatim arguments.

To create a RECPSTRING it is often useful to employ a strconcat style function. For example this function creates a string to encrypt to two keys:

```
char *
xbuild_recpstring (const char *key1, const char *key2)
{
  char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
  if (!result)
    { perror ("strconcat failed"); exit (2); }
  return result;
}
```

Note the use of the double dash here; unless you want to specify a keyword, it is a good idea to avoid any possible trouble with key specifications starting with a double dash. The used strconcat function is available in Libgpg-error 1.28 and later; Libgpg-error (aka Gpgrt) is a dependency of GPGME. The number of arguments to gpgrt_strconcat is limited to 47 but that should always be sufficient. In case a larger and non-fixed number of keys are to be supplied the following code can be used:

```
char *
xbuild_long_recpstring (void)
{
  gpgrt_stream_t memfp;
  const char *s;
  void *result;

  memfp = gpgrt_fopenmem (0, "w+b");
  if (!memfp)
    { perror ("fopenmem failed"); exit (2); }
  gpgrt_fputs ("--", memfp);
  while ((s = get_next_keyspec ()))
    {
      gpgrt_fputc ('\n', memfp);
```

```
            gpgrt_fputs (s, memfp);
          }
        gpgrt_fputc (0, memfp);
        if (gpgrt_ferror (memfp))
          { perror ("writing to memstream failed"); exit (2); }
        if (gpgrt_fclose_snatch (memfp, &result, NULL))
          { perror ("fclose_snatch failed"); exit (2); }
        return result;
      }
```

In this example get_next_keyspec is expected to return the next key to be added to the string. Please take care: Encrypting to a large number of recipients is often questionable due to security reasons and also for the technicality that all keys are currently passed on the command line to gpg which has as a platform specific length limitation.

-- Function: gpgme_error_t gpgme_op_encrypt_ext_start (gpgme_ctx_t CTX, gpgme_key_t RECP[], const char *RECPSTRING, gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN, gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_start with RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING is not NULL, the latter is expected to be a linefeed delimited string with the set of key specifications. In contrast to RECP the keys are given directly as strings and there is no need to first create key objects. The keys are passed verbatim to the backend engine.

-- Data type: gpgme_encrypt_result_t
This is a pointer to a structure used to store the result of a gpgme_op_encrypt operation. After successfully encrypting data, you can retrieve the pointer to the result with gpgme_op_encrypt_result. The structure contains the following members:

gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which the data could not be encrypted.

-- Function: gpgme_encrypt_result_t gpgme_op_encrypt_result (gpgme_ctx_t CTX)
The function gpgme_op_encrypt_result returns a

gpgme_encrypt_result_t pointer to a structure holding the result
of a gpgme_op_encrypt operation. The pointer is only valid if
the last operation on the context was a gpgme_op_encrypt,
gpgme_op_encrypt_start, gpgme_op_sign or gpgme_op_sign_start
operation. If this operation failed, this might be a NULL
pointer. The returned pointer is only valid until the next
operation is started on the context.

-- Function: gpgme_error_t gpgme_op_encrypt_sign (gpgme_ctx_t CTX,
gpgme_key_t RECP[], gpgme_encrypt_flags_t FLAGS,
gpgme_data_t PLAIN, gpgme_data_t CIPHER)
The function gpgme_op_encrypt_sign does a combined encrypt and
sign operation. It is used like gpgme_op_encrypt, but the
ciphertext also contains signatures for the signers listed in CTX.

The combined encrypt and sign operation is currently only available
for the OpenPGP crypto engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[],
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)
The function gpgme_op_encrypt_sign_start initiates a
gpgme_op_encrypt_sign operation. It can be completed by calling
gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the
operation could be started successfully, and GPG_ERR_INV_VALUE if
CTX, RSET, PLAIN or CIPHER is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext (gpgme_ctx_t CTX,
gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,
gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign with
RECPSTRING as additional parameter. If RECP is NULL and RECPSTRING
is not NULL, the latter is expected to be a linefeed delimited
string with the set of key specifications. In contrast to RECP the
keys are given directly as strings and there is no need to first
create the key objects. The keys are passed verbatim to the
backend engine.

-- Function: gpgme_error_t gpgme_op_encrypt_sign_ext_start
(gpgme_ctx_t CTX, gpgme_key_t RECP[], const char *RECPSTRING,
gpgme_encrypt_flags_t FLAGS, gpgme_data_t PLAIN,

gpgme_data_t CIPHER)

SINCE: 1.11.0

This is an extended version of gpgme_op_encrypt_sign_start with
RECPSTRING
as additional parameter. If RECP is NULL and RECPSTRING
is not NULL, the latter is expected to be a linefeed delimited
string with the set of key specifications. In contrast to RECP the
keys are given directly as strings and there is no need to first
create the key objects. The keys are passed verbatim to the
backend engine.

File: gpgme.info, Node: Miscellaneous, Next: Run Control, Prev: Crypto Operations, Up: Contexts

7.7 Miscellaneous operations
==========

Here are some support functions which are sometimes useful.

* Menu:

* Running other Programs:: Running other Programs
* Using the Assuan protocol:: Using the Assuan protocol
* Checking for updates:: How to check for software updates

File: gpgme.info, Node: Running other Programs, Next: Using the Assuan protocol, Up: Miscellaneous

7.7.1 Running other Programs

GPGME features an internal subsystem to run the actual backend engines.
Along
with data abstraction object this subsystem can be used to run
arbitrary simple programs which even need not be related to
cryptographic features. It may for example be used to run tools which
are part of the GnuPG system but are not directly accessible with the
GPGME API.

-- Function: gpgme_error_t gpgme_op_spawn (gpgme_ctx_t CTX,
const char *FILE, const char *ARGV[], gpgme_data_t DATAIN,
gpgme_data_t DATAOUT, gpgme_data_t DATAERR,
unsigned int FLAGS)

SINCE: 1.5.0

The function gpgme_op_spawn runs the program FILE with the arguments taken from the NULL terminated array ARGV. If no arguments are required ARGV may be given as NULL. In the latter case or if argv[0] is the empty string, GPGME uses the basename of FILE for argv[0]. The file descriptors stdin, stdout, and stderr are connected to the data objects DATAIN, DATAOUT, and DATAERR. If NULL is passed for one of these data objects the corresponding
file descriptor is connected to /dev/null.

The value in FLAGS is a bitwise-or combination of one or multiple of the following bit values:

GPGME_SPAWN_DETACHED
SINCE: 1.5.0

Under Windows this flag inhibits the allocation of a new console for the program. This is useful for a GUI application which needs to call a command line helper tool.

GPGME_SPAWN_ALLOW_SET_FG
SINCE: 1.5.0

Under Windows this flag allows the called program to put itself into the foreground.

-- Function: gpgme_error_t gpgme_op_spawn_start (gpgme_ctx_t CTX,
const char *FILE, const char *ARGV[], gpgme_data_t DATAIN,
gpgme_data_t DATAOUT, gpgme_data_t DATAERR,
unsigned int FLAGS)

SINCE: 1.5.0

This is the asynchronous variant of gpgme_op_spawn.

File: gpgme.info, Node: Using the Assuan protocol, Next: Checking for updates, Prev: Running other Programs, Up: Miscellaneous

7.7.2
Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers. By default it is connected to the GnuPG agent, but it may be connected to arbitrary servers by using gpgme_ctx_set_engine_info, passing the location of the servers socket as FILE_NAME argument, and an empty string as HOME_DIR argument.

The Assuan protocol functions use three kinds of callbacks to transfer data:

-- Data type: gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN)

SINCE: 1.2.0

This callback receives any data sent by the server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, DATA of length DATALEN refers to the data sent.

-- Data type: gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA)

SINCE: 1.2.0

This callback is used to provide additional data to the Assuan

server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, NAME and ARGS specify what kind of data the server requested, and R_DATA is used to return the actual data.

Note: Returning data is currently not implemented in GPGME.

-- Data type: gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE, const char *STATUS, const char *ARGS)

SINCE: 1.2.0

This callback receives any status lines sent by the server. OPAQUE is the pointer passed to gpgme_op_assuan_transact_start, STATUS and ARGS denote the status update sent.

-- Function: gpgme_error_t gpgme_op_assuan_transact_start (gpgme_ctx_t CTX, const char *COMMAND, gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE, gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE, gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE)

SINCE: 1.2.0

Send the Assuan COMMAND and return results via the callbacks. Any callback may be NULL. The result of the operation may be retrieved using gpgme_wait_ext.

Asynchronous variant.

-- Function: gpgme_error_t gpgme_op_assuan_transact_ext
(gpgme_ctx_t CTX, const char *COMMAND,
gpgme_assuan_data_cb_t DATA_CB, void * DATA_CB_VALUE,
gpgme_assuan_inquire_cb_t INQUIRE_CB, void * INQUIRE_CB_VALUE,
gpgme_assuan_status_cb_t STATUS_CB, void * STATUS_CB_VALUE,
gpgme_error_t *OP_ERR)

Send the Assuan COMMAND and return results via the callbacks. The
result of the operation is returned in OP_ERR.

Synchronous variant.

File: gpgme.info, Node: Checking for updates, Prev: Using the Assuan protocol, Up: Miscellaneous

7.7.3 How to check for software updates

The GnuPG Project operates a server to query the current versions of
software packages related to GnuPG. GPGME can be used to access this
online database and check whether a new version of
a software package is
available.

-- Data type: gpgme_query_swdb_result_t
SINCE: 1.8.0

This is a pointer to a structure used to store the result of a
gpgme_op_query_swdb operation. After success full call to that
function, you can retrieve the pointer to the result with
gpgme_op_query_swdb_result. The structure contains the following
member:

name
This is the name of the package.

iversion
The currently installed version or an empty string. This
value is either a copy of the argument given to
gpgme_op_query_swdb or the version of the installed software
as figured out by GPGME or GnuPG.

created
This gives the date the file with the list of version numbers
has originally be created by the GnuPG project.

retrieved
This gives the date the file was downloaded.

warning
If this flag is set either an error has occurred or some of
the
information in this structure are not properly set. For
example if the version number of the installed software could
not be figured out, the update flag may not reflect a
required update status.

update
If this flag is set an update of the software is available.

urgent
If this flag is set an available update is important.

noinfo
If this flag is set, no valid information could be retrieved.

unknown
If this flag is set the given name is not known.

tooold
If this flag is set the available information is not fresh
enough.

error
If this flag is set some other error has occurred.

version
The version string of the latest released version.

reldate
The release date of the latest released version.

-- Function: gpgme_error_t gpgme_op_query_swdb (gpgme_ctx_t CTX,
const char *NAME, const char *IVERSION, gpgme_data_t RESERVED)

SINCE: 1.8.0

Query the software version database for software package NAME and
check against the installed version given by IVERSION. If IVERSION
is given as NULL a check is only done if GPGME can figure out the
version by itself (for example when using "gpgme" or "gnupg"). If
NULL is used for NAME the current gpgme version is checked.
RESERVED must be set to 0.

-- Function: gpgme_query_swdb_result_t gpgme_op_query_swdb_result
(gpgme_ctx_t CTX)

SINCE: 1.8.0

The function gpgme_op_query_swdb_result returns a gpgme_query_swdb_result_t pointer to a structure holding the result of a gpgme_op_query_swdb operation. The pointer is only valid if the last operation on the context was a successful call to gpgme_op_query_swdb. If that call failed, the result might be a NULL pointer. The returned pointer is only valid until the next operation is started on the context CTX.

Here is an example on
how to check whether GnuPG is current:

```
#include <gpgme.h>

int
main (void)
{
  gpg_error_t err;
  gpgme_ctx_t ctx;
  gpgme_query_swdb_result_t result;

  gpgme_check_version (NULL);
  err = gpgme_new (&ctx);
  if (err)
    fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
  else
    {
      gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

      err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
      if (err)
        fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
      else
        {
          result = gpgme_op_query_swdb_result (ctx);
          if (!result)
            fprintf (stderr, "error querying swdb\n");
          if (!result->warning && !result->update)
            printf ("GnuPG version %s is current\n",
                    result->iversion);
          else if (!result->warning && result->update)

      printf ("GnuPG version %s can be updated to %s\n",
                    result->iversion, result->version);
```

```
          else
            fprintf (stderr, "error finding the update status\n");
         }
       gpgme_release (ctx);
     }
   return 0;
 }
```

File: gpgme.info, Node: Run Control, Prev: Miscellaneous, Up: Contexts

7.8 Run Control

GPGME supports running operations synchronously and asynchronously. You can use asynchronous operation to set up a context up to initiating the desired operation, but delay performing it to a later point.

Furthermore, you can use an external event loop to control exactly when GPGME runs. This ensures that GPGME only runs when necessary and also prevents it from blocking for a long time.

* Menu:

* Waiting For Completion:: Waiting until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

File: gpgme.info, Node: Waiting For Completion, Next: Using External Event Loops, Up: Run Control

7.8.1 Waiting For Completion

-- Function: gpgme_ctx_t gpgme_wait (gpgme_ctx_t CTX, gpgme_error_t *STATUS, int HANG)

The function gpgme_wait continues the pending operation within the context CTX. In particular, it ensures the data exchange between GPGME and the crypto backend and watches over the run time status of the backend process.

If HANG is true, the function does not return until the operation is completed or cancelled. Otherwise the function will not block for a long time.

The error status of the finished operation is returned in STATUS if gpgme_wait does not return NULL.

The CTX argument can be NULL. In that case, gpgme_wait waits for any context to complete its operation.

gpgme_wait can be used only in conjunction with any context that has a pending operation initiated with one of the gpgme_op_*_start functions except gpgme_op_keylist_start and gpgme_op_trustlist_start (for which you should use the corresponding gpgme_op_*_next functions). If CTX is NULL, all of such contexts are waited upon and possibly returned. Synchronous operations running in parallel, as well as key and trust item list operations, do not affect gpgme_wait.

In a multi-threaded environment, only one thread should ever call gpgme_wait at any time, regardless of whether CTX is specified or not. This means that all calls to this function should be fully synchronized by locking primitives. It is safe to start asynchronous operations while a thread is running in gpgme_wait.

The function returns the CTX of the context which has finished the operation. If HANG is false, and the timeout expires, NULL is returned and *status will be set to 0. If an error occurs, NULL is returned and the error is returned in *status.

File: gpgme.info, Node: Using External Event Loops, Next: Cancellation, Prev: Waiting For Completion, Up: Run Control

7.8.2 Using External Event Loops

GPGME hides the complexity of the communication between the library and the crypto engine. The price of this convenience is that the calling thread can block arbitrary long waiting for the data returned by the crypto engine. In single-threaded programs, in particular if they are interactive, this is an unwanted side-effect. OTOH, if gpgme_wait is used without the HANG option being enabled, it might be called unnecessarily often, wasting CPU time that could be used otherwise.

The I/O callback interface described in this section lets the user take control over what happens when. GPGME will provide the user with the file descriptors that should be monitored, and the callback functions that should be invoked when a file descriptor is ready for reading or writing. It is then the users responsibility to decide when to check the file descriptors and when to invoke the callback functions.

Usually this is done in an event loop, that also checks for events in other parts of the program. If the callback functions are only called when the file descriptors are ready, GPGME will never block. This gives the user more control over the program flow, and allows to perform other tasks when GPGME would block otherwise.

By using this advanced mechanism, GPGME can be integrated smoothly into GUI toolkits like GTK+ even for single-threaded programs.

* Menu:

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use GPGME with GTK+.
* I/O Callback Example GDK:: How to use GPGME with GDK.
* I/O Callback Example Qt:: How to use GPGME with Qt.

File: gpgme.info, Node: I/O Callback Interface, Next: Registering I/O Callbacks, Up: Using External Event Loops

7.8.2.1 I/O Callback Interface
.....

-- Data type: gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD)
The gpgme_io_cb_t type is the type of functions which GPGME wants to register as I/O callback handlers using the gpgme_register_io_cb_t functions provided by the user.

DATA and FD are provided by GPGME when the I/O callback handler is registered, and should be passed through to the handler when it is invoked by the user because it noticed activity on the file descriptor FD.

The callback handler always returns 0, but you should consider the return value to be reserved for later use.

-- Data type: gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG)
The gpgme_register_io_cb_t type is the type of functions which can be called by GPGME to register an I/O callback function FNC for the file descriptor FD with the user. FNC_DATA should be passed as the first argument to FNC when the handler is invoked (the second argument should be FD). If DIR is 0, FNC should be called by the user when FD is ready for writing. If DIR is 1, FNC should be

called when FD is ready for reading.

DATA was provided by the user when registering the gpgme_register_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the event loop to which the file descriptor should be added.

GPGME will call this function when a crypto operation is initiated in a context for which the user has registered I/O callback handler functions with gpgme_set_io_cbs. It can also call this function when it is in an I/O callback handler for a file descriptor associated to this context.

The user should return a unique handle in TAG identifying this I/O callback registration, which will be passed to the gpgme_register_io_cb_t function without interpretation when the file descriptor should not be monitored anymore.

-- Data type: void (*gpgme_remove_io_cb_t) (void *TAG)
The gpgme_remove_io_cb_t type is the type of functions which can be called by GPGME to remove an I/O callback handler that was registered before. TAG is the handle that was returned by the gpgme_register_io_cb_t for this I/O callback.

GPGME can call this function when a crypto operation is in an I/O callback. It will also call this function when the context is destroyed while an operation is pending.

-- Data type: enum gpgme_event_io_t
The gpgme_event_io_t type specifies the type of an event that is reported to the user by GPGME as a consequence of an I/O operation. The following events are defined:

GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the registered I/O callback handlers now. Note that registered I/O callback handlers must not be run before this event is signalled. TYPE_DATA is NULL and reserved for later use.

GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation was removed. The accompanying TYPE_DATA points to a struct gpgme_io_event_done_data variable that contains the status of the operation that finished. This event is

signalled after the last I/O callback has been removed.

GPGME_EVENT_NEXT_KEY
In a gpgme_op_keylist_start operation, the next key was received from the crypto engine. The accompanying TYPE_DATA is a gpgme_key_t variable that contains the key with one reference for the user.

-- Data type: void (*gpgme_event_io_cb_t)
(void *DATA,
gpgme_event_io_t TYPE, void *TYPE_DATA)
The gpgme_event_io_cb_t type is the type of functions which can be called by GPGME to signal an event for an operation running in a context which has I/O callback functions registered by the user.

DATA was provided by the user when registering the gpgme_event_io_cb_t function with GPGME and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the context in which this event has occurred.

TYPE will specify the type of event that has occurred. TYPE_DATA specifies the event further, as described in the above list of possible gpgme_event_io_t types.

GPGME can call this function in an I/O callback handler.

File: gpgme.info, Node: Registering I/O Callbacks, Next: I/O Callback Example, Prev: I/O Callback Interface, Up: Using External Event Loops

7.8.2.2 Registering I/O Callbacks
.....

-- Data type: struct gpgme_io_cbs
This structure is used to store the I/O callback interface functions described in the previous section. It has the following members:

gpgme_register_io_cb_t add
This is the function called by GPGME to register an I/O callback handler. It must be specified.

void *add_priv
This is passed as the first argument to the add function when it is called by GPGME. For example, it can be used to determine the event loop to which the file descriptor should be added.

gpgme_remove_io_cb_t remove
This is the function called by GPGME to remove an I/O callback handler. It must be specified.

gpgme_event_io_cb_t event
This is the function called by GPGME to signal an event for an operation. It must be specified, because at least the start event must be processed.

void *event_priv
This is passed as the first argument to the event function when it is called by GPGME. For example, it can be used to determine the context in which the event has occurred.

-- Function: void gpgme_set_io_cbs (gpgme_ctx_t CTX, struct gpgme_io_cbs *IO_CBS)
The function gpgme_set_io_cbs enables the I/O callback interface for the context CTX. The I/O callback functions are specified by IO_CBS.

If IO_CBS->add is NULL, the I/O callback interface is disabled for the context, and normal operation is restored.

-- Function: void gpgme_get_io_cbs (gpgme_ctx_t CTX, struct gpgme_io_cbs *IO_CBS)
The function gpgme_get_io_cbs returns the I/O callback functions set with gpgme_set_io_cbs in IO_CBS.

File: gpgme.info, Node: I/O Callback Example, Next: I/O Callback Example GTK+, Prev: Registering I/O Callbacks, Up: Using External Event Loops

7.8.2.3 I/O Callback Example
.....

To actually use an external event loop, you have to implement the I/O callback functions that are used by GPGME to register and unregister file descriptors. Furthermore, you have to actually monitor these file descriptors for activity and call the appropriate I/O callbacks.

The following example illustrates how to do that. The example uses locking to show in which way the callbacks and the event loop can run concurrently. For the event loop, we use a fixed array. For a real-world implementation, you should use a dynamically sized structure because the number of file descriptors needed for a crypto operation in GPGME is not predictable.

```
  #include <assert.h>
  #include <errno.h>
  #include <stdlib.h>
  #include <pthread.h>
  #include <sys/types.h>
  #include <gpgme.h>

  /* The following structure holds the result of a crypto operation.  */
  struct op_result
  {
    int done;
    gpgme_error_t err;
  };

  /* The following structure holds the
data associated with one I/O
  callback.  */
  struct one_fd
  {
    int fd;
    int dir;
    gpgme_io_cb_t fnc;
    void *fnc_data;
    void *loop;
  };

  struct event_loop
  {
    pthread_mutex_t lock;
  #define MAX_FDS 32
    /* Unused slots are marked with FD being -1.  */
    struct one_fd fds[MAX_FDS];
  };
```

The following functions implement the I/O callback interface.

```
  gpgme_error_t
  add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
     void **r_tag)
  {
    struct event_loop *loop = data;
    struct one_fd *fds = loop->fds;
    int i;

    pthread_mutex_lock (&loop->lock);
    for (i = 0; i < MAX_FDS; i++)
      {
```

```
      if (fds[i].fd == -1)
    {
     fds[i].fd = fd;
     fds[i].dir = dir;
     fds[i].fnc = fnc;
     fds[i].fnc_data = fnc_data;
     fds[i].loop = loop;
     break;
    }
      }
    pthread_mutex_unlock (&loop->lock);
     if (i == MAX_FDS)
      return gpg_error (GPG_ERR_GENERAL);
    *r_tag = &fds[i];
    return 0;
  }

  void
  remove_io_cb (void *tag)
  {
    struct one_fd *fd = tag;
    struct event_loop *loop = fd->loop;

    pthread_mutex_lock (&loop->lock);
    fd->fd = -1;
    pthread_mutex_unlock (&loop->lock);
  }

  void
  event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
  {
    struct op_result *result = data;

    /* We don't support list operations here.  */
    if (type == GPGME_EVENT_DONE)
      {
        result->done = 1;
        result->err = *type_data;
      }
  }
```

The final missing piece is the event loop, which will be presented next. We only support waiting for the success of a single operation.

```
  int
  do_select (struct event_loop *loop)
  {
    fd_set rfds;
```

```
    fd_set wfds;
    int i, n;
    int any = 0;
    struct timeval tv;
    struct one_fd *fdlist
= loop->fds;

    pthread_mutex_lock (&loop->lock);
    FD_ZERO (&rfds);
    FD_ZERO (&wfds);
    for (i = 0; i < MAX_FDS; i++)
      if (fdlist[i].fd != -1)
        FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
    pthread_mutex_unlock (&loop->lock);

    tv.tv_sec = 0;
    tv.tv_usec = 1000;

    do
      {
        n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
      }
    while (n < 0 && errno == EINTR);

    if (n < 0)
      return n; /* Error or timeout.  */

    pthread_mutex_lock (&loop->lock);
    for (i = 0; i < MAX_FDS && n; i++)
      {
        if (fdlist[i].fd != -1)
   {
     if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
       {
         assert (n);
         n--;
         any = 1;
               /* The I/O callback handler can register/remove callbacks,
                  so we have to unlock the file descriptor list.  */
               pthread_mutex_unlock (&loop->lock);
          (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
               pthread_mutex_lock (&loop->lock);
       }
   }
      }
    pthread_mutex_unlock (&loop->lock);
    return any;
  }
```

```
void
wait_for_op (struct event_loop *loop, struct op_result *result)
{
  int ret;

  do
    {
      ret = do_select (loop);
    }
  while (ret >= 0 && !result->done);
}
```

The main function shows how to put it all together.

```
int
main (int argc, char *argv[])
{
  struct event_loop loop;
  struct op_result result;
  gpgme_ctx_t ctx;
  gpgme_error_t err;
  gpgme_data_t sig, text;
  int i;
  pthread_mutexattr_t attr;
  struct gpgme_io_cbs io_cbs =
  {
    add_io_cb,
    &loop,
    remove_io_cb,
    event_io_cb,
    &result
  };

  init_gpgme ();

  /* Initialize the loop structure.  */

  /* The mutex must be
recursive, since remove_io_cb (which acquires a
     lock) can be called while holding a lock acquired in do_select.  */
  pthread_mutexattr_init (&attr);
  pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
  pthread_mutex_init (&loop.lock, &attr);
  pthread_mutexattr_destroy (&attr);

  for (i = 0; i < MAX_FDS; i++)
    loop.fds[i].fd = -1;
```

```
    /* Initialize the result structure.  */
    result.done = 0;

    err = gpgme_data_new_from_file (&sig, "signature", 1);
    if (!err)
      err = gpgme_data_new_from_file (&text, "text", 1);
    if (!err)
      err = gpgme_new (&ctx);
    if (!err)
      {
        gpgme_set_io_cbs (ctx, &io_cbs);
        err = gpgme_op_verify_start (ctx, sig, text, NULL);
      }
    if (err)
      {
        fprintf (stderr, "gpgme error: %s: %s\n",
                 gpgme_strsource (err), gpgme_strerror (err));
        exit (1);
      }

    wait_for_op (&loop,
&result);
    if (!result.done)
      {
        fprintf (stderr, "select error\n");
        exit (1);
      }
    if (!result.err)
      {
        fprintf (stderr, "verification failed: %s: %s\n",
                 gpgme_strsource (result.err), gpgme_strerror (result.err));
        exit (1);
      }
    /* Evaluate verify result.  */
    ...
    return 0;
  }
```

File: gpgme.info, Node: I/O Callback Example GTK+, Next: I/O Callback Example GDK, Prev: I/O Callback Example, Up: Using External Event Loops

7.8.2.4 I/O Callback Example GTK+

The I/O callback interface can be used to integrate GPGME with the GTK+ event loop. The following code snippets shows how this can be done

using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GTK+ specific setup.

```
#include <gtk/gtk.h>

struct my_gpgme_io_cb
{
  gpgme_io_cb_t fnc;
  void *fnc_data;
  guint input_handler_id
};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
{
  struct my_gpgme_io_cb *iocb = data;
  (*(iocb->fnc)) (iocb->data, source);
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gtk_input_remove (data->input_handler_id);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->input_handler_id = gtk_input_add_full (fd, dir
                                               ? GDK_INPUT_READ
                                               : GDK_INPUT_WRITE,
                                              my_gpgme_io_callback,
                                              0, iocb, NULL);
  *tag = iocb;
  return 0;
}
```

File: gpgme.info, Node: I/O Callback Example GDK, Next: I/O Callback Example Qt, Prev: I/O Callback Example GTK+, Up: Using External Event Loops

7.8.2.5 I/O Callback Example GDK
.....

The I/O callback interface can also be used to integrate GPGME with the GDK event loop. The following code snippets shows how this can be done using the appropriate register and remove I/O callback functions. In this example, the private data of the register I/O callback function is unused. The event notifications is missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

```
#include <gdk/gdk.h>

struct my_gpgme_io_cb
{
  gpgme_io_cb_t fnc;
  void *fnc_data;
  gint tag;

};

void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
{
  struct my_gpgme_io_cb *iocb = data;
  (*(iocb->fnc)) (iocb->data, source);
}

void
my_gpgme_remove_io_cb (void *data)
{
  struct my_gpgme_io_cb *iocb = data;
  gdk_input_remove (data->tag);
}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
{
  struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
  iocb->fnc = fnc;
  iocb->data = fnc_data;
  iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                  my_gpgme_io_callback, iocb, NULL);
  *tag = iocb;
  return 0;
```

```
}
```

File: gpgme.info, Node: I/O Callback Example Qt, Prev: I/O Callback Example GDK, Up: Using External Event Loops

7.8.2.6 I/O Callback Example Qt
.....

The
I/O callback interface can also be used to integrate GPGME with the
Qt event loop. The following code snippets show how this can be done
using the appropriate register and remove I/O callback functions. In
this example, the private data of the register I/O callback function is
unused. The event notifications is missing because it does not require
any Qt specific setup.

```
#include <qsocketnotifier.h>
#include <qapplication.h>

struct IOCB {
  IOCB( GpgmeIOCb f, void * d, QSocketNotifier * n )
    : func( f ), data( d ), notifier( n ) {}
  GpgmeIOCb func;
  void * data;
  QSocketNotifier * notifier;
}

class MyApp : public QApplication {

  // ...

  static void registerGpgmeIOCallback( void * data, int fd, int dir,
                                       GpgmeIOCb func, void * func_data,
                                       void ** tag ) {
    QSocketNotifier * n =
      new QSocketNotifier(
fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write );
    connect( n, SIGNAL(activated(int)),
             qApp, SLOT(slotGpgmeIOCallback(int)) );
    qApp->mIOCBs.push_back( IOCB( func, func_data, n ) );
    *tag = (void*)n;
  }

  static void removeGpgmeIOCallback( void * tag ) {
    if ( !tag ) return;
    QSocketNotifier * n = static_cast<QSocketNotifier*>( tag );
```

```
      for ( QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
            it != qApp->mIOCBs.end() ; ++it )
        if ( it->notifier == n ) {
          delete it->notifier;
          qApp->mIOCBs.erase( it );
          return;
        }
    }

  public slots:
    void slotGpgmeIOCallback( int fd ) {
      for ( QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
            it != mIOCBs.end() ; ++it )
        if ( it->notifier && it->notifier->socket() == fd )
          (*(it->func))
( it->func_data, fd );
    }

    // ...

  private:
    QValueList<IOCB> mIOCBs;
    // ...
  };
```


7.8.3 Cancellation

Sometimes you do not want to wait for an operation to finish. GPGME provides two different functions to achieve that. The function gpgme_cancel takes effect immediately. When it returns, the operation is effectively canceled. However, it has some limitations and can not be used with synchronous operations. In contrast, the function gpgme_cancel_async can be used with any context and from any thread, but it is not guaranteed to take effect immediately. Instead, cancellation occurs at the next possible time (typically the next time I/O occurs in the target context).

-- Function: gpgme_ctx_t gpgme_cancel (gpgme_ctx_t CTX)
SINCE: 0.4.5

The function gpgme_cancel attempts to cancel a pending operation in the context
CTX. This only works if you use the global event loop or your own event loop.

If you use the global event loop, you must not call gpgme_wait during cancellation. After successful cancellation, you can call gpgme_wait (optionally waiting on CTX), and the context CTX will appear as if it had finished with the error code GPG_ERR_CANCEL.

If you use an external event loop, you must ensure that no I/O callbacks are invoked for this context (for example by halting the event loop). On successful cancellation, all registered I/O callbacks for this context will be unregistered, and a GPGME_EVENT_DONE event with the error code GPG_ERR_CANCEL will be signalled.

The function returns an error code if the cancellation failed (in this case the state of CTX is not modified).

-- Function: gpgme_ctx_t gpgme_cancel_async (gpgme_ctx_t CTX)
SINCE: 1.1.7

The function gpgme_cancel_async attempts to cancel a pending operation
in the context CTX. This can be called by any thread at any time after starting an operation on the context, but will not take effect immediately. The actual cancellation happens at the next time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in this case the state of CTX is not modified).

Appendix A The GnuPG UI Server Protocol

This section specifies the protocol used between clients and a User Interface Server (UI server). This protocol helps to build a system where all cryptographic operations are done by a server and the server is responsible for all dialogs. Although GPGME has no direct support for this protocol it is believed that servers will utilize the GPGME library; thus having the specification included in this manual is an appropriate choice. This protocol
should be referenced as The GnuPG UI Server Protocol.

A server needs to implement these commands:(1)

* Menu:

* UI Server Encrypt:: Encrypt a message.
* UI Server Sign:: Sign a message.
* UI Server Decrypt:: Decrypt a message.
* UI Server Verify:: Verify a message.
* UI Server Set Input Files:: Specifying the input files to operate on.
* UI Server Sign/Encrypt Files:: Encrypting and signing files.
* UI Server Verify/Decrypt Files:: Decrypting and verifying files.
* UI Server Import/Export Keys:: Managing certificates.
* UI Server Checksum Files:: Create and verify checksums for files.
* Miscellaneous UI Server Commands:: Commands not related to a specific operation.

---------- Footnotes ----------

(1) In all examples we assume that the connection has already been established; see the Assuan manual for details.

File: gpgme.info, Node: UI Server Encrypt, Next: UI Server Sign, Up: UI Server Protocol

A.1 UI Server: Encrypt a Message
==========

Before encryption can be done the recipients must be set using the command:

-- Command: RECIPIENT STRING

Set the recipient for the encryption. STRING is an RFC-2822 recipient name ("mailbox" as per section 3.4). This command may or may not check the recipient for validity right away; if it does not all recipients are expected to be checked at the time of the ENCRYPT command. All RECIPIENT commands are cumulative until a successful ENCRYPT command or until a RESET command. Linefeeds are obviously not allowed in STRING and should be folded into spaces (which are equivalent).

To tell the server the source and destination of the data, the next two commands are to be used:

-- Command: INPUT FD=N

Set the file descriptor for the message to be encrypted to N. The message send to the server is binary encoded.

GpgOL is a Windows only program, thus N is not a libc file descriptor but a regular system handle. Given that the Assuan

connection works over a socket, it is not possible to use regular
inheritance to make the file descriptor available to the server.
Thus DuplicateHandle needs to be used to duplicate a handle to
the server process. This is the reason that the server needs to
implement the GETINFO pid command. Sending this command a second
time replaces the file descriptor set by the last one.

-- Command: OUTPUT FD=N [--binary]
Set the file descriptor to be used for the output (i.e. the
encrypted message) to N. If the option --binary is given the
output shall be in binary format; if not given, the output for
OpenPGP needs to be ASCII armored and for CMS Base-64 encoded. For
details on the file descriptor, see the INPUT command.

The setting of the recipients, the data source and destination may
happen in any order, even intermixed. If this has been
done the actual
encryption operation is called using:

-- Command: ENCRYPT --protocol=NAME

This command reads the plaintext from the file descriptor set by
the INPUT command, encrypts it and writes the ciphertext to the
file descriptor set by the OUTPUT command. The server may (and
should) overlap reading and writing. The recipients used for the
encryption are all the recipients set so far. If any recipient is
not usable the server should take appropriate measures to notify
the user about the problem and may cancel the operation by
returning an error code. The used file descriptors are void after
this command; the recipient list is only cleared if the server
returns success.

Because GpgOL uses a streaming mode of operation the server is not
allowed to auto select the protocol and must obey to the mandatory
PROTOCOL parameter:

OpenPGP
Use the OpenPGP protocol (RFC-2440).
CMS
Use the CMS
(PKCS#7) protocol (RFC-3852).

To support automagically selection of the protocol depending on the
selected keys, the server MAY implement the command:

-- Command: PREP_ENCRYPT [--protocol=NAME] [--expect-sign]

This commands considers all recipients set so far and decides

whether it is able to take input and start the actual encryption.
This is kind of a dry-run ENCRYPT without requiring or using the
input and output file descriptors. The server shall cache the
result of any user selection to avoid asking this again when the
actual ENCRYPT command is send. The --protocol option is
optional; if it is not given, the server should allow the user to
select the protocol to be used based on the recipients given or by
any other means.

If --expect-sign is given the server should expect that the
message will also be signed and use this hint to present a unified
recipient and signer selection dialog if possible and desired.
A
selected signer should then be cached for the expected SIGN command
(which is expected in the same session but possible on another
connection).

If this command is given again before a successful ENCRYPT
command, the second one takes effect.

Before sending the OK response the server shall tell the client the
protocol to be used (either the one given by the argument or the
one selected by the user) by means of a status line:

-- Status line: PROTOCOL NAME
Advise the client to use the protocol NAME for the ENCRYPT
command. The valid protocol names are listed under the description
of the ENCRYPT command. The server shall emit exactly one
PROTOCOL status line.

Here is an example of a complete encryption sequence; client lines are
indicated by a C:, server responses by C::

C: RESET
S: OK
C: RECIPIENT foo@example.net
S: OK
C: RECIPIENT bar@example.com
S: OK
C: PREP_ENCRYPT
S: S PROTOCOL OpenPGP
S: OK
C: INPUT FD=17
S: OK
C: OUTPUT FD=18
S: OK
C: ENCRYPT
S: OK

File: gpgme.info, Node: UI Server Sign, Next: UI Server Decrypt, Prev: UI Server Encrypt, Up: UI Server Protocol

A.2 UI Server: Sign a Message
==========

The server needs to implement opaque signing as well as detached signing. Due to the nature of OpenPGP messages it is always required to send the entire message to the server; sending just the hash is not possible. The following two commands are required to set the input and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be signed to N. The message send to the server is binary encoded. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N [--binary]
Set the file descriptor to be used for the output. The output is either the complete signed message or in case of a detached signature just that detached signature. If the option --binary is given the output shall be in binary format; if not given, the output for OpenPGP needs to be ASCII armored and for CMS Base-64 encoded. For details on the file descriptor, see the INPUT command.

To allow the server the selection of a non-default signing key the client may optionally use the SENDER command, see *note command SENDER::.

The signing operation is then initiated by:

-- Command: SIGN --protocol=NAME [--detached]
Sign the data set with the INPUT command and write it to the sink set by OUTPUT. NAME is the signing protocol used for the message. For a description of the allowed protocols see the ENCRYPT command. With option --detached given, a detached signature is created; this is actually the usual way the command is used.

The client expects the server to send at least this status information before the final OK response:

-- Status line: MICALG STRING

The STRING represents the hash algorithm used to create the
signature. It is used with RFC-1847 style signature messages and
defined by PGP/MIME (RFC-3156) and S/MIME (RFC-3851). The GPGME
library has a supporting function gpgme_hash_algo_name to return
the algorithm name as a string. This string needs to be lowercased
and for OpenPGP prefixed with "pgp-".

```
{
  "op": "export",
  "keys": "victor@example.org",
  "armor": true
}
-----BEGIN PGP PRIVATE KEY BLOCK-----

lQOYBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAEAB/wLJ0gyMjs2fFfT83wM
5Lzz2yQIwV4t3bblBAujdHTqeN5Zmsm/oakFyjSokULK96Kv0R4ej9eoIgMFvxFk
HRkrggxTrbsNJ7I6QcKYHTPeIIj318ykNL6fj0WJUcdPIENukXl5jbqNyk3/4D2y
TTDySyq6jHTgvMH4K4KJUSpglvSJPntTk9RhuFGHAF+sNR9atygDYctAaERMRtSg
LCoSt/AoX5GRMlQjXT9oqQjwSQoZyF4s8HMC8wdTFIE/E0L4IVdHVp8sz2UszNtT
W/evmCA+KVruKjRH/Fhrq4hHkEamW28+j4L6uAyagONP7BONs+S5Oo2zTT9+tV2R
ILTZBADdgLuAgF6C5Lu9jCF6DfFgaT/uafMyQNkEGNlxOHMWHTgLHe475V2eG9gA
amd4yXKyEFKU1PWnvlGuicQSGdzVcwmq61msvXgYD0FK3LP3yWzKnE4X1tzrC9Vp
/uHJxKjewCuyt1f5in919v+T8TbUxBYKC0zX/qWtX+10cTx77QQA6leqhToJ95Yc
u4UBrKMEO+y2v8Svb3LG7yI5oY8tkw0EkJ/kpZ8xTAfZYCe6fXdvVE3PHg2lrxyc
Wv/EU3QY/qA3G82mbXYeJ2jNZaTNYo4MylMrt4Mx25x4ke7JlsE8SVrQ+4CrHkqp
OjSIa7fppLrQ78uW980AtN8NNQGrlTsD/A9aoA60Igxy1Q3K2uSyDCyjLknv57ym
ZSBD3/t7m0l6Q6gbdfhNGosT+Hd4y3actqEqzXZHW2VG4dKZ/wRNkxtSm9adU9vs
EHyzxjb6mKIH32zAG5TaFT20hC+NK6lsyHr9UE2ZrS6ma2sLxGW2O40hqNsdD+5m
NrqeBc2I/js1PMK0EHRlc3RAZXhhbXBsZS5vcmeJAVQEEwEIAD4WIQTUFzW5Ejb9
uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8JnAAULCQgHAgYVCgkICwIEFgIDAQIe
AQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGwFq07W9N01HWULyhHKoMmcHL6rfZ6
4oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6kaBe+wF6Kqir6udFSBW9rPcFg6/V
ZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rNGkYo1JCBR0XdRJYCSX3yB4TWv/eX
nZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k70DevQeBsv+UjVXjWpNTZmPbvDnd9
95uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6UunOf9Rlp1oMzdxMool/d1MlCxg2h
3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ1J8Nsv87SZeEnQOYBFrsKEkBCADj
oEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6yE+x2hk5FoQCajxKa/d4AVxOnJpd
whAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0pO7bgAiZxkA6RHxtNqhpPnPQoXvUz
kzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/8i9Taz67pdZwuJjac8qBuJHjzAo1
bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt3RuqVGP316Fk+Sy2+60tC/HlX8jg
MyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyLUGKU+L8cB2g1PGGp2biBFWqZbudZ
oyRBet/0yH/zirBdQJw1ABEBAAEAB/4lN3gXOI4OuoOcsvHak4pebx61Mt0YP9cT
qZASIBqxok5x8E28pFh/tYfkYdqRCtdNYZOnxcEoUWh5j6nfwZkEnJ9P/T8GPNk7
pMKnKXmExi05b5uGHD8nU1rSbf/YkvAF0vpbxd4/RDxbbtQhbUwGzusSI+pBLM0w
```

```
5TreEB+vRGBc2gOvXXOtKLNEa7M9rH2EwbAkP3jOGGwgk6adxbQdBcRxq4merqhL
YrVz73bCj8TDc0fsNJyIaZZJ++ejfBFYavsF1pvx9z7FNFi8rSXoiB3SBtaWGfhr
bwNaMZrDc7TRIq/fgGaL6g//bzcWrr1YaHXZ10Bgx6UymDOlYkCpBADm0Hv46sPw
07SO8+IACcaQliOto1pndOPwTimCeo58/7rf8I2a5uuJloGrnPwAX65bKDnUALp6
X3lnXRNMhnB3Uewx4i00LQmjsxhJfQiGLpMv0j58tn64s7GqQzGVV1JKcQm992RV
jFOydyjZ+K4LGWEOITG/bZrMEVNGCM+OnQQA/Haz8xN0NFSlq7tyfFc0pkx/TiCX
xGfBqbO0wU2b5GMnZbY/06HENpidIzpa231VQaw5/nPTvfhlLKW1iGAkc148cX1q
lL9w2ksXuaHR3LXud2VcfVTIdxU/7h7u1dD/85+c0+7jlGObD9cXKxlM6OjpIJz1
l5/1h3C5S0TuxHkEAL/3BGihkhNfv1Xx0rWu0/732usX/nE/A9C26hGu41FUf3fp
0ilonKpKZUEwWt5hWSEFCSrznNVekiO0rxvuu3RVegvzThPNU4Pf4JZtJpRVhvUQ
d9ulxJw7V9rs75uNBatTNC0kXuGoXhehw4Bn93xa67gYGd3LfrH+oT0GCDpTSHCJ
ATwEGAEIACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAK
CRAjAWNe7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ
5F32NDJ9PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7
Jq3e/4Iy0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02L
kr+2Cc/Qk6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe
23nntMSDA+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t
9Mmd7bM1+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=hkUm
-----END
 PGP PRIVATE KEY BLOCK-----
{
  "manifest_version": 2,

  "name": "Browsertests for gpgmejs",
  "description": "Run the browsertests.",
  "version": "0.1",
  "content_security_policy": "default-src 'self' filesystem:",
  "browser_action": {
    "default_icon": "testicon.png",
    "default_popup": "popup.html"
  },
  "permissions": ["nativeMessaging", "activeTab"]
 }
from __future__ import absolute_import

import cython
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)
```

```
if cython.compiled is True:
  cc = "Powered by Cython compiled C code."
else:
  cc = "Powered by Python."

print("""
  Number of secret keys:  {0}
  Number of public keys:  {1}

 {2}
""".format(secnum, pubnum, cc))
{
  "info": {
    "is_mime":      false,
    "signatures":   [{
      "summary":      {
        "sigsum":       [],
        "valid":        false,
        "green":        false,
        "red":  false,
        "revoked":      false,
        "key-expired":  false,
        "sig-expired":  false,
        "key-missing":  false,
        "crl-missing":  false,
        "crl-too-old":  false,
        "bad-policy":   false,
        "sys-error":    false
      },
      "wrong_key_usage":      false,
      "chain_model":  false,
      "is_de_vs":     false,
      "status_string":        "Success",
      "fingerprint":  "A0FF4590BB6122EDEF6E3C542D727CC768697734",
      "validity_string":      "unknown",
      "pubkey_algo_name":     "DSA",
      "hash_algo_name":       "SHA1",
      "status_code":  0,
      "timestamp":    1542213871,
       "exp_timestamp":        0,
      "pka_trust":    0,
      "validity":     0,
      "validity_reason":      0,
      "notations":    [{
        "human_readable":       false,
        "critical":     false,
        "value":        "https://www.gnu.org/policy/",
```

```
            "flags":       0
          }, {
          "human_readable":       true,
          "critical":     false,
          "name": "laughing@me",
          "value":       "Just Squeeze Me",
          "flags":       1
          }, {
          "human_readable":       true,
          "critical":     true,
          "name": "preferred-email-encoding@pgp.com",
          "value":       "pgpmime",
          "flags":       3
          }]
       }]
  },
  "type": "plaintext",
  "base64":       false,
  "data": "Hallo Leute\n"
}
```


This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU General Public License as published by the Free Software Foundation; either version 3 of the License, or (at your option) any later version. The text of the license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme).   Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The GnuPG Made Easy Reference Manual, for Version 1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this

document under the terms of the GNU General Public License as published by the Free Software Foundation; either version 3 of the License, or (at your option) any later version. The text of the license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

Indirect:
gpgme.info-1: 1688
gpgme.info-2: 301751

Tag Table:
(Indirect)
Node: Top1688
Node: Introduction9067
Node: Getting Started9857
Node: Features11318
Node: Overview12630
Node: Preparation13739
Node: Header14736
Node: Building the Source15483
Node: Largefile Support (LFS)17627
Node: Using Automake23043
Node: Using Libtool25596
Node: Library Version Check25958
Node: Signal Handling32018
Node: Multi-Threading33288
Ref: Multi-Threading-Footnote-134704
Node: Protocols and Engines35127
Node: Engine Version Check37878
Node: Engine Information40401
Node: Engine Configuration44261
Node: OpenPGP45565
Node: Cryptographic Message Syntax45905
Node: Assuan46218
Node: Algorithms46592
Ref: Algorithms-Footnote-147071
Node: Public Key Algorithms47199
Node: Hash Algorithms49801
Node: Error Handling51015
Node: Error Values52889
Node: Error Sources58092
Node: Error Codes60532

Node: Error Strings65325
Node: Exchanging Data67132
Node: Creating Data Buffers69017
Node: Memory Based Data Buffers69533
Node: File Based Data Buffers72966
Node: Callback Based Data Buffers76079
Node: Destroying Data Buffers80270
Node: Manipulating Data Buffers81777
Node: Data Buffer I/O Operations82269
Node: Data Buffer Meta-Data84642
Node: Data Buffer Convenience89161
Node: Contexts91381
Node: Creating Contexts92500
Node: Destroying Contexts93347
Node: Result Management93686
Node:
Context Attributes95267
Node: Protocol Selection96434
Node: Crypto Engine97480
Node: Setting the Sender99369
Node: ASCII Armor100882
Node: Text Mode101511
Node: Offline Mode102445
Node: Pinentry Mode103943
Node: Included Certificates105837
Node: Key Listing Mode107283
Node: Passphrase Callback112407
Node: Progress Meter Callback115969
Node: Status Message Callback117954
Node: Context Flags119719
Node: Locale126330
Node: Additional Logs127922
Node: Key Management130120
Node: Key objects131344
Node: Listing Keys145918
Node: Information About Keys154571
Node: Manipulating Keys155879
Node: Generating Keys158777
Node: Signing Keys177097
Node: Exporting Keys182611
Node: Importing Keys189891
Ref: Importing Keys-Footnote-1197294
Node: Deleting Keys197422
Node: Changing Passphrases199702
Node: Changing TOFU Data201029
Node: Advanced Key Editing203137
Node: Crypto Operations205870
Node: Decrypt207127

Node: Verify214407
Node: Decrypt and Verify227500
Node: Sign230355
Node: Selecting Signers230919
Node:
Creating a Signature232325
Node: Signature Notation Data237095
Node: Encrypt239380
Node: Encrypting a Plaintext239736
Node: Miscellaneous254148
Node: Running other Programs254560
Node: Using the Assuan protocol256723
Node: Checking for updates259521
Node: Run Control264338
Node: Waiting For Completion265082
Node: Using External Event Loops267207
Node: I/O Callback Interface269179
Node: Registering I/O Callbacks274107
Node: I/O Callback Example276146
Node: I/O Callback Example GTK+282771
Node: I/O Callback Example GDK284560
Node: I/O Callback Example Qt286202
Node: Cancellation288490
Node: UI Server Protocol290798
Ref: UI Server Protocol-Footnote-1292233
Node: UI Server Encrypt292352
Node: UI Server Sign297710
Node: UI Server Decrypt301751
Node: UI Server Verify303406
Node: UI Server Set Input Files306978
Node: UI Server Sign/Encrypt Files308048
Node: UI Server Verify/Decrypt Files309856
Node: UI Server Import/Export Keys311732
Node: UI Server Checksum Files312794
Node:
Miscellaneous UI Server Commands315012
Ref: command SENDER316943
Node: Debugging318645
Node: Deprecated Functions320394
Node: Library Copying343403
Node: Copying371623
Node: Concept Index409373
Node: Function and Data Index424085

End Tag Table

Local Variables:

coding: utf-8
End:
000
 *H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0
001102164724Z
011230180000Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1+0)U"DFN Server Certification Authority1!0 *H
 certify@pca.dfn.de0"0
 *H
0
W`r;wXu)QYHm1t]4?|-.B(iw6G01N>[mQSwC'muw~E'l-M
+<[A|F)F%
ZiRaW=OC,,meKW@J-*<,L}:Bnm-kv
EYBmu tt[-%,R+n0j0U00U0U{upz*D\
v0Ux0v09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfnpca.crx09753http://www.pca.dfn.de/dfnpca/certify/ssl/dfn
pca.crl0 `HB0) `HBhttps://mystic.pca.dfn.de/0A `HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html0 `HB
This certificate was issued by the DFN-PCA, the Top
Level Certification Authority of the German Research
Network (Deutsches Forschungsnetz, DFN).
The key owner's identity was authenticated in
accordance with the DFN World Wide Web Policy, v1.00! `HBcgi/check-rev.cgi?0
 *H
\C)2
+ZYG| UCA|PzYFnTj@SA)/<HU+4t?@g?pb5w'Z;dqLi9\(d=
,}h?c(MeM44=Qe/_^^JyYN/61&jPFXifP&#;/KZ
1 xOK?ps
\input texinfo   @c -*- mode: texinfo; coding: utf-8; -*-
@documentencoding UTF-8
@setfilename gpgme.info
@include defs.inc
@settitle The `GnuPG Made Easy' Reference Manual

@dircategory GNU Libraries
@direntry
* @acronym{GPGME}: (gpgme).   Adding support for cryptography to your program.
@end direntry

@c Unify some of the indices.
@syncodeindex tp fn
@syncodeindex pg fn

@copying
Copyright @copyright{} 2002--2008, 2010, 2012--2018 g10 Code GmbH.

@quotation

Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU General Public License as published by the
Free Software Foundation; either version 3 of the License, or (at your
option) any later version. The text of the license can be found in the
section entitled ``Copying''.
@end quotation

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See
 the GNU
General Public License for more details.
@end copying

@c Macros used by the description of the UI server protocol
@macro clnt{string}
 @sc{c:} \string\
@end macro
@macro srvr{string}
 @sc{s:} \string\
@end macro

@c API version.
@macro since{string}
 @sc{Since:} \string\
@end macro

@c
@c T I T L E P A G E
@c
@ifinfo
This file documents the @acronym{GPGME} library.

This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version
@value{VERSION}.

@c NOTE: Don't forget to update the year for the TeX version, too.
@insertcopying

@end ifinfo

@c We do not want that bastard short titlepage.
@c @iftex
@c @shorttitlepage The `GnuPG Made Easy' Reference Manual
@c @end iftex
@titlepage

@center @titlefont{The `GnuPG Made Easy'}
@sp 1
@center @titlefont{Reference Manual}
@sp 6
@center Edition @value{EDITION}
@sp 1
@center last updated @value{UPDATED}
@sp 1
@center for version @value{VERSION}
@page
@vskip 0pt plus 1filll
Published
by The GnuPG Project@* c/o g10 Code GmbH@* Httenstr. 61@* 40699 Erkrath, Germany

@insertcopying
@end titlepage
@page

@summarycontents
@contents

@ifnottex
@node Top
@top Main Menu
This is Edition @value{EDITION}, last updated @value{UPDATED}, of
@cite{The `GnuPG Made Easy' Reference Manual}, for Version
@value{VERSION} of the @acronym{GPGME} library.
@end ifnottex

@menu
* Introduction:: How to use this manual.
* Preparation:: What you should do before using the library.
* Protocols and Engines:: Supported crypto protocols.
* Algorithms:: Supported algorithms.
* Error Handling:: Error numbers and their meanings.
* Exchanging Data:: Passing data to and from @acronym{GPGME}.
* Contexts:: Handling @acronym{GPGME} contexts.

Appendices

* UI Server Protocol:: The GnuPG UI Server Protocol.
* Debugging:: How to solve problems.
* Deprecated
Functions:: Documentation of deprecated functions.

* Library Copying:: The GNU Lesser General Public License says
how you can copy and share `GnuPG Made Easy'.
* Copying:: The GNU General Public License says how you

can copy and share this manual.

Indices

* Concept Index:: Index of concepts and programs.
* Function and Data Index:: Index of functions, variables and data types.

@detailmenu
--- The Detailed Node Listing ---

Introduction

* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.

Preparation

* Header:: What header file you need to include.
* Building the Source:: Compiler options to be used.
* Largefile Support (LFS)::
  How to use @acronym{GPGME} with LFS.
* Using Automake:: Compiler options to be used the easy way.
* Using Libtool:: Avoiding compiler options entirely.
* Library Version Check:: Getting and verifying the library version.
* Signal Handling:: How @acronym{GPGME} affects signal handling.
* Multi-Threading:: How @acronym{GPGME} can be used in an MT environment.

Protocols and Engines

* Engine Version Check:: Verifying the engine version.
* Engine Information:: Obtaining more information about the engines.
* Engine Configuration:: Changing the engine configuration.
* OpenPGP:: Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.

Algorithms

* Public Key Algorithms:: A list of all public key algorithms.
* Hash Algorithms:: A list of all hash algorithms.

Error Handling

* Error Values:: The error
value and what it means.
* Error Codes:: A list of important error codes.
* Error Sources:: A list of important error sources.
* Error Strings:: How to get a descriptive string from a value.

Exchanging Data

* Creating Data Buffers:: Creating new data buffers.
* Destroying Data Buffers:: Releasing data buffers.
* Manipulating Data Buffers:: Operations on data buffers.

Creating Data Buffers

* Memory Based Data Buffers:: Creating memory based data buffers.
* File Based Data Buffers:: Creating file based data buffers.
* Callback Based Data Buffers:: Creating callback based data buffers.

Manipulating Data Buffers

* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.

Contexts

* Creating Contexts:: Creating new @acronym{GPGME} contexts.
*
Destroying Contexts:: Releasing @acronym{GPGME} contexts.
* Result Management:: Managing the result of crypto operations.
* Context Attributes:: Setting properties of a context.
* Key Management:: Managing keys with @acronym{GPGME}.
* Crypto Operations:: Using a context for cryptography.
* Miscellaneous:: Miscellaneous operations.
* Run Control:: Controlling how operations are run.

Context Attributes

* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode::
Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Locale:: Setting the locale of a context.

Key Management

* Key objects:: Description of the key structures.
* Listing Keys:: Browsing the list of available keys.
* Information About Keys:: Requesting detailed information about keys.
* Manipulating Keys:: Operations on keys.
* Generating Keys:: Creating new key pairs.
* Signing Keys:: Adding key signatures to public keys.
* Exporting Keys:: Retrieving key data from the key ring.
* Importing Keys:: Adding keys to the key ring.
* Deleting Keys:: Removing keys from the key ring.
* Changing Passphrases:: Change the passphrase of
a key.
* Changing TOFU Data:: Changing data pertaining to TOFU.
* Advanced Key Editing:: Advanced key edit operation.

Crypto Operations

* Decrypt:: Decrypting a ciphertext.
* Verify:: Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.

Sign

* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.

Encrypt

* Encrypting a Plaintext:: How to encrypt a plaintext.

Miscellaneous

* Running other Programs:: Running other Programs.
* Using the Assuan protocol:: Using the Assuan protocol.
* Checking for updates:: How to check for software updates.

Run Control

* Waiting For Completion:: Waiting
until an operation is completed.
* Using External Event Loops:: Advanced control over what happens when.
* Cancellation:: How to end pending operations prematurely.

Using External Event Loops

* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to integrate @acronym{GPGME} in GTK+.
* I/O Callback Example GDK:: How to integrate @acronym{GPGME} in GDK.
* I/O Callback Example Qt:: How to integrate @acronym{GPGME} in Qt.

@end detailmenu
@end menu

@node Introduction
@chapter Introduction

`GnuPG Made Easy' (@acronym{GPGME}) is a C language library that
allows to add support for cryptography to a program. It is designed
to make access to public key crypto engines like GnuPG or GpgSM easier
for applications. @acronym{GPGME} provides a high-level crypto API
for
 encryption, decryption, signing, signature verification and key
management.

@acronym{GPGME} uses GnuPG and GpgSM as its backends to support
OpenPGP and the Cryptographic Message Syntax (CMS).

@menu
* Getting Started:: Purpose of the manual, and how to use it.
* Features:: Reasons to install and use @acronym{GPGME}.
* Overview:: Basic architecture of the @acronym{GPGME} library.
@end menu

@node Getting Started
@section Getting Started

This manual documents the @acronym{GPGME} library programming
interface. All functions and data types provided by the library are
explained.

The reader is assumed to possess basic knowledge about cryptography in
general, and public key cryptography in particular. The underlying
cryptographic engines that are used by the library are not explained,
but where necessary, special features or requirements by an engine are
mentioned as far as they are relevant to @acronym{GPGME} or its users.

This manual
 can be used in several ways. If read from the beginning
to the end, it gives a good introduction into the library and how it
can be used in an application. Forward references are included where

necessary. Later on, the manual can be used as a reference manual to
get just the information needed about any particular interface of the
library. Experienced programmers might want to start looking at the
examples at the end of the manual, and then only read up those parts
of the interface which are unclear.

The documentation for the language bindings is currently not included
in this manual. Those languages bindings follow the general
programming model of @acronym{GPGME} but may provide some extra high
level abstraction on top of the @acronym{GPGME} style API. For now
please see the README files in the @file{lang/} directory of the
source distribution.

@node Features
@section Features

@acronym{GPGME} has a couple of advantages over other libraries doing
a similar job, and over
 implementing support for GnuPG or other crypto
engines into your application directly.

@table @asis
@item it's free software
Anybody can use, modify, and redistribute it under the terms of the GNU
Lesser General Public License (@pxref{Library Copying}).

@item it's flexible
@acronym{GPGME} provides transparent support for several cryptographic
protocols by different engines. Currently, @acronym{GPGME} supports
the OpenPGP protocol using GnuPG as the backend, and the Cryptographic
Message Syntax using GpgSM as the backend.

@item it's easy
@acronym{GPGME} hides the differences between the protocols and
engines from the programmer behind an easy-to-use interface. This way
the programmer can focus on the other parts of the program, and still
integrate strong cryptography in his application. Once support for
@acronym{GPGME} has been added to a program, it is easy to add support
for other crypto protocols once @acronym{GPGME} backends provide them.

@item it's language friendly
@acronym{GPGME}
 comes with languages bindings for several common
programming languages: Common Lisp, C++, Python 2, and Python 3.
@end table

@node Overview

@section Overview

@acronym{GPGME} provides a data abstraction that is used to pass data
to the crypto engine, and receive returned data from it. Data can be
read from memory or from files, but it can also be provided by a
callback function.

The actual cryptographic operations are always set within a context.
A context provides configuration parameters that define the behaviour
of all operations performed within it. Only one operation per context
is allowed at any time, but when one operation is finished, you can
run the next operation in the same context. There can be more than
one context, and all can run different operations at the same time.

Furthermore, @acronym{GPGME} has rich key management facilities
including listing keys, querying their attributes, generating,
importing, exporting and deleting keys, and acquiring information
about
 the trust path.

With some precautions, @acronym{GPGME} can be used in a multi-threaded
environment, although it is not completely thread safe and thus needs
the support of the application.

@node Preparation
@chapter Preparation

To use @acronym{GPGME}, you have to perform some changes to your
sources and the build system. The necessary changes are small and
explained in the following sections. At the end of this chapter, it
is described how the library is initialized, and how the requirements
of the library are verified.

@menu
* Header::   What header file you need to include.
* Building the Source::   Compiler options to be used.
* Largefile Support (LFS)::   How to use @acronym{GPGME} with LFS.
* Using Automake::   Compiler options to be used the easy way.
* Using Libtool::   Avoiding compiler options entirely.
* Library Version Check::   Getting and verifying the library version.
* Signal Handling::
        How @acronym{GPGME} affects signal handling.
* Multi-Threading::   How @acronym{GPGME} can be used in an MT environment.
@end menu

@node Header

@section Header
@cindex header file
@cindex include file

All interfaces (data types and functions) of the library are defined
in the header file `gpgme.h'. You must include this in all programs
using the library, either directly or through some other header file,
like this:

@example
#include <gpgme.h>
@end example

The name space of @acronym{GPGME} is @code{gpgme_*} for function names
and data types and @code{GPGME_*} for other symbols. Symbols internal
to @acronym{GPGME} take the form @code{_gpgme_*} and @code{_GPGME_*}.

Because @acronym{GPGME} makes use of the GPG Error library, using
@acronym{GPGME} will also use the @code{GPG_ERR_*} name space
directly, and the @code{gpg_err*}, @code{gpg_str*}, and @code{gpgrt_*}
name space indirectly.

@node Building the Source
@section Building the Source
@cindex compiler options
@cindex
 compiler flags

If you want to compile a source file including the `gpgme.h' header
file, you must make sure that the compiler can find it in the
directory hierarchy. This is accomplished by adding the path to the
directory in which the header file is located to the compilers include
file search path (via the @option{-I} option).

However, the path to the include file is determined at the time the
source is configured. To solve this problem, gpgme ships with a small
helper program @command{gpgme-config} that knows about the path to the
include file and other configuration options. The options that need
to be added to the compiler invocation at compile time are output by
the @option{--cflags} option to @command{gpgme-config}. The following
example shows how it can be used at the command line:

@example
gcc -c foo.c `gpgme-config --cflags`
@end example

Adding the output of @samp{gpgme-config --cflags} to the compiler

command line will ensure that the compiler can find the
@acronym{GPGME}
header file.

A similar problem occurs when linking the program with the library.
Again, the compiler has to find the library files. For this to work,
the path to the library files has to be added to the library search
path (via the @option{-L} option). For this, the option
@option{--libs} to @command{gpgme-config} can be used. For
convenience, this option also outputs all other options that are
required to link the program with @acronym{GPGME} (in particular, the
@samp{-lgpgme} option). The example shows how to link @file{foo.o}
with the @acronym{GPGME} library to a program @command{foo}.

@example
gcc -o foo foo.o `gpgme-config --libs`
@end example

Of course you can also combine both examples to a single command by
specifying both options to @command{gpgme-config}:

@example
gcc -o foo foo.c `gpgme-config --cflags --libs`
@end example

If you need to detect the installed language bindings you can use list
them using:

@example
gpgme-config --print-lang
@end example

or
test for the availability using

@example
gpgme-config --have-lang=python && echo 'Bindings for Pythons available'
@end example

@node Largefile Support (LFS)
@section Largefile Support (LFS)
@cindex largefile support
@cindex LFS

@acronym{GPGME} is compiled with largefile support by default, if it
is available on the system. This means that GPGME supports files
larger than two gigabyte in size, if the underlying operating system

can. On some systems, largefile support is already the default. On such systems, nothing special is required. However, some systems provide only support for files up to two gigabyte in size by default. Support for larger file sizes has to be specifically enabled.

To make a difficult situation even more complex, such systems provide two different types of largefile support. You can either get all relevant functions replaced with alternatives that are largefile capable, or you can get new functions and data types for largefile support added. Those
new functions have the same name as their
smallfile counterparts, but with a suffix of 64.

An example: The data type @code{off_t} is 32 bit wide on GNU/Linux PC systems. To address offsets in large files, you can either enable largefile support add-on. Then a new data type @code{off64_t} is provided, which is 64 bit wide. Or you can replace the existing @code{off_t} data type with its 64 bit wide counterpart. All occurrences of @code{off_t} are then automagically replaced.

As if matters were not complex enough, there are also two different types of file descriptors in such systems. This is important because if file descriptors are exchanged between programs that use a different maximum file size, certain errors must be produced on some file descriptors to prevent subtle overflow bugs from occurring.

As you can see, supporting two different maximum file sizes at the same time is not at all an easy task. However, the maximum file size does matter for @acronym{GPGME}, because
some data types it uses in
its interfaces are affected by that. For example, the @code{off_t} data type is used in the @code{gpgme_data_seek} function, to match its @acronym{POSIX} counterpart. This affects the call-frame of the function, and thus the ABI of the library. Furthermore, file descriptors can be exchanged between GPGME and the application.

For you as the user of the library, this means that your program must be compiled in the same file size mode as the library. Luckily, there is absolutely no valid reason for new programs to not enable largefile support by default and just use that. The compatibility modes (small file sizes or dual mode) can be considered an historic artefact, only useful to allow for a transitional period.

On POSIX platforms @acronym{GPGME} is compiled using largefile support by default. This means that your application must do the same, at least as far as it is relevant for using the @file{gpgme.h} header file. All types in this header files refer

to their largefile
counterparts, if they are different from any default types on the
system.

On 32 and 64 bit Windows platforms @code{off_t} is declared as 32 bit
signed integer. There is no specific support for LFS in the C
library. The recommendation from Microsoft is to use the native
interface (@code{CreateFile} et al.) for large files. Released binary
versions of @acronym{GPGME} (libgpgme-11.dll) have always been build
with a 32 bit @code{off_t}. To avoid an ABI break we stick to this
convention for 32 bit Windows by using @code{long} there.
@acronym{GPGME} versions for 64 bit Windows have never been released
and thus we are able to use @code{int64_t} instead of @code{off_t}
there. For easier migration the typedef @code{gpgme_off_t} has been
defined. The reason we cannot use @code{off_t} directly is that some
toolchains (e.g. mingw64) introduce a POSIX compatible hack for
@code{off_t}. Some widely used toolkits make use of this hack and in
turn @acronym{GPGME} would need
to use it also. However, this would
introduce an ABI break and existing software making use of libgpgme
might suffer from a severe break. Thus with version 1.4.2 we
redefined all functions using @code{off_t} to use @code{gpgme_off_t}
which is defined as explained above. This way we keep the ABI well
defined and independent of any toolchain hacks. The bottom line is
that LFS support in @acronym{GPGME} is only available on 64 bit
versions of Windows.

On POSIX platforms you can enable largefile support, if it is
different from the default on the system the application is compiled
on, by using the Autoconf macro @code{AC_SYS_LARGEFILE}. If you do
this, then you don't need to worry about anything else: It will just
work. In this case you might also want to use @code{AC_FUNC_FSEEKO}
to take advantage of some new interfaces, and @code{AC_TYPE_OFF_T}
(just in case).

If you do not use Autoconf, you can define the preprocessor symbol
@code{_FILE_OFFSET_BITS} to 64 @emph{before} including
any header
files, for example by specifying the option
@code{-D_FILE_OFFSET_BITS=64} on the compiler command line. You will
also want to define the preprocessor symbol @code{LARGEFILE_SOURCE} to
1 in this case, to take advantage of some new interfaces.

If you do not want to do either of the above, you probably know enough
about the issue to invent your own solution. Just keep in mind that
the @acronym{GPGME} header file expects that largefile support is
enabled, if it is available. In particular, we do not support dual
mode (@code{_LARGEFILE64_SOURCE}).

@node Using Automake
@section Using Automake
@cindex automake
@cindex autoconf

It is much easier if you use GNU Automake instead of writing your own
Makefiles. If you do that you do not have to worry about finding and
invoking the @command{gpgme-config} script at all. @acronym{GPGME}
provides an extension to Automake that does all the work for you.

@c A simple macro for optional variables.
@macro ovar{varname}
@r{[}@var{\varname\}@r{]}
@end
 macro
@defmac AM_PATH_GPGME (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTH (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
@defmacx AM_PATH_GPGME_PTHREAD (@ovar{minimum-version}, @ovar{action-if-found}, @ovar{action-if-not-found})
Check whether @acronym{GPGME} (at least version @var{minimum-version},
if given) exists on the host system. If it is found, execute
@var{action-if-found}, otherwise do @var{action-if-not-found}, if
given.

Additionally, the function defines @code{GPGME_CFLAGS} to the flags
needed for compilation of the program to find the @file{gpgme.h}
header file, and @code{GPGME_LIBS} to the linker flags needed to link
the program to the @acronym{GPGME} library. If the used helper script
does not match the target type you are building for a warning is
printed and the string @code{libgcrypt} is appended to the variable
@code{gpg_config_script_warn}.

@code{AM_PATH_GPGME_PTH}
 checks for the version of @acronym{GPGME}
that can be used with GNU Pth, and defines @code{GPGME_PTH_CFLAGS} and
@code{GPGME_PTH_LIBS}.

@code{AM_PATH_GPGME_PTHREAD} checks for the version of @acronym{GPGME}
that can be used with the native pthread implementation, and defines
@code{GPGME_PTHREAD_CFLAGS} and @code{GPGME_PTHREAD_LIBS}. Since
version 1.8.0 this is no longer required to GPGME_PTHREAD as
@acronym{GPGME} itself is thread safe.

This macro searches for @command{gpgme-config} along the PATH. If
you are cross-compiling, it is useful to set the environment variable

@code{SYSROOT} to the top directory of your target. The macro will
then first look for the helper program in the @file{bin} directory
below that top directory. An absolute directory name must be used for
@code{SYSROOT}. Finally, if the configure command line option
@code{--with-gpgme-prefix} is used, only its value is used for the top
directory below which the helper script is expected.

@end defmac

You can
use the defined Autoconf variables like this in your
@file{Makefile.am}:

@example
AM_CPPFLAGS = $(GPGME_CFLAGS)
LDADD = $(GPGME_LIBS)
@end example

@node Using Libtool
@section Using Libtool
@cindex libtool

The easiest way is to just use GNU Libtool. If you use libtool, and
link to @code{libgpgme.la}, @code{libgpgme-pth.la} or
@code{libgpgme-pthread.la} respectively, everything will be done
automatically by Libtool.

@node Library Version Check
@section Library Version Check
@cindex version check, of the library

@deftypefun {const char *} gpgme_check_version (@w{const char *@var{required_version}})
The function @code{gpgme_check_version} has four purposes. It can be
used to retrieve the version number of the library. In addition it
can verify that the version number is higher than a certain required
version number. In either case, the function initializes some
sub-systems, and for this reason alone it must be invoked early in
your program, before you make use of the other functions
in
@acronym{GPGME}. The last purpose is to run selftests.

As a side effect for W32 based systems, the socket layer will get
initialized.

If @var{required_version} is @code{NULL}, the function returns a

pointer to a statically allocated string containing the version number
of the library.

If @var{required_version} is not @code{NULL}, it should point to a
string containing a version number, and the function checks that the
version of the library is at least as high as the version number
provided. In this case, the function returns a pointer to a
statically allocated string containing the version number of the
library. If @var{REQUIRED_VERSION} is not a valid version number, or
if the version requirement is not met, the function returns
@code{NULL}.

If you use a version of a library that is backwards compatible with
older releases, but contains additional interfaces which your program
uses, this function provides a run-time check if the necessary
features are provided by the
 installed version of the library.

If a selftest fails, the function may still succeed. Selftest errors
are returned later when invoking @code{gpgme_new} or
@code{gpgme-data_new}, so that a detailed error code can be returned
(historically, @code{gpgme_check_version} does not return a detailed
error code).
@end deftypefun

@deftypefun {int} gpgme_set_global_flag @
        (@w{const char *@var{name}}, @
        @w{const char *@var{value}})

@since{1.4.0}

On some systems it is not easy to set environment variables and thus
hard to use @acronym{GPGME}'s internal trace facility for debugging.
This function has been introduced as an alternative way to enable
debugging and for a couple of other rarely used tweaks. It is
important to assure that only one thread accesses @acronym{GPGME}
functions between a call to this function and after the return from
the call to @code{gpgme_check_version}.

All currently supported features require that this function is called
as early as possible
 --- even before @code{gpgme_check_version}. The
features are identified by the following values for @var{name}:

@table @code
@item debug
To enable debugging use the string ``debug'' for @var{name} and

@var{value} identical to the value used with the environment variable
@code{GPGME_DEBUG}.

@item disable-gpgconf
Using this feature with any @var{value} disables the detection of the
gpgconf program and thus forces GPGME to fallback into the simple
OpenPGP only mode. It may be used to force the use of GnuPG-1 on
systems which have both GPG versions installed. Note that in general
the use of @code{gpgme_set_engine_info} is a better way to select a
specific engine version.

@item gpgconf-name
@itemx gpg-name
Set the name of the gpgconf respective gpg binary. The defaults are
@code{GNU/GnuPG/gpgconf} and @code{GNU/GnuPG/gpg}. Under Unix the
leading directory part is ignored. Under Windows the leading
directory part is used as the default installation directory; the
@code{.exe} suffix
 is added by GPGME. Use forward slashed even under
Windows.

@item require-gnupg
Set the minimum version of the required GnuPG engine. If that version
is not met, GPGME fails early instead of trying to use the existent
version. The given version must be a string with major, minor, and
micro number. Example: "2.1.0".

@item w32-inst-dir
On Windows GPGME needs to know its installation directory to find its
spawn helper. This is in general no problem because a DLL has this
information. Some applications however link statically to GPGME and
thus GPGME can only figure out the installation directory of this
application which may be wrong in certain cases. By supplying an
installation directory as value to this flag, GPGME will assume that
that directory is the installation directory. This flag has no effect
on non-Windows platforms.

@end table

This function returns @code{0} on success. In contrast to other
functions the non-zero return value on failure does not convey any
error
 code. For setting ``debug'' the only possible error cause is an
out of memory condition; which would exhibit itself later anyway.
Thus the return value may be ignored.
@end deftypefun

After initializing @acronym{GPGME}, you should set the locale
information to the locale required for your output terminal. This
locale information is needed for example for the curses and Gtk
pinentry. Here is an example of a complete initialization:

@example
#include <locale.h>
#include <gpgme.h>

void
init_gpgme (void)
@{
 /* Initialize the locale environment. */
 setlocale (LC_ALL, "");
 gpgme_check_version (NULL);
 gpgme_set_locale (NULL, LC_CTYPE, setlocale (LC_CTYPE, NULL));
#ifdef LC_MESSAGES
 gpgme_set_locale (NULL, LC_MESSAGES, setlocale (LC_MESSAGES, NULL));
#endif
@}
@end example

Note that you are highly recommended to initialize the locale settings
like this. @acronym{GPGME} can not do this for you because it would
not be thread safe. The conditional on LC_MESSAGES is only necessary
for
 portability to W32 systems.

@node Signal Handling
@section Signal Handling
@cindex signals
@cindex signal handling

The @acronym{GPGME} library communicates with child processes (the
crypto engines). If a child process dies unexpectedly, for example
due to a bug, or system problem, a @code{SIGPIPE} signal will be
delivered to the application. The default action is to abort the
program. To protect against this, @code{gpgme_check_version} sets the
@code{SIGPIPE} signal action to @code{SIG_IGN}, which means that the
signal will be ignored.

@acronym{GPGME} will only do that if the signal action for
@code{SIGPIPE} is @code{SIG_DEF} at the time
@code{gpgme_check_version} is called. If it is something different,
@code{GPGME} will take no action.

This means that if your application does not install any signal

handler for @code{SIGPIPE}, you don't need to take any precautions.
If you do install a signal handler for @code{SIGPIPE}, you must be
prepared to handle any @code{SIGPIPE}
 events that occur due to
@acronym{GPGME} writing to a defunct pipe. Furthermore, if your
application is multi-threaded, and you install a signal action for
@code{SIGPIPE}, you must make sure you do this either before
@code{gpgme_check_version} is called or afterwards.

@node Multi-Threading
@section Multi-Threading
@cindex thread-safeness
@cindex multi-threading

The @acronym{GPGME} library is mostly thread-safe, and can be used
in a multi-threaded environment but there are some requirements
for multi-threaded use:

@itemize @bullet
@item
The function @code{gpgme_check_version} must be called before any
other function in the library, because it initializes the thread
support subsystem in @acronym{GPGME}. To achieve this in
multi-threaded programs, you must synchronize the memory with respect
to other threads that also want to use @acronym{GPGME}. For this, it
is sufficient to call @code{gpgme_check_version} before creating the
other threads using @acronym{GPGME}@footnote{At least
 this is true for
POSIX threads, as @code{pthread_create} is a function that
synchronizes memory with respects to other threads. There are many
functions which have this property, a complete list can be found in
POSIX, IEEE Std 1003.1-2003, Base Definitions, Issue 6, in the
definition of the term ``Memory Synchronization''. For other thread
packages other, more relaxed or more strict rules may apply.}.

@item
Any @code{gpgme_data_t} and @code{gpgme_ctx_t} object must only be
accessed by one thread at a time. If multiple threads want to deal
with the same object, the caller has to make sure that operations on
that object are fully synchronized.

@item
Only one thread at any time is allowed to call @code{gpgme_wait}. If
multiple threads call this function, the caller must make sure that
all invocations are fully synchronized. It is safe to start
asynchronous operations while a thread is running in gpgme_wait.

@item
The function @code{gpgme_strerror} is not thread safe. You have
 to
use @code{gpgme_strerror_r} instead.
@end itemize

@node Protocols and Engines
@chapter Protocols and Engines
@cindex protocol
@cindex engine
@cindex crypto engine
@cindex backend
@cindex crypto backend

@acronym{GPGME} supports several cryptographic protocols, however, it
does not implement them. Rather it uses backends (also called
engines) which implement the protocol. @acronym{GPGME} uses
inter-process communication to pass data back and forth between the
application and the backend, but the details of the communication
protocol and invocation of the backend is completely hidden by the
interface. All complexity is handled by @acronym{GPGME}. Where an
exchange of information between the application and the backend is
necessary, @acronym{GPGME} provides the necessary callback function
hooks and further interfaces.

@deftp {Data type} {enum gpgme_protocol_t}
@tindex gpgme_protocol_t
The @code{gpgme_protocol_t} type specifies the set of possible protocol
values that are supported
 by @acronym{GPGME}. The following protocols
are supported:

@table @code
@item GPGME_PROTOCOL_OpenPGP
@itemx GPGME_PROTOCOL_OPENPGP
This specifies the OpenPGP protocol.

@item GPGME_PROTOCOL_CMS
This specifies the Cryptographic Message Syntax.

@item GPGME_PROTOCOL_GPGCONF
Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_ASSUAN
@since{1.2.0}

This specifies the raw Assuan protocol.

@item GPGME_PROTOCOL_G13
@since{1.3.0}

Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_UISERVER
Under development. Please ask on @email{gnupg-devel@@gnupg.org} for help.

@item GPGME_PROTOCOL_SPAWN
@since{1.5.0}

Special protocol for use with @code{gpgme_op_spawn}.

@item GPGME_PROTOCOL_UNKNOWN
Reserved for future extension. You may use this to indicate that the
used protocol is not known to the application. Currently,
@acronym{GPGME} does not accept this value in any operation, though,
except for @code{gpgme_get_protocol_name}.
@end
 table
@end deftp

@deftypefun {const char *} gpgme_get_protocol_name (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_get_protocol_name} returns a statically
allocated string describing the protocol @var{protocol}, or
@code{NULL} if the protocol number is not valid.
@end deftypefun

@menu
* Engine Version Check::   Verifying the engine version.
* Engine Information::   Obtaining more information about the engines.
* Engine Configuration::   Changing the engine configuration.
* OpenPGP::   Support for the OpenPGP protocol.
* Cryptographic Message Syntax:: Support for the CMS.
* Assuan::   Support for the raw Assuan protocol.
@end menu

@node Engine Version Check
@section Engine Version Check
@cindex version check, of the engines

@deftypefun @w{const char *} gpgme_get_dirinfo (@w{cons char *@var{what}})
@since{1.5.0}

The function @code{gpgme_get_dirinfo} returns a statically

allocated
string with the value associated to @var{what}. The returned values
are the defaults and won't change even after
@code{gpgme_set_engine_info} has been used to configure a different
engine. @code{NULL} is returned if no value is available. Commonly
supported values for @var{what} are:

@table @code
@item homedir
Return the default home directory.

@item sysconfdir
Return the name of the system configuration directory

@item bindir
Return the name of the directory with GnuPG program files.

@item libdir
Return the name of the directory with GnuPG related library files.

@item libexecdir
Return the name of the directory with GnuPG helper program files.

@item datadir
Return the name of the directory with GnuPG shared data.

@item localedir
Return the name of the directory with GnuPG locale data.

@item agent-socket
Return the name of the socket to connect to the gpg-agent.

@item agent-ssh-socket
Return the name of the socket to connect to the ssh-agent component of
gpg-agent.

@item
dirmngr-socket
Return the name of the socket to connect to the dirmngr.

@item uiserver-socket
Return the name of the socket to connect to the user interface server.

@item gpgconf-name
Return the file name of the engine configuration tool.

@item gpg-name
Return the file name of the OpenPGP engine.

@item gpgsm-name
Return the file name of the CMS engine.

@item g13-name
Return the name of the file container encryption engine.

@item gpg-wks-client-name
Return the name of the Web Key Service tool.

@end table

@end deftypefun

@deftypefun gpgme_error_t gpgme_engine_check_version (@w{gpgme_protocol_t @var{protocol}})
The function @code{gpgme_engine_check_version} verifies that the
engine implementing the protocol @var{PROTOCOL} is installed in the
expected path and meets the version requirement of @acronym{GPGME}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if the
engine is available and @code{GPG_ERR_INV_ENGINE} if it is not.
@end deftypefun

@node Engine
Information
@section Engine Information
@cindex engine, information about

@deftp {Data type} {gpgme_engine_info_t}
@tindex gpgme_protocol_t
The @code{gpgme_engine_info_t} type specifies a pointer to a structure
describing a crypto engine. The structure contains the following
elements:

@table @code
@item gpgme_engine_info_t next
This is a pointer to the next engine info structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_protocol_t protocol
This is the protocol for which the crypto engine is used. You can
convert this to a string with @code{gpgme_get_protocol_name} for
printing.

@item const char *file_name
This is a string holding the file name of the executable of the crypto

engine. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.

@item const char *home_dir
This is a string holding the directory name of the crypto engine's
configuration directory. If it is @code{NULL}, then
 the default
directory is used. See @code{gpgme_get_dirinfo} on how to get the
default directory.

@item const char *version
This is a string containing the version number of the crypto engine.
It might be @code{NULL} if the version number can not be determined,
for example because the executable doesn't exist or is invalid.

@item const char *req_version
This is a string containing the minimum required version number of the
crypto engine for @acronym{GPGME} to work correctly. This is the
version number that @code{gpgme_engine_check_version} verifies
against. Currently, it is never @code{NULL}, but using @code{NULL} is
reserved for future use, so always check before you use it.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_get_engine_info (@w{gpgme_engine_info_t *@var{info}})
The function @code{gpgme_get_engine_info} returns a linked list of
engine info structures in @var{info}. Each info structure describes
the defaults of one configured backend.

The memory for the info
 structures is allocated the first time this
function is invoked, and must not be freed by the caller.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, and a system error if the memory could not be allocated.
@end deftypefun

Here is an example how you can provide more diagnostics if you receive
an error message which indicates that the crypto engine is invalid.

@example
gpgme_ctx_t ctx;
gpgme_error_t err;

[...]

if (gpgme_err_code (err) == GPG_ERR_INV_ENGINE)
 @{

```
  gpgme_engine_info_t info;
  err = gpgme_get_engine_info (&info);
  if (!err)
    @{
      while (info && info->protocol != gpgme_get_protocol (ctx))
        info = info->next;
      if (!info)
        fprintf (stderr, "GPGME compiled without support for protocol %s",
                 gpgme_get_protocol_name (info->protocol));
      else if (info->file_name && !info->version)
        fprintf (stderr, "Engine %s not installed properly",
                 info->file_name);
       else if (info->file_name && info->version && info->req_version)
        fprintf (stderr, "Engine %s version %s installed, "
                 "but at least version %s required", info->file_name,
                 info->version, info->req_version);
      else
        fprintf (stderr, "Unknown problem with engine for protocol %s",
                 gpgme_get_protocol_name (info->protocol));
    @}
 @}
@end example


@node Engine Configuration
@section Engine Configuration
@cindex engine, configuration of
@cindex configuration of crypto backend

You can change the configuration of a backend engine, and thus change
the executable program and configuration directory to be used.  You
can make these changes the default or set them for some contexts
individually.

@deftypefun gpgme_error_t gpgme_set_engine_info (@w{gpgme_protocol_t @var{proto}}, @w{const char
*@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_set_engine_info} changes
 the default
configuration of the crypto engine implementing the protocol
@var{proto}.

@var{file_name} is the file name of the executable program
implementing this protocol, and @var{home_dir} is the directory name
of the configuration directory for this crypto engine.  If
@var{home_dir} is @code{NULL}, the engine's default will be used.
```

The new defaults are not applied to already created GPGME contexts.

This function returns the error code @code{GPG_ERR_NO_ERROR} if
successful, or an error code on failure.
@end deftypefun

The functions @code{gpgme_ctx_get_engine_info} and
@code{gpgme_ctx_set_engine_info} can be used to change the engine
configuration per context. @xref{Crypto Engine}.

@node OpenPGP
@section OpenPGP
@cindex OpenPGP
@cindex GnuPG
@cindex protocol, GnuPG
@cindex engine, GnuPG

OpenPGP is implemented by GnuPG, the @acronym{GNU} Privacy Guard.
This is the first protocol that was supported by @acronym{GPGME}.

The OpenPGP protocol is specified by @code{GPGME_PROTOCOL_OpenPGP}.

@node
 Cryptographic Message Syntax
@section Cryptographic Message Syntax
@cindex CMS
@cindex cryptographic message syntax
@cindex GpgSM
@cindex protocol, CMS
@cindex engine, GpgSM
@cindex S/MIME
@cindex protocol, S/MIME

@acronym{CMS} is implemented by GpgSM, the S/MIME implementation for
GnuPG.

The @acronym{CMS} protocol is specified by @code{GPGME_PROTOCOL_CMS}.

@node Assuan
@section Assuan
@cindex ASSUAN
@cindex protocol, ASSUAN
@cindex engine, ASSUAN

Assuan is the RPC library used by the various @acronym{GnuPG}

components. The Assuan protocol allows one to talk to arbitrary
Assuan servers using @acronym{GPGME}. @xref{Using the Assuan
protocol}.

The ASSUAN protocol is specified by @code{GPGME_PROTOCOL_ASSUAN}.

@node Algorithms
@chapter Algorithms
@cindex algorithms

The crypto backends support a variety of algorithms used in public key
cryptography.@footnote{Some engines also provide symmetric only
encryption; see the description of the encryption function on
 how to use
this.} The following sections list the identifiers used to denote such
an algorithm.

@menu
* Public Key Algorithms::   A list of all public key algorithms.
* Hash Algorithms::   A list of all hash algorithms.
@end menu

@node Public Key Algorithms
@section Public Key Algorithms
@cindex algorithms, public key
@cindex public key algorithms

Public key algorithms are used for encryption, decryption, signing and
verification of signatures.

@deftp {Data type} {enum gpgme_pubkey_algo_t}
@tindex gpgme_pubkey_algo_t
The @code{gpgme_pubkey_algo_t} type specifies the set of all public key
algorithms that are supported by @acronym{GPGME}. Possible values
are:

@table @code
@item GPGME_PK_RSA
This value indicates the RSA (Rivest, Shamir, Adleman) algorithm.

@item GPGME_PK_RSA_E
Deprecated. This value indicates the RSA (Rivest, Shamir, Adleman)
algorithm for encryption and decryption only.

@item GPGME_PK_RSA_S
Deprecated. This value indicates the RSA (Rivest, Shamir,

Adleman)
algorithm for signing and verification only.

@item GPGME_PK_DSA
This value indicates DSA, the Digital Signature Algorithm.

@item GPGME_PK_ELG
This value indicates ElGamal.

@item GPGME_PK_ELG_E
This value also indicates ElGamal and is used specifically in GnuPG.

@item GPGME_PK_ECC
@since{1.5.0}

This value is a generic indicator for ellipic curve algorithms.

@item GPGME_PK_ECDSA
@since{1.3.0}

This value indicates ECDSA, the Elliptic Curve Digital Signature
Algorithm as defined by FIPS 186-2 and RFC-6637.

@item GPGME_PK_ECDH
@since{1.3.0}

This value indicates ECDH, the Eliptic Curve Diffie-Hellmann
encryption algorithm as defined by RFC-6637.

@item GPGME_PK_EDDSA
@since{1.7.0}

This value indicates the EdDSA algorithm.

@end table
@end deftp

@deftypefun {const char *} gpgme_pubkey_algo_name (@w{gpgme_pubkey_algo_t @var{algo}})
The function @code{gpgme_pubkey_algo_name} returns a pointer to a
statically allocated string containing a description of the public key
algorithm
@var{algo}. This string can be used to output the name of
the public key algorithm to the user.

If @var{algo} is not a valid public key algorithm, @code{NULL} is
returned.
@end deftypefun

@deftypefun {char *} gpgme_pubkey_algo_string (@w{gpgme_subkey_t @var{key}})
@since{1.7.0}

The function @code{gpgme_pubkey_algo_string} is a convenience function
to build and return an algorithm string in the same way GnuPG does
(e.g. ``rsa2048'' or ``ed25519''). The caller must free the result
using @code{gpgme_free}. On error (e.g. invalid argument or memory
exhausted), the function returns NULL and sets @code{ERRNO}.
@end deftypefun

@node Hash Algorithms
@section Hash Algorithms
@cindex algorithms, hash
@cindex algorithms, message digest
@cindex hash algorithms
@cindex message digest algorithms

Hash (message digest) algorithms are used to compress a long message
to make it suitable for public key cryptography.

@deftp {Data type} {enum gpgme_hash_algo_t}
@tindex gpgme_hash_algo_t
The
@code{gpgme_hash_algo_t} type specifies the set of all hash algorithms
that are supported by @acronym{GPGME}. Possible values are:

@table @code
@item GPGME_MD_MD5
@item GPGME_MD_SHA1
@item GPGME_MD_RMD160
@item GPGME_MD_MD2
@item GPGME_MD_TIGER
@item GPGME_MD_HAVAL
@item GPGME_MD_SHA256
@item GPGME_MD_SHA384
@item GPGME_MD_SHA512
@item GPGME_MD_SHA224
@since{1.5.0}

@item GPGME_MD_MD4
@item GPGME_MD_CRC32
@item GPGME_MD_CRC32_RFC1510
@item GPGME_MD_CRC24_RFC2440
@end table
@end deftp

@deftypefun {const char *} gpgme_hash_algo_name (@w{gpgme_hash_algo_t @var{algo}})

The function @code{gpgme_hash_algo_name} returns a pointer to a
statically allocated string containing a description of the hash
algorithm @var{algo}. This string can be used to output the name of
the hash algorithm to the user.

If @var{algo} is not a valid hash algorithm, @code{NULL} is returned.
@end deftypefun

@node Error Handling
@chapter Error Handling
@cindex error handling

Many functions in @acronym{GPGME}
 can return an error if they fail.
For this reason, the application should always catch the error
condition and take appropriate measures, for example by releasing the
resources and passing the error up to the caller, or by displaying a
descriptive message to the user and cancelling the operation.

Some error values do not indicate a system error or an error in the
operation, but the result of an operation that failed properly. For
example, if you try to decrypt a tempered message, the decryption will
fail. Another error value actually means that the end of a data
buffer or list has been reached. The following descriptions explain
for many error codes what they mean usually. Some error values have
specific meanings if returned by a certain functions. Such cases are
described in the documentation of those functions.

@acronym{GPGME} uses the @code{libgpg-error} library. This allows to
share the error codes with other components of the GnuPG system, and
thus pass error values transparently
 from the crypto engine, or some
helper application of the crypto engine, to the user. This way no
information is lost. As a consequence, @acronym{GPGME} does not use
its own identifiers for error codes, but uses those provided by
@code{libgpg-error}. They usually start with @code{GPG_ERR_}.

However, @acronym{GPGME} does provide aliases for the functions
defined in libgpg-error, which might be preferred for name space
consistency.

@menu
* Error Values:: The error value and what it means.
* Error Sources:: A list of important error sources.
* Error Codes:: A list of important error codes.
* Error Strings:: How to get a descriptive string from a value.
@end menu

@node Error Values
@section Error Values
@cindex error values
@cindex error codes
@cindex error sources

@deftp {Data type} {gpgme_err_code_t}
The @code{gpgme_err_code_t} type is an alias for the @code{libgpg-error}
type @code{gpg_err_code_t}. The
error code indicates the type of an
error, or the reason why an operation failed.

A list of important error codes can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_err_source_t}
The @code{gpgme_err_source_t} type is an alias for the
@code{libgpg-error} type @code{gpg_err_source_t}. The error source
has not a precisely defined meaning. Sometimes it is the place where
the error happened, sometimes it is the place where an error was
encoded into an error value. Usually the error source will give an
indication to where to look for the problem. This is not always true,
but it is attempted to achieve this goal.

A list of important error sources can be found in the next section.
@end deftp

@deftp {Data type} {gpgme_error_t}
The @code{gpgme_error_t} type is an alias for the @code{libgpg-error}
type @code{gpg_error_t}. An error value like this has always two
components, an error code and an error source. Both together form the
error value.

Thus, the error value
can not be directly compared against an error
code, but the accessor functions described below must be used.
However, it is guaranteed that only 0 is used to indicate success
(@code{GPG_ERR_NO_ERROR}), and that in this case all other parts of
the error value are set to 0, too.

Note that in @acronym{GPGME}, the error source is used purely for
diagnostical purposes. Only the error code should be checked to test
for a certain outcome of a function. The manual only documents the
error code part of an error value. The error source is left
unspecified and might be anything.
@end deftp

@deftypefun {static inline gpgme_err_code_t} gpgme_err_code (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_code} returns the
@code{gpgme_err_code_t} component of the error value @var{err}. This
function must be used to extract the error code from an error value in
order to compare it with the @code{GPG_ERR_*} error code macros.
@end deftypefun

@deftypefun {static inline gpgme_err_source_t}
gpgme_err_source (@w{gpgme_error_t @var{err}})
The static inline function @code{gpgme_err_source} returns the
@code{gpgme_err_source_t} component of the error value @var{err}. This
function must be used to extract the error source from an error value in
order to compare it with the @code{GPG_ERR_SOURCE_*} error source macros.
@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_err_make (@w{gpgme_err_source_t @var{source}},
@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_err_make} returns the error
value consisting of the error source @var{source} and the error code
@var{code}.

This function can be used in callback functions to construct an error
value to return it to the library.
@end deftypefun

@deftypefun {static inline gpgme_error_t} gpgme_error (@w{gpgme_err_code_t @var{code}})
The static inline function @code{gpgme_error} returns the error value
consisting of the default error source and the error code @var{code}.

For @acronym{GPGME}
applications, the default error source is
@code{GPG_ERR_SOURCE_USER_1}. You can define
@code{GPGME_ERR_SOURCE_DEFAULT} before including @file{gpgme.h} to
change this default.

This function can be used in callback functions to construct an error
value to return it to the library.
@end deftypefun

The @code{libgpg-error} library provides error codes for all system
error numbers it knows about. If @var{err} is an unknown error
number, the error code @code{GPG_ERR_UNKNOWN_ERRNO} is used. The
following functions can be used to construct error values from system
errnor numbers.

@deftypefun {gpgme_error_t} gpgme_err_make_from_errno (@w{gpgme_err_source_t @var{source}}, @w{int
@var{err}})

The function @code{gpgme_err_make_from_errno} is like
@code{gpgme_err_make}, but it takes a system error like @code{errno}
instead of a @code{gpgme_err_code_t} error code.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_error_from_errno (@w{int @var{err}})
The function @code{gpgme_error_from_errno}
is like @code{gpgme_error},
but it takes a system error like @code{errno} instead of a
@code{gpgme_err_code_t} error code.
@end deftypefun

Sometimes you might want to map system error numbers to error codes
directly, or map an error code representing a system error back to the
system error number. The following functions can be used to do that.

@deftypefun {gpgme_err_code_t} gpgme_err_code_from_errno (@w{int @var{err}})
The function @code{gpgme_err_code_from_errno} returns the error code
for the system error @var{err}. If @var{err} is not a known system
error, the function returns @code{GPG_ERR_UNKNOWN_ERRNO}.
@end deftypefun

@deftypefun {int} gpgme_err_code_to_errno (@w{gpgme_err_code_t @var{err}})
The function @code{gpgme_err_code_to_errno} returns the system error
for the error code @var{err}. If @var{err} is not an error code
representing a system error, or if this system error is not defined on
this system, the function returns @code{0}.
@end deftypefun

@node Error Sources
@section
Error Sources
@cindex error codes, list of

The library @code{libgpg-error} defines an error source for every
component of the GnuPG system. The error source part of an error
value is not well defined. As such it is mainly useful to improve the
diagnostic error message for the user.

If the error code part of an error value is @code{0}, the whole error
value will be @code{0}. In this case the error source part is of
course @code{GPG_ERR_SOURCE_UNKNOWN}.

The list of error sources that might occur in applications using
@acronym{GPGME} is:

@table @code

@item GPG_ERR_SOURCE_UNKNOWN
The error source is not known. The value of this error source is
@code{0}.

@item GPG_ERR_SOURCE_GPGME
The error source is @acronym{GPGME} itself. This is the default for
errors that occur in the @acronym{GPGME} library.

@item GPG_ERR_SOURCE_GPG
The error source is GnuPG, which is the crypto engine used for the
OpenPGP protocol.

@item GPG_ERR_SOURCE_GPGSM
The error source is GPGSM, which is
 the crypto engine used for the
CMS protocol.

@item GPG_ERR_SOURCE_GCRYPT
The error source is @code{libgcrypt}, which is used by crypto engines
to perform cryptographic operations.

@item GPG_ERR_SOURCE_GPGAGENT
The error source is @command{gpg-agent}, which is used by crypto
engines to perform operations with the secret key.

@item GPG_ERR_SOURCE_PINENTRY
The error source is @command{pinentry}, which is used by
@command{gpg-agent} to query the passphrase to unlock a secret key.

@item GPG_ERR_SOURCE_SCD
The error source is the SmartCard Daemon, which is used by
@command{gpg-agent} to delegate operations with the secret key to a
SmartCard.

@item GPG_ERR_SOURCE_KEYBOX
The error source is @code{libkbx}, a library used by the crypto
engines to manage local keyrings.

@item GPG_ERR_SOURCE_USER_1
@item GPG_ERR_SOURCE_USER_2
@item GPG_ERR_SOURCE_USER_3
@item GPG_ERR_SOURCE_USER_4
These error sources are not used by any GnuPG component and can be
used by other software. For example, applications
 using
@acronym{GPGME} can use them to mark error values coming from callback
handlers. Thus @code{GPG_ERR_SOURCE_USER_1} is the default for errors
created with @code{gpgme_error} and @code{gpgme_error_from_errno},

unless you define @code{GPGME_ERR_SOURCE_DEFAULT} before including
@file{gpgme.h}.
@end table

@node Error Codes
@section Error Codes
@cindex error codes, list of

The library @code{libgpg-error} defines many error values. Most of
them are not used by @code{GPGME} directly, but might be returned by
@acronym{GPGME} because it received them from the crypto engine. The
below list only includes such error codes that have a specific meaning
in @code{GPGME}, or which are so common that you should know about
them.

@table @code
@item GPG_ERR_EOF
This value indicates the end of a list, buffer or file.

@item GPG_ERR_NO_ERROR
This value indicates success. The value of this error code is
@code{0}. Also, it is guaranteed that an error value made from the
error code @code{0}
will be @code{0} itself (as a whole). This means
that the error source information is lost for this error code,
however, as this error code indicates that no error occurred, this is
generally not a problem.

@item GPG_ERR_GENERAL
This value means that something went wrong, but either there is not
enough information about the problem to return a more useful error
value, or there is no separate error value for this type of problem.

@item GPG_ERR_ENOMEM
This value means that an out-of-memory condition occurred.

@item GPG_ERR_E...
System errors are mapped to GPG_ERR_FOO where FOO is the symbol for
the system error.

@item GPG_ERR_INV_VALUE
This value means that some user provided data was out of range. This
can also refer to objects. For example, if an empty
@code{gpgme_data_t} object was expected, but one containing data was
provided, this error value is returned.

@item GPG_ERR_UNUSABLE_PUBKEY

This value means that some recipients for a message were invalid.

@item GPG_ERR_UNUSABLE_SECKEY
This
value means that some signers were invalid.

@item GPG_ERR_NO_DATA
This value means that a @code{gpgme_data_t} object which was expected
to have content was found empty.

@item GPG_ERR_CONFLICT
This value means that a conflict of some sort occurred.

@item GPG_ERR_NOT_IMPLEMENTED
This value indicates that the specific function (or operation) is not
implemented. This error should never happen. It can only occur if
you use certain values or configuration options which do not work,
but for which we think that they should work at some later time.

@item GPG_ERR_DECRYPT_FAILED
This value indicates that a decryption operation was unsuccessful.

@item GPG_ERR_BAD_PASSPHRASE
This value means that the user did not provide a correct passphrase
when requested.

@item GPG_ERR_CANCELED
This value means that the operation was canceled.

@item GPG_ERR_INV_ENGINE
This value means that the engine that implements the desired protocol
is currently not available. This can either be because
the sources
were configured to exclude support for this engine, or because the
engine is not installed properly.

@item GPG_ERR_AMBIGUOUS_NAME
This value indicates that a user ID or other specifier did not specify
a unique key.

@item GPG_ERR_WRONG_KEY_USAGE
This value indicates that a key is not used appropriately.

@item GPG_ERR_CERT_REVOKED
This value indicates that a key signature was revoced.

@item GPG_ERR_CERT_EXPIRED
This value indicates that a key signature expired.

@item GPG_ERR_NO_CRL_KNOWN
This value indicates that no certificate revocation list is known for
the certificate.

@item GPG_ERR_NO_POLICY_MATCH
This value indicates that a policy issue occurred.

@item GPG_ERR_NO_SECKEY
This value indicates that no secret key for the user ID is available.

@item GPG_ERR_MISSING_CERT
This value indicates that a key could not be imported because the
issuer certificate is missing.

@item GPG_ERR_BAD_CERT_CHAIN
This value indicates that a key could not be imported because its
certificate
 chain is not good, for example it could be too long.

@item GPG_ERR_UNSUPPORTED_ALGORITHM
This value means a verification failed because the cryptographic
algorithm is not supported by the crypto backend.

@item GPG_ERR_BAD_SIGNATURE
This value means a verification failed because the signature is bad.

@item GPG_ERR_NO_PUBKEY
This value means a verification failed because the public key is not
available.

@item GPG_ERR_USER_1
@item GPG_ERR_USER_2
@item ...
@item GPG_ERR_USER_16
These error codes are not used by any GnuPG component and can be
freely used by other software. Applications using @acronym{GPGME}
might use them to mark specific errors returned by callback handlers
if no suitable error codes (including the system errors) for
these errors exist already.
@end table

@node Error Strings
@section Error Strings
@cindex error values, printing of
@cindex error codes, printing of
@cindex error sources, printing of

@cindex error strings

@deftypefun {const char *} gpgme_strerror
 (@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error code contained
in the error value @var{err}. This string can be used to output a
diagnostic message to the user.

This function is not thread safe. Use @code{gpgme_strerror_r} in
multi-threaded programs.
@end deftypefun

@deftypefun {int} gpgme_strerror_r (@w{gpgme_error_t @var{err}}, @w{char *@var{buf}}, @w{size_t @var{buflen}})
The function @code{gpgme_strerror_r} returns the error string for
@var{err} in the user-supplied buffer @var{buf} of size @var{buflen}.
This function is, in contrast to @code{gpgme_strerror}, thread-safe if
a thread-safe @code{strerror_r} function is provided by the system.
If the function succeeds, 0 is returned and @var{buf} contains the
string describing the error. If the buffer was not large enough,
ERANGE is returned and @var{buf} contains as much of the beginning of
the error string as fits into
 the buffer.
@end deftypefun

@deftypefun {const char *} gpgme_strsource (@w{gpgme_error_t @var{err}})
The function @code{gpgme_strerror} returns a pointer to a statically
allocated string containing a description of the error source
contained in the error value @var{err}. This string can be used to
output a diagnostic message to the user.
@end deftypefun

The following example illustrates the use of @code{gpgme_strerror}:

@example
gpgme_ctx_t ctx;
gpgme_error_t err = gpgme_new (&ctx);
if (err)
 @{
   fprintf (stderr, "%s: creating GpgME context failed: %s: %s\n",
            argv[0], gpgme_strsource (err), gpgme_strerror (err));
   exit (1);
 @}
@end example

@node Exchanging Data
@chapter Exchanging Data
@cindex data, exchanging

A lot of data has to be exchanged between the user and the crypto
engine, like plaintext messages, ciphertext, signatures and
information about the keys. The technical details about exchanging
the data information are completely abstracted by @acronym{GPGME}.
The
 user provides and receives the data via @code{gpgme_data_t} objects,
regardless of the communication protocol between @acronym{GPGME} and
the crypto engine in use.

@deftp {Data type} {gpgme_data_t}
The @code{gpgme_data_t} type is a handle for a container for generic
data, which is used by @acronym{GPGME} to exchange data with the user.
@end deftp

@code{gpgme_data_t} objects do not provide notifications on events.
It is assumed that read and write operations are blocking until data
is available. If this is undesirable, the application must ensure
that all GPGME data operations always have data available, for example
by using memory buffers or files rather than pipes or sockets. This
might be relevant, for example, if the external event loop mechanism
is used.

@deftp {Data type} {gpgme_off_t}
@since{1.4.1}

On POSIX platforms the @code{gpgme_off_t} type is an alias for
@code{off_t}; it may be used interchangeable. On Windows platforms
@code{gpgme_off_t} is defined as
 a long (i.e. 32 bit) for 32 bit
Windows and as a 64 bit signed integer for 64 bit Windows.
@end deftp

@deftp {Data type} {gpgme_ssize_t}
The @code{gpgme_ssize_t} type is an alias for @code{ssize_t}. It has
only been introduced to overcome portability problems pertaining to
the declaration of @code{ssize_t} by different toolchains.
@end deftp

@menu
* Creating Data Buffers::   Creating new data buffers.
* Destroying Data Buffers::   Releasing data buffers.
* Manipulating Data Buffers::   Operations on data buffers.

@end menu

@node Creating Data Buffers
@section Creating Data Buffers
@cindex data buffer, creation

Data objects can be based on memory, files, or callback functions
provided by the user. Not all operations are supported by all
objects.

@menu
* Memory Based Data Buffers::   Creating memory based data buffers.
* File Based Data Buffers::   Creating file based data buffers.
* Callback Based Data Buffers::   Creating callback based data buffers.
@end menu

@node
 Memory Based Data Buffers
@subsection Memory Based Data Buffers

Memory based data objects store all data in allocated memory. This is
convenient, but only practical for an amount of data that is a
fraction of the available physical memory. The data has to be copied
from its source and to its destination, which can often be avoided by
using one of the other data object

@deftypefun gpgme_error_t gpgme_data_new (@w{gpgme_data_t *@var{dh}})
The function @code{gpgme_data_new} creates a new @code{gpgme_data_t}
object and returns a handle for it in @var{dh}. The data object is
memory based and initially empty.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_mem (@w{gpgme_data_t *@var{dh}}, @w{const char
*@var{buffer}}, @w{size_t @var{size}},
 @w{int @var{copy}})
The function @code{gpgme_data_new_from_mem} creates a new
@code{gpgme_data_t} object and fills it with @var{size} bytes starting
from @var{buffer}.

If @var{copy} is not zero, a private copy of the data is made. If

@var{copy} is zero, the data is taken from the specified buffer as
needed, and the user has to ensure that the buffer remains valid for
the whole life span of the data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{buffer} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_file (@w{gpgme_data_t *@var{dh}}, @w{const char *@var{filename}}, @w{int @var{copy}})
The function @code{gpgme_data_new_from_file} creates a new
@code{gpgme_data_t} object and fills it with the content of the file
@var{filename}.

If @var{copy} is not zero, the whole file is
read in at initialization
time and the file is not used anymore after that. This is the only
mode supported currently. Later, a value of zero for @var{copy} might
cause all reads to be delayed until the data is needed, but this is
not yet implemented.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{filename} is not a valid pointer,
@code{GPG_ERR_NOT_IMPLEMENTED} if @var{code} is zero, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_filepart (@w{gpgme_data_t *@var{dh}}, @w{const char *@var{filename}}, @w{FILE *@var{fp}}, @w{off_t @var{offset}}, @w{size_t @var{length}})
The function @code{gpgme_data_new_from_filepart} creates a new
@code{gpgme_data_t} object and fills it with a part of the file specified
by @var{filename} or @var{fp}.

Exactly one of @var{filename} and @var{fp} must be non-zero, the other
must
be zero. The argument that is not zero specifies the file from
which @var{length} bytes are read into the data object, starting from
@var{offset}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} and exactly one of @var{filename} and @var{fp} is not a valid
pointer, and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@node File Based Data Buffers
@subsection File Based Data Buffers

File based data objects operate directly on file descriptors or
streams. Only a small amount of data is stored in core at any time,
so the size of the data objects is not limited by @acronym{GPGME}.

@deftypefun gpgme_error_t gpgme_data_new_from_fd (@w{gpgme_data_t *@var{dh}}, @w{int @var{fd}})
The function @code{gpgme_data_new_from_fd} creates a new
@code{gpgme_data_t} object and uses the file descriptor @var{fd} to read
from (if used as an input data object) and write to (if used as
 an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the file descriptor than is actually needed by the
crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the file descriptor is set to blocking
mode. Errors during I/O operations, except for EINTR, are usually
fatal for crypto operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_stream (@w{gpgme_data_t *@var{dh}}, @w{FILE
*@var{stream}})
The function @code{gpgme_data_new_from_stream} creates a new
@code{gpgme_data_t} object and uses the I/O stream @var{stream} to read
from (if used as an input data object) and write to (if used as an
output data object).

When using the data object as an input buffer, the function might read
a bit more from the
 stream than is actually needed by the crypto
engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors
during I/O operations, except for EINTR, are usually fatal for crypto
operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_from_estream (@w{gpgme_data_t *@var{dh}}, @w{gpgrt_stream_t @var{stream}})
The function @code{gpgme_data_new_from_estream} creates a new @code{gpgme_data_t} object and uses the gpgrt stream @var{stream} to read from (if used as an input data object) and write to (if used as an output data object).

When using the data object as an input buffer, the function might read a bit more from the stream than is actually needed by the crypto engine in the desired operation because of internal buffering.

Note that GPGME assumes that the stream is in blocking mode. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the data object was successfully created, and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@node Callback Based Data Buffers
@subsection Callback Based Data Buffers

If neither memory nor file based data objects are a good fit for your application, you can implement the functions a data object provides yourself and create a data object from these callback functions.

@deftp {Data type} {ssize_t (*gpgme_data_read_cb_t) (@w{void *@var{handle}}, @w{void @var{*buffer}}, @w{size_t @var{size}})}
@tindex gpgme_data_read_cb_t
The @code{gpgme_data_read_cb_t} type is the type of functions which @acronym{GPGME} calls if it wants to read data from a user-implemented data object. The function should read up to @var{size} bytes from the current read position into the space starting at @var{buffer}. The @var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the read blocks until data is available. Errors during I/O operations, except for EINTR, are usually fatal for crypto operations.

The function should return the number of bytes read, 0 on EOF, and -1 on error. If an error occurs, @var{errno} should be set to describe the type of the error.
@end deftp

@deftp {Data type} {ssize_t (*gpgme_data_write_cb_t) (@w{void *@var{handle}}, @w{const void
@var{*buffer}}, @w{size_t @var{size}})}
@tindex gpgme_data_write_cb_t
The @code{gpgme_data_write_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to write data to a user-implemented
data object. The function should write up to @var{size} bytes to the
current write position from the space starting at @var{buffer}. The
@var{handle} is provided by the user at data object creation time.

Note that GPGME assumes that the write blocks until data
is available.
Errors during I/O operations, except for EINTR, are usually fatal for
crypto operations.

The function should return the number of bytes written, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {off_t (*gpgme_data_seek_cb_t) (@w{void *@var{handle}}, @w{off_t @var{offset}},
@w{int @var{whence}})}
@tindex gpgme_data_seek_cb_t
The @code{gpgme_data_seek_cb_t} type is the type of functions which
@acronym{GPGME} calls if it wants to change the current read/write
position in a user-implemented data object, just like the @code{lseek}
function.

The function should return the new read/write position, and -1 on
error. If an error occurs, @var{errno} should be set to describe the
type of the error.
@end deftp

@deftp {Data type} {void (*gpgme_data_release_cb_t) (@w{void *@var{handle}})}
@tindex gpgme_data_release_cb_t
The @code{gpgme_data_release_cb_t} type is the type of functions which
@acronym{GPGME}
calls if it wants to destroy a user-implemented data
object. The @var{handle} is provided by the user at data object
creation time.
@end deftp

@deftp {Data type} {struct gpgme_data_cbs}
This structure is used to store the data callback interface functions
described above. It has the following members:

@table @code
@item gpgme_data_read_cb_t read

This is the function called by @acronym{GPGME} to read data from the
data object. It is only required for input data object.

@item gpgme_data_write_cb_t write
This is the function called by @acronym{GPGME} to write data to the
data object. It is only required for output data object.

@item gpgme_data_seek_cb_t seek
This is the function called by @acronym{GPGME} to change the current
read/write pointer in the data object (if available). It is optional.

@item gpgme_data_release_cb_t release
This is the function called by @acronym{GPGME} to release a data
object. It is optional.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_data_new_from_cbs
 (@w{gpgme_data_t *@var{dh}}, @w{gpgme_data_cbs_t @var{cbs}}, @w{void *@var{handle}})
The function @code{gpgme_data_new_from_cbs} creates a new
@code{gpgme_data_t} object and uses the user-provided callback functions
to operate on the data object.

The handle @var{handle} is passed as first argument to the callback
functions. This can be used to identify this data object.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, and @code{GPG_ERR_ENOMEM} if not
enough memory is available.
@end deftypefun

@node Destroying Data Buffers
@section Destroying Data Buffers
@cindex data buffer, destruction

@deftypefun void gpgme_data_release (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_release} destroys the data object with
the handle @var{dh}. It releases all associated resources that were
not provided by the user in the first place.
@end deftypefun

@deftypefun {char *} gpgme_data_release_and_get_mem (@w{gpgme_data_t
 @var{dh}}, @w{size_t *@var{length}})
The function @code{gpgme_data_release_and_get_mem} is like
@code{gpgme_data_release}, except that it returns the data buffer and
its length that was provided by the object.

The user has to release the buffer with @code{gpgme_free}. In case the user provided the data buffer in non-copy mode, a copy will be made for this purpose.

In case an error returns, or there is no suitable data buffer that can be returned to the user, the function will return @code{NULL}. In any case, the data object @var{dh} is destroyed.
@end deftypefun

@deftypefun void gpgme_free (@w{void *@var{buffer}})
@since{1.1.1}

The function @code{gpgme_free} releases the memory returned by @code{gpgme_data_release_and_get_mem} and @code{gpgme_pubkey_algo_string}. It should be used instead of the system libraries @code{free} function in case different allocators are used by a program. This is often the case if gpgme is used under Windows as a DLL.
@end deftypefun

@node
Manipulating Data Buffers
@section Manipulating Data Buffers
@cindex data buffer, manipulation

Data buffers contain data and meta-data. The following operations can be used to manipulate both.

@menu
* Data Buffer I/O Operations:: I/O operations on data buffers.
* Data Buffer Meta-Data:: Meta-data manipulation of data buffers.
* Data Buffer Convenience:: Convenience function for data buffers.
@end menu

@node Data Buffer I/O Operations
@subsection Data Buffer I/O Operations
@cindex data buffer, I/O operations
@cindex data buffer, read
@cindex data buffer, write
@cindex data buffer, seek

@deftypefun ssize_t gpgme_data_read (@w{gpgme_data_t @var{dh}}, @w{void *@var{buffer}}, @w{size_t @var{length}})
The function @code{gpgme_data_read} reads up to @var{length} bytes

from the data object with the handle @var{dh} into the space starting
at @var{buffer}.

If no error occurs, the actual amount read is returned. If the end of
the data object is reached, the function returns
0.

In all other cases, the function returns -1 and sets @var{errno}.
@end deftypefun

@deftypefun ssize_t gpgme_data_write (@w{gpgme_data_t @var{dh}}, @w{const void *@var{buffer}},
@w{size_t @var{size}})
The function @code{gpgme_data_write} writes up to @var{size} bytes
starting from @var{buffer} into the data object with the handle
@var{dh} at the current write position.

The function returns the number of bytes actually written, or -1 if an
error occurs. If an error occurs, @var{errno} is set.
@end deftypefun

@deftypefun off_t gpgme_data_seek (@w{gpgme_data_t @var{dh}}, @w{off_t @var{offset}}, @w{int
@var{whence}})
The function @code{gpgme_data_seek} changes the current read/write
position.

The @var{whence} argument specifies how the @var{offset} should be
interpreted. It must be one of the following symbolic constants:

@table @code
@item SEEK_SET
Specifies that @var{offset} is a count of characters from the
beginning of the data object.

@item SEEK_CUR
Specifies that @var{offset}
is a count of characters from the current
file position. This count may be positive or negative.

@item SEEK_END
Specifies that @var{offset} is a count of characters from the end of
the data object. A negative count specifies a position within the
current extent of the data object; a positive count specifies a
position past the current end. If you set the position past the
current end, and actually write data, you will extend the data object
with zeros up to that position.
@end table

If successful, the function returns the resulting file position,

measured in bytes from the beginning of the data object. You can use this feature together with @code{SEEK_CUR} to read the current read/write position.

If the function fails, -1 is returned and @var{errno} is set.
@end deftypefun

@node Data Buffer Meta-Data
@subsection Data Buffer Meta-Data
@cindex data buffer, meta-data
@cindex data buffer, file name
@cindex data buffer, encoding

@deftypefun {char *} gpgme_data_get_file_name
(@w{gpgme_data_t @var{dh}})
@since{1.1.0}

The function @code{gpgme_data_get_file_name} returns a pointer to a string containing the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

If no error occurs, the string containing the file name is returned. Otherwise, @code{NULL} will be returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_file_name (@w{gpgme_data_t @var{dh}}, @w{const char *@var{file_name}})
@since{1.1.0}

The function @code{gpgme_data_set_file_name} sets the file name associated with the data object. The file name will be stored in the output when encrypting or signing the data and will be returned to the user when decrypting or verifying the output data.

The function returns the error code @code{GPG_ERR_INV_VALUE} if @var{dh} is not a valid pointer and @code{GPG_ERR_ENOMEM} if not enough memory is available.
@end
deftypefun

@deftp {Data type} {enum gpgme_data_encoding_t}
@tindex gpgme_data_encoding_t
The @code{gpgme_data_encoding_t} type specifies the encoding of a

@code{gpgme_data_t} object. For input data objects, the encoding is useful to give the backend a hint on the type of data. For output data objects, the encoding can specify the output data format on certain operations. Please note that not all backends support all encodings on all operations. The following data types are available:

@table @code
@item GPGME_DATA_ENCODING_NONE
This specifies that the encoding is not known. This is the default for a new data object. The backend will try its best to detect the encoding automatically.

@item GPGME_DATA_ENCODING_BINARY
This specifies that the data is encoding in binary form; i.e. there is no special encoding.

@item GPGME_DATA_ENCODING_BASE64
This specifies that the data is encoded using the Base-64 encoding scheme as used by @acronym{MIME} and other protocols.

@item
GPGME_DATA_ENCODING_ARMOR
This specifies that the data is encoded in an armored form as used by OpenPGP and PEM.

@item GPGME_DATA_ENCODING_MIME
@since{1.7.0}

This specifies that the data is encoded as a MIME part.

@item GPGME_DATA_ENCODING_URL
@since{1.2.0}

The data is a list of linefeed delimited URLs. This is only useful with @code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URL0
@since{1.2.0}

The data is a list of binary zero delimited URLs. This is only useful with @code{gpgme_op_import}.

@item GPGME_DATA_ENCODING_URLESC
@since{1.2.0}

The data is a list of linefeed delimited URLs with all control and space characters percent escaped. This mode is is not yet implemented.

@end table
@end deftp

@deftypefun gpgme_data_encoding_t gpgme_data_get_encoding (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_get_encoding} returns the encoding of
the data object with the handle @var{dh}. If @var{dh} is not a valid
pointer (e.g. @code{NULL}) @code{GPGME_DATA_ENCODING_NONE}
is
returned.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_set_encoding (@w{gpgme_data_t @var{dh}, gpgme_data_encoding_t @var{enc}})
The function @code{gpgme_data_set_encoding} changes the encoding of
the data object with the handle @var{dh} to @var{enc}.
@end deftypefun

@deftypefun {gpgme_error_t} gpgme_data_set_flag @
(@w{gpgme_data_t @var{dh}}, @
@w{const char *@var{name}}, @
@w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the data object can be controlled with flags
set by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item size-hint
The value is a decimal number with the length gpgme shall assume for
this data object. This is useful if the data is provided by callbacks
or via file descriptors but the applications knows the total size of
the data. If this is set the OpenPGP engine may use this to decide on
buffer allocation strategies and to provide a total
value for its
progress information.

@end table

This function returns @code{0} on success.
@end deftypefun

@node Data Buffer Convenience
@subsection Data Buffer Convenience Functions
@cindex data buffer, convenience
@cindex type of data

@cindex identify

@deftp {Data type} {enum gpgme_data_type_t}
@tindex gpgme_data_type_t
@since{1.4.3}

The @code{gpgme_data_type_t} type is used to return the detected type
of the content of a data buffer.
@end deftp

@table @code
@item GPGME_DATA_TYPE_INVALID
This is returned by @code{gpgme_data_identify} if it was not possible
to identify the data. Reasons for this might be a non-seekable stream
or a memory problem. The value is 0.
@item GPGME_DATA_TYPE_UNKNOWN
The type of the data is not known.
@item GPGME_DATA_TYPE_PGP_SIGNED
The data is an OpenPGP signed message. This may be a binary
signature, a detached one or a cleartext signature.
@item GPGME_DATA_TYPE_PGP_ENCRYPTED
@since{1.7.0}

The data is an OpenPGP encrypted message.
@item GPGME_DATA_TYPE_PGP_SIGNATURE
@since{1.7.0}

The
 data is an OpenPGP detached signature.
@item GPGME_DATA_TYPE_PGP_OTHER
This is a generic OpenPGP message. In most cases this will be
encrypted data.
@item GPGME_DATA_TYPE_PGP_KEY
This is an OpenPGP key (private or public).
@item GPGME_DATA_TYPE_CMS_SIGNED
This is a CMS signed message.
@item GPGME_DATA_TYPE_CMS_ENCRYPTED
This is a CMS encrypted (enveloped data) message.
@item GPGME_DATA_TYPE_CMS_OTHER
This is used for other CMS message types.
@item GPGME_DATA_TYPE_X509_CERT
The data is a X.509 certificate
@item GPGME_DATA_TYPE_PKCS12
The data is a PKCS#12 message. This is commonly used to exchange
private keys for X.509.
@end table

@deftypefun gpgme_data_type_t gpgme_data_identify (@w{gpgme_data_t @var{dh}})

@since{1.4.3}

The function @code{gpgme_data_identify} returns the type of the data
with the handle @var{dh}. If it is not possible to perform the
identification, the function returns zero
(@code{GPGME_DATA_TYPE_INVALID}). Note that depending
 on how the data
object has been created the identification may not be possible or the
data object may change its internal state (file pointer moved). For
file or memory based data object, the state should not change.
@end deftypefun

@c
@c   Chapter Contexts
@c
@node Contexts
@chapter Contexts
@cindex context

All cryptographic operations in @acronym{GPGME} are performed within a
context, which contains the internal state of the operation as well as
configuration parameters. By using several contexts you can run
several cryptographic operations in parallel, with different
configuration.

@deftp {Data type} {gpgme_ctx_t}
The @code{gpgme_ctx_t} type is a handle for a @acronym{GPGME} context,
which is used to hold the configuration, status and result of
cryptographic operations.
@end deftp

@menu
* Creating Contexts::   Creating new @acronym{GPGME} contexts.
* Destroying Contexts::   Releasing @acronym{GPGME} contexts.
* Result Management::   Managing the
 result of crypto operations.
* Context Attributes::   Setting properties of a context.
* Key Management::   Managing keys with @acronym{GPGME}.
* Crypto Operations::   Using a context for cryptography.
* Miscellaneous::   Miscellaneous operations
* Run Control::   Controlling how operations are run.
@end menu

@node Creating Contexts
@section Creating Contexts
@cindex context, creation

@deftypefun gpgme_error_t gpgme_new (@w{gpgme_ctx_t *@var{ctx}})
The function @code{gpgme_new} creates a new @code{gpgme_ctx_t} object
and returns a handle for it in @var{ctx}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
context was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if not
enough memory is available. Also, it returns
@code{GPG_ERR_NOT_OPERATIONAL} if @code{gpgme_check_version} was not
called to initialize GPGME, and @code{GPG_ERR_SELFTEST_FAILED}
 if a
selftest failed. Currently, the only selftest is for Windows MingW32
targets to see if @code{-mms-bitfields} was used (as required).
@end deftypefun

@node Destroying Contexts
@section Destroying Contexts
@cindex context, destruction

@deftypefun void gpgme_release (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_release} destroys the context with the handle
@var{ctx} and releases all associated resources.
@end deftypefun

@node Result Management
@section Result Management
@cindex context, result of operation

The detailed result of an operation is returned in operation-specific
structures such as @code{gpgme_decrypt_result_t}. The corresponding
retrieval functions such as @code{gpgme_op_decrypt_result} provide
static access to the results after an operation completes. Those
structures shall be considered read-only and an application must not
allocate such a structure on its own. The following interfaces make
it possible to detach a result structure from its associated
 context
and give it a lifetime beyond that of the current operation or
context.

@deftypefun void gpgme_result_ref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_ref} acquires an additional reference
for the result @var{result}, which may be of any type
@code{gpgme_*_result_t}. As long as the user holds a reference, the

result structure is guaranteed to be valid and unmodified.
@end deftypefun

@deftypefun void gpgme_result_unref (@w{void *@var{result}})
@since{1.2.0}

The function @code{gpgme_result_unref} releases a reference for the result @var{result}. If this was the last reference, the result structure will be destroyed and all resources associated to it will be released.
@end deftypefun

Note that a context may hold its own references to result structures, typically until the context is destroyed or the next operation is started. In fact, these references are accessed through the @code{gpgme_op_*_result} functions.

@node Context Attributes
@section
Context Attributes
@cindex context, attributes

@menu
* Protocol Selection:: Selecting the protocol used by a context.
* Crypto Engine:: Configuring the crypto engine.
* Setting the Sender:: How to tell the engine the sender.
* ASCII Armor:: Requesting @acronym{ASCII} armored output.
* Text Mode:: Choosing canonical text mode.
* Offline Mode:: Choosing offline mode.
* Pinentry Mode:: Choosing the pinentry mode.
* Included Certificates:: Including a number of certificates.
* Key Listing Mode:: Selecting key listing mode.
* Passphrase Callback:: Getting the passphrase from the user.
* Progress Meter Callback:: Being informed about the progress.
* Status Message Callback:: Status messages received from gpg.
* Context Flags:: Additional flags for a context.
* Locale:: Setting the locale of a context.
*
Additional Logs:: Additional logs of a context.
@end menu

@node Protocol Selection
@subsection Protocol Selection
@cindex context, selecting protocol
@cindex protocol, selecting

@deftypefun gpgme_error_t gpgme_set_protocol (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t @var{proto}})
The function @code{gpgme_set_protocol} sets the protocol used within the context @var{ctx} to @var{proto}. All crypto operations will be performed by the crypto engine configured for that protocol. @xref{Protocols and Engines}.

Setting the protocol with @code{gpgme_set_protocol} does intentionally not check if the crypto engine for that protocol is available and installed correctly. @xref{Engine Version Check}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the protocol could be set successfully, and @code{GPG_ERR_INV_VALUE} if @var{protocol} is not a valid protocol.
@end deftypefun

@deftypefun gpgme_protocol_t gpgme_get_protocol (@w{gpgme_ctx_t @var{ctx}})
The
function @code{gpgme_get_protocol} retrieves the protocol currently use with the context @var{ctx}.
@end deftypefun

@node Crypto Engine
@subsection Crypto Engine
@cindex context, configuring engine
@cindex engine, configuration per context

The following functions can be used to set and retrieve the configuration of the crypto engines of a specific context. The default can also be retrieved without any particular context. @xref{Engine Information}. The default can also be changed globally. @xref{Engine Configuration}.

@deftypefun gpgme_engine_info_t gpgme_ctx_get_engine_info (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_ctx_get_engine_info} returns a linked list of engine info structures. Each info structure describes the configuration of one configured backend, as used by the context @var{ctx}.

The result is valid until the next invocation of @code{gpgme_ctx_set_engine_info} for this particular context.

This function can not fail.
@end deftypefun

@deftypefun
gpgme_error_t gpgme_ctx_set_engine_info (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_protocol_t @var{proto}}, @w{const char *@var{file_name}}, @w{const char *@var{home_dir}})
@since{1.1.0}

The function @code{gpgme_ctx_set_engine_info} changes the configuration of the crypto engine implementing the protocol @var{proto} for the context @var{ctx}.

@var{file_name} is the file name of the executable program implementing this protocol, and @var{home_dir} is the directory name of the configuration directory for this crypto engine. If @var{home_dir} is @code{NULL}, the engine's default will be used.

Currently this function must be used before starting the first crypto operation. It is unspecified if and when the changes will take effect if the function is called after starting the first operation on the context @var{ctx}.

This function returns the error code @code{GPG_ERR_NO_ERROR} if successful, or an error code on failure.
@end deftypefun

@node Setting the Sender
@subsection How to tell the engine the sender.
@cindex context, sender
@cindex sender
@cindex From:

Some engines can make use of the senders address, for example to figure out the best user id in certain trust models. For verification and signing of mails, it is thus suggested to let the engine know the sender ("From:") address. @acronym{GPGME} provides two functions to accomplish that. Note that the esoteric use of multiple "From:" addresses is not supported.

@deftypefun gpgme_error_t gpgme_set_sender @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{int @var{address}})

@since{1.8.0}

The function @code{gpgme_set_sender} specifies the sender address for use in sign and verify operations. @var{address} is expected to be the ``addr-spec'' part of an address but my also be a complete mailbox address, in which case this function extracts the ``addr-spec'' from

it. Using @code{NULL} for @var{address} clears the sender address.

The function returns 0 on success or an error code on failure. The
most likely
 failure is that no valid ``addr-spec'' was found in
@var{address}.

@end deftypefun

@deftypefun @w{const char *} gpgme_get_sender @
    (@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_get_sender} returns the current sender
address from the context, or NULL if none was set. The returned
value is valid as long as the @var{ctx} is valid and
@code{gpgme_set_sender} has not been called again.

@end deftypefun

@c FIXME: Unfortunately, using @acronym here breaks texi2dvi.
@node ASCII Armor
@subsection @acronym{ASCII} Armor
@cindex context, armor mode
@cindex @acronym{ASCII} armor
@cindex armor mode

@deftypefun void gpgme_set_armor (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_armor} specifies if the output should be
@acronym{ASCII} armored. By default, output is not @acronym{ASCII}
armored.

@acronym{ASCII} armored output is disabled if @var{yes} is zero, and
enabled otherwise.
@end deftypefun

@deftypefun int gpgme_get_armor (@w{gpgme_ctx_t
 @var{ctx}})
The function @code{gpgme_get_armor} returns 1 if the output is
@acronym{ASCII} armored, and @code{0} if it is not, or if @var{ctx} is
not a valid pointer.
@end deftypefun

@node Text Mode

@subsection Text Mode
@cindex context, text mode
@cindex text mode
@cindex canonical text mode

@deftypefun void gpgme_set_textmode (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
The function @code{gpgme_set_textmode} specifies if canonical text mode
should be used. By default, text mode is not used.

Text mode is for example used for the RFC2015 signatures; note that
the updated RFC 3156 mandates that the mail user agent does some
preparations so that text mode is not needed anymore.

This option is only relevant to the OpenPGP crypto engine, and ignored
by all other engines.

Canonical text mode is disabled if @var{yes} is zero, and enabled
otherwise.
@end deftypefun

@deftypefun int gpgme_get_textmode (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_textmode} returns
 1 if canonical text
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Offline Mode
@subsection Offline Mode
@cindex context, offline mode
@cindex offline mode

@deftypefun void gpgme_set_offline (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{yes}})
@since{1.6.0}

The function @code{gpgme_set_offline} specifies if offline mode should
be used. Offline mode is disabled if @var{yes} is zero, and enabled
otherwise. By default, offline mode is disabled.

The details of the offline mode depend on the used protocol and its
backend engine. It may eventually be extended to be more stricter and
for example completely disable the use of Dirmngr for any engine.

For the CMS protocol the offline mode specifies whether Dirmngr shall
be used to do additional validation that might require connecting
external services (e.g. CRL / OCSP checks). Here the offline mode
only affects the keylist mode @code{GPGME_KEYLIST_MODE_VALIDATE}.

For the OpenPGP
protocol offline mode entirely disables the use of the
Dirmngr and will thus guarantee that no network connections are done
as part of an operation on this context. It has only an effect with
GnuPG versions 2.1.23 or later.

For all other protocols the offline mode is currently ignored.

@end deftypefun

@deftypefun int gpgme_get_offline (@w{gpgme_ctx_t @var{ctx}})
@since{1.6.0}

The function @code{gpgme_get_offline} returns 1 if offline
mode is enabled, and @code{0} if it is not, or if @var{ctx} is not a
valid pointer.
@end deftypefun

@node Pinentry Mode
@subsection Pinentry Mode
@cindex context, pinentry mode
@cindex pinentry mode

@deftypefun gpgme_error_t gpgme_set_pinentry_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_pinentry_mode_t @var{mode}})

@since{1.4.0}

The function @code{gpgme_set_pinentry_mode} specifies the pinentry mode
to be used.

For GnuPG >= 2.1 this option is required to be set to
@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback
mechanism in GPGME
through @code{gpgme_set_passphrase_cb}.
@end deftypefun

@deftypefun gpgme_pinentry_mode_t gpgme_get_pinentry_mode (@w{gpgme_ctx_t @var{ctx}})
@since{1.4.0}

The function @code{gpgme_get_pinenty_mode} returns the
mode set for the context.
@end deftypefun

@deftp {Data type} {enum gpgme_pinentry_mode_t}
@tindex gpgme_pinentry_mode_t

@since{1.4.0}

The @code{gpgme_minentry_mode_t} type specifies the set of possible pinentry
modes that are supported by @acronym{GPGME} if GnuPG >= 2.1 is used.
The following modes are supported:

@table @code
@item GPGME_PINENTRY_MODE_DEFAULT
@since{1.4.0}

Use the default of the agent, which is ask.

@item GPGME_PINENTRY_MODE_ASK
@since{1.4.0}

Force the use of the Pinentry.

@item GPGME_PINENTRY_MODE_CANCEL
@since{1.4.0}

Emulate use of Pinentry's cancel button.

@item GPGME_PINENTRY_MODE_ERROR
@since{1.4.0}

Return a Pinentry error @code{No Pinentry}.

@item GPGME_PINENTRY_MODE_LOOPBACK
@since{1.4.0}

Redirect Pinentry queries to the caller.
This enables
the use of @code{gpgme_set_passphrase_cb} because pinentry
queries are redirected to gpgme.

Note: For 2.1.0 - 2.1.12 this mode requires @code{allow-loopback-pinentry}
to be enabled in the @file{gpg-agent.conf} or an agent started with that option.

@end table
@end deftp

@node Included Certificates
@subsection Included Certificates
@cindex certificates, included

@deftypefun void gpgme_set_include_certs (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{nr_of_certs}})
The function @code{gpgme_set_include_certs} specifies how many

certificates should be included in an S/MIME signed message. By
default, only the sender's certificate is included. The possible
values of @var{nr_of_certs} are:

@table @code
@item GPGME_INCLUDE_CERTS_DEFAULT
@since{1.0.3}

Fall back to the default of the crypto backend. This is the default
for GPGME.
@item -2
Include all certificates except the root certificate.
@item -1
Include all certificates.
@item 0
Include no certificates.
@item 1
Include the sender's
 certificate only.
@item n
Include the first n certificates of the certificates path, starting
from the sender's certificate. The number @code{n} must be positive.
@end table

Values of @var{nr_of_certs} smaller than -2 are undefined.

This option is only relevant to the CMS crypto engine, and ignored by
all other engines.
@end deftypefun

@deftypefun int gpgme_get_include_certs (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_get_include_certs} returns the number of
certificates to include into an S/MIME signed message.
@end deftypefun

@node Key Listing Mode
@subsection Key Listing Mode
@cindex key listing mode
@cindex key listing, mode of

@deftypefun gpgme_error_t gpgme_set_keylist_mode (@w{gpgme_ctx_t @var{ctx}},
@w{gpgme_keylist_mode_t @var{mode}})
The function @code{gpgme_set_keylist_mode} changes the default
behaviour of the key listing functions. The value in @var{mode} is a
bitwise-or combination of one or multiple of the following bit values:

@table @code

@item GPGME_KEYLIST_MODE_LOCAL
The
@code{GPGME_KEYLIST_MODE_LOCAL} symbol specifies that the local
keyring should be searched for keys in the keylisting operation. This
is the default.

Using only this option results in a @code{--list-keys}.

@item GPGME_KEYLIST_MODE_EXTERN
The @code{GPGME_KEYLIST_MODE_EXTERN} symbol specifies that an external
source should be searched for keys in the keylisting operation. The
type of external source is dependent on the crypto engine used and
whether it is combined with @code{GPGME_KEYLIST_MODE_LOCAL}. For
example, it can be a remote keyserver or LDAP certificate server.

Using only this option results in a @code{--search-keys} for
@code{GPGME_PROTOCOL_OpenPGP} and something similar to
@code{--list-external-keys} for @code{GPGME_PROTOCOL_CMS}.

@item GPGME_KEYLIST_MODE_LOCATE
This is a shortcut for the combination of
@code{GPGME_KEYLIST_MODE_LOCAL} and @code{GPGME_KEYLIST_MODE_EXTERN}, which
results in a @code{--locate-keys} for @code{GPGME_PROTOCOL_OpenPGP}.

@item
GPGME_KEYLIST_MODE_SIGS
The @code{GPGME_KEYLIST_MODE_SIGS} symbol specifies that the key
signatures should be included in the listed keys.

@item GPGME_KEYLIST_MODE_SIG_NOTATIONS
@since{1.1.1}

The @code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} symbol specifies that the
signature notations on key signatures should be included in the listed
keys. This only works if @code{GPGME_KEYLIST_MODE_SIGS} is also
enabled.

@item GPGME_KEYLIST_MODE_WITH_TOFU
@since{1.7.0}

The @code{GPGME_KEYLIST_MODE_WITH_TOFU} symbol specifies that
information pertaining to the TOFU trust model should be included in
the listed keys.

@item GPGME_KEYLIST_MODE_WITH_KEYGRIP
@since{1.14.0}

The @code{GPGME_KEYLIST_MODE_WITH_KEYRIP} symbol specifies that the

keygrip is always included in the listing. The default depends on the
version of the backend and the used protocol.

@item GPGME_KEYLIST_MODE_WITH_SECRET
@since{1.5.1}

The @code{GPGME_KEYLIST_MODE_WITH_SECRET} returns information about
the presence of a corresponding
 secret key in a public key listing. A
public key listing with this mode is slower than a standard listing
but can be used instead of a second run to list the secret keys. This
is only supported for GnuPG versions >= 2.1. Note that using this
option also makes sure that the keygrip is available in the output.

@item GPGME_KEYLIST_MODE_EPHEMERAL
@since{1.2.0}

The @code{GPGME_KEYLIST_MODE_EPHEMERAL} symbol specifies that keys
flagged as ephemeral are included in the listing.

@item GPGME_KEYLIST_MODE_VALIDATE
@since{0.4.5}

The @code{GPGME_KEYLIST_MODE_VALIDATE} symbol specifies that the
backend should do key or certificate validation and not just get the
validity information from an internal cache. This might be an
expensive operation and is in general not useful. Currently only
implemented for the S/MIME backend and ignored for other backends.

@end table

At least one of @code{GPGME_KEYLIST_MODE_LOCAL} and
@code{GPGME_KEYLIST_MODE_EXTERN} must be specified. For future binary
compatibility,
 you should get the current mode with
@code{gpgme_get_keylist_mode} and modify it by setting or clearing the
appropriate bits, and then using that calculated value in the
@code{gpgme_set_keylisting_mode} operation. This will leave all other
bits in the mode value intact (in particular those that are not used
in the current version of the library).

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
mode could be set correctly, and @code{GPG_ERR_INV_VALUE} if @var{ctx}
is not a valid pointer or @var{mode} is not a valid mode.
@end deftypefun

@deftypefun gpgme_keylist_mode_t gpgme_get_keylist_mode (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_get_keylist_mode} returns the current key
listing mode of the context @var{ctx}. This value can then be
modified and used in a subsequent @code{gpgme_set_keylist_mode}
operation to only affect the desired bits (and leave all others
intact).

The function returns 0 if @var{ctx} is not a valid pointer, and
the
current mode otherwise. Note that 0 is not a valid mode value.
@end deftypefun

@node Passphrase Callback
@subsection Passphrase Callback
@cindex callback, passphrase
@cindex passphrase callback

@deftp {Data type} {gpgme_error_t (*gpgme_passphrase_cb_t)(void *@var{hook}, const char *@var{uid_hint},
const char *@var{passphrase_info}, @w{int @var{prev_was_bad}}, @w{int @var{fd}})}
@tindex gpgme_passphrase_cb_t
The @code{gpgme_passphrase_cb_t} type is the type of functions usable as
passphrase callback function.

The argument @var{uid_hint} might contain a string that gives an
indication for which user ID the passphrase is required. If this is
not available, or not applicable (in the case of symmetric encryption,
for example), @var{uid_hint} will be @code{NULL}.

The argument @var{passphrase_info}, if not @code{NULL}, will give
further information about the context in which the passphrase is
required. This information is engine and operation specific.

If this is the repeated attempt
to get the passphrase, because
previous attempts failed, then @var{prev_was_bad} is 1, otherwise it
will be 0.

The user must write the passphrase, followed by a newline character,
to the file descriptor @var{fd}. The function @code{gpgme_io_writen}
should be used for the write operation. Note that if the user returns
0 to indicate success, the user must at least write a newline
character before returning from the callback.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. You can use the error code @code{GPG_ERR_CANCELED} to abort
the operation. Otherwise, return @code{0}.

Note: The passphrase_cb only works with GnuPG 1.x and 2.1.x and not

with the 2.0.x series. See @code{gpgme_set_pinentry_mode} for more
details on 2.1.x usage.
@end deftp

@deftypefun void gpgme_set_passphrase_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t
@var{passfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_passphrase_cb} sets the function that is
used
when a passphrase needs to be provided by the user to
@var{passfunc}. The function @var{passfunc} needs to implemented by
the user, and whenever it is called, it is called with its first
argument being @var{hook_value}. By default, no passphrase callback
function is set.

Not all crypto engines require this callback to retrieve the
passphrase. It is better if the engine retrieves the passphrase from
a trusted agent (a daemon process), rather than having each user to
implement their own passphrase query. Some engines do not even
support an external passphrase callback at all, in this case the error
code @code{GPG_ERR_NOT_SUPPORTED} is returned.

For GnuPG >= 2.1 the pinentry mode has to be set to
@code{GPGME_PINENTRY_MODE_LOOPBACK} to enable the passphrase callback.
See @code{gpgme_set_pinentry_mode}.

The user can disable the use of a passphrase callback function by
calling @code{gpgme_set_passphrase_cb} with @var{passfunc} being
@code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_passphrase_cb
(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_passphrase_cb_t *@var{passfunc}}, @w{void
**@var{hook_value}})
The function @code{gpgme_get_passphrase_cb} returns the function that
is used when a passphrase needs to be provided by the user in
@var{*passfunc}, and the first argument for this function in
@var{*hook_value}. If no passphrase callback is set, or @var{ctx} is
not a valid pointer, @code{NULL} is returned in both variables.

@var{passfunc} or @var{hook_value} can be @code{NULL}. In this case,
the corresponding value will not be returned.
@end deftypefun

@node Progress Meter Callback
@subsection Progress Meter Callback
@cindex callback, progress meter
@cindex progress meter callback

@deftp {Data type} {void (*gpgme_progress_cb_t)(void *@var{hook}, const char *@var{what}, int @var{type}, int @var{current}, int @var{total})}
@tindex gpgme_progress_cb_t
The @code{gpgme_progress_cb_t} type is the type of functions usable as progress callback function.

The arguments are specific to the crypto engine. More information about the progress information returned from the GnuPG engine can be found in the GnuPG source code in the file @file{doc/DETAILS} in the section PROGRESS.
@end deftp

@deftypefun void gpgme_set_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t @var{progfunc}}, @w{void *@var{hook_value}})
The function @code{gpgme_set_progress_cb} sets the function that is used when progress information about a cryptographic operation is available. The function @var{progfunc} needs to implemented by the user, and whenever it is called, it is called with its first argument being @var{hook_value}. By default, no progress callback function is set.

Setting a callback function allows an interactive program to display progress information about a long operation to the user.

The user can disable the use of a progress callback function by calling @code{gpgme_set_progress_cb} with @var{progfunc} being @code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_progress_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_progress_cb_t *@var{progfunc}}, @w{void **@var{hook_value}})
The function @code{gpgme_get_progress_cb} returns the function that is used to inform the user about the progress made in @var{*progfunc}, and the first argument for this function in @var{*hook_value}. If no progress callback is set, or @var{ctx} is not a valid pointer, @code{NULL} is returned in both variables.

@var{progfunc} or @var{hook_value} can be @code{NULL}. In this case, the corresponding value will not be returned.
@end deftypefun

@node Status Message Callback
@subsection Status Message Callback
@cindex callback, status message

@cindex status message callback

@deftp {Data type} {gpgme_error_t (*gpgme_status_cb_t)(void *@var{hook}, const char *@var{keyword}, const char *@var{args})}
@tindex gpgme_status_cb_t
The @code{gpgme_status_cb_t} type is the type of function usable as
a status message callback function.

The argument @var{keyword} is the name
of the status message while the
@var{args} argument contains any arguments for the status message.

If an error occurs, return the corresponding @code{gpgme_error_t}
value. Otherwise, return @code{0}.
@end deftp

@deftypefun void gpgme_set_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t @var{statusfunc}}, @w{void *@var{hook_value}})
@since{1.6.0}

The function @code{gpgme_set_status_cb} sets the function that is used when a
status message is received from gpg to @var{statusfunc}. The function
@var{statusfunc} needs to be implemented by the user, and whenever it is
called, it is called with its first argument being @var{hook_value}. By
default, no status message callback function is set.

The user can disable the use of a status message callback function by calling
@code{gpgme_set_status_cb} with @var{statusfunc} being @code{NULL}.
@end deftypefun

@deftypefun void gpgme_get_status_cb (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_status_cb_t *@var{statusfunc}}, @w{void **@var{hook_value}})
@since{1.6.0}

The
function @code{gpgme_get_status_cb} returns the function that is used to
process status messages from gpg in @var{*statusfunc}, and the first argument
for this function in @var{*hook_value}. If no status message callback is set,
or @var{ctx} is not a valid pointer, @code{NULL} is returned in both
variables.
@end deftypefun

@node Context Flags
@subsection Context Flags
@cindex flags, of a context

@deftypefun {gpgme_error_t} gpgme_set_ctx_flag @
(@w{gpgme_ctx_t @var{ctx}}, @

@w{const char *@var{name}}, @
@w{const char *@var{value}})

@since{1.7.0}

Some minor properties of the context can be controlled with flags set
by this function. The properties are identified by the following
values for @var{name}:

@table @code
@item "redraw"
This flag is normally not changed by the caller because GPGME sets and
clears it automatically: The flag is cleared before an operation and
set if an operation noticed that the engine has launched
 a Pinentry.
A Curses based application may use this information to redraw the
screen; for example:

@example
  err = gpgme_op_keylist_start (ctx, "foo@@example.org", 0);
  while (!err)
    @{
      err = gpgme_op_keylist_next (ctx, &key);
      if (err)
        break;
      show_key (key);
      gpgme_key_release (key);
    @}
  if ((s = gpgme_get_ctx_flag (ctx, "redraw")) && *s)
    redraw_screen ();
  gpgme_release (ctx);
@end example

@item "full-status"
Using a @var{value} of "1" the status callback set by
gpgme_set_status_cb returns all status lines with the exception of
PROGRESS lines. With the default of "0" the status callback is only
called in certain situations.

@item "raw-description"
Setting the @var{value} to "1" returns human readable strings in a raw
format. For example the non breaking space characters ("~") will not
be removed from the @code{description} field of the
@code{gpgme_tofu_info_t} object.

@item "export-session-key"
Using a @var{value}

of "1" specifies that the context should try to
export the symmetric session key when decrypting data. By default, or
when using an empty string or "0" for @var{value}, session keys are
not exported.

@item "override-session-key"
The string given in @var{value} is passed to the GnuPG engine to override
the session key for decryption. The format of that session key is
specific to GnuPG and can be retrieved during a decrypt operation when
the context flag "export-session-key" is enabled. Please be aware that
using this feature with GnuPG < 2.1.16 will leak the session key on
many platforms via ps(1).

@item "auto-key-retrieve"
Setting the @var{value} to "1" asks the backend to automatically
retrieve a key for signature verification if possible. Note that this
option makes a "web bug" like behavior possible. Keyserver or Web Key
Directory operators can see which keys you request, so by sending you
a message signed by a brand new key (which you naturally will not have
on your
local keyring), the operator can tell both your IP address and
the time when you verified the signature.

@item "auto-key-import"
Setting the @var{value} to "1" forces the GPG backend to automatically
import a missing key for signature verification from the signature.

@item "include-key-block"
Setting the @var{value} to "1" forces the GPG backend to embed the
signing key as well as an encryption subkey into the the signature.

@item "request-origin"
The string given in @var{value} is passed to the GnuPG engines to
request restrictions based on the origin of the request. Valid values
are documented in the GnuPG manual and the gpg man page under the
option @option{--request-origin}. Requires at least GnuPG 2.2.6 to have an
effect.

@item "no-symkey-cache"
For OpenPGP disable the passphrase cache used for symmetrical en- and
decryption. This cache is based on the message specific salt value.
Requires at least GnuPG 2.2.7 to have an effect.

@item "ignore-mdc-error"
This flag passes
the option @option{--ignore-mdc-error} to gpg. This
can be used to force decryption of a message which failed due to a
missing integrity check. This flag must be used with great caution

and only if it is a known non-corrupted old message and the decryption
result of the former try had the decryption result flag
@code{legacy_cipher_nomdc} set. For failsafe reasons this flag is
reset after each operation.

@item "auto-key-locate"
The string given in @var{value} is passed to gpg. This can be used
to change the behavior of a @code{GPGME_KEYLIST_MODE_LOCATE} keylisting.
Valid values are documented in the GnuPG manual and the gpg man page under
the option @option{--auto-key-locate}.
Requires at least GnuPG 2.1.18.

Note: Keys retrieved through @code{auto-key-locate} are automatically
imported in the keyring.

@item trust-model
@since{1.11.2}

Change the trust-model for all GnuPG engine operations. An empty
string sets the trust-model back to the users default. If the
trust-model is not
 supported by GnuPG the behavior is undefined
and will likely cause all operations to fail. Example: "tofu+pgp".

This options should be used carefully with a strict version
requirement. In some versions of GnuPG setting the
trust-model changes the default trust-model for future operations.
A change in the trust-model also can have unintended side effects, like
rebuilding the trust-db.

@item "extended-edit"
This flag passes the option @option{--expert} to gpg key edit. This
can be used to get additional callbacks in @code{gpgme_op_edit}.

@end table

This function returns @code{0} on success.
@end deftypefun

@deftypefun {const char *} gpgme_get_ctx_flag @
        (@w{gpgme_ctx_t @var{ctx}}, @
        @w{const char *@var{name}})

@since{1.8.0}

The value of flags settable by @code{gpgme_set_ctx_flag} can be
retrieved by this function. If @var{name} is unknown the function

returns @code{NULL}. For boolean flags an empty string is returned
for False and the string "1" is
 returned for True; either atoi(3) or a
test for an empty string can be used to get the boolean value.

@end deftypefun

@node Locale
@subsection Locale
@cindex locale, default
@cindex locale, of a context

A locale setting can be associated with a context. This locale is
passed to the crypto engine, and used for applications like the PIN
entry, which is displayed to the user when entering a passphrase is
required.

The default locale is used to initialize the locale setting of all
contexts created afterwards.

@deftypefun gpgme_error_t gpgme_set_locale (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{category}},
@w{const char *@var{value}})
@since{0.4.3}

The function @code{gpgme_set_locale} sets the locale of the context
@var{ctx}, or the default locale if @var{ctx} is a null pointer.

The locale settings that should be changed are specified by
@var{category}. Supported categories are @code{LC_CTYPE},
@code{LC_MESSAGES}, and @code{LC_ALL}, which is a wildcard you can use
if you want to change
 all the categories at once.

The value to be used for the locale setting is @var{value}, which will
be copied to @acronym{GPGME}'s internal data structures. @var{value}
can be a null pointer, which disables setting the locale, and will
make PIN entry and other applications use their default setting, which
is usually not what you want.

Note that the settings are only used if the application runs on a text
terminal, and that the settings should fit the configuration of the
output terminal. Normally, it is sufficient to initialize the default
value at startup.

The function returns an error if not enough memory is available.
@end deftypefun

@node Additional Logs
@subsection Additional Logs
@cindex auditlog, of the engine
@cindex auditlog

Additional logs can be associated with a context. These logs are
engine specific and can be be obtained with @code{gpgme_op_getauditlog}.

@deftypefun gpgme_error_t gpgme_op_getauditlog @
        (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}},
@
        @w{unsigned int @var{flags}})
@since{1.1.1}

The function @code{gpgme_op_getauditlog} is used to obtain additional
logs as specified by @var{flags} into the @var{output} data. If

The function returns the error code @code{GPG_ERR_NO_ERROR} if a
log could be queried from the engine, and @code{GPG_ERR_NOT_IMPLEMENTED}
if the log specified in @var{flags} is not available for this engine.
If no log is available @code{GPG_ERR_NO_DATA} is returned.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_AUDITLOG_DIAG
@since{1.11.2}

Obtain diagnostic output which would be written to @code{stderr} in
interactive use of the engine. This can be used to provide additional
diagnostic information in case of errors in other operations.

Note: If log-file has been set in the configuration the log will
be empty and @code{GPG_ERR_NO_DATA} will be returned.

Implemented for: @code{GPGME_PROTOCOL_OpenPGP}

@item
 GPGME_AUDITLOG_DEFAULT
@since{1.11.2}

This flag has the value 0 for compatibility reasons. Obtains additional
information from the engine by issuing the @code{GETAUDITLOG} command.
For @code{GPGME_PROTOCOL_CMS} this provides additional information about
the X509 certificate chain.

Implemented for: @code{GPGME_PROTOCOL_CMS}

@item GPGME_AUDITLOG_HTML
@since{1.1.1}

Same as @code{GPGME_AUDITLOG_DEFAULT} but in HTML.

Implemented for: @code{GPGME_PROTOCOL_CMS}
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_getauditlog_start @
    (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{output}}, @
    @w{unsigned int @var{flags}})
@since{1.1.1}

This is the asynchronous variant of @code{gpgme_op_getauditlog}.
@end deftypefun

@node Key Management
@section Key Management
@cindex key management

Some of the cryptographic operations require that recipients or
signers are specified. This is always done by specifying the
respective keys that should be used
 for the operation. The following
section describes how such keys can be selected and manipulated.

@menu
* Key objects::   Description of the key structures.
* Listing Keys::   Browsing the list of available keys.
* Information About Keys::   Requesting detailed information about keys.
* Manipulating Keys::   Operations on keys.
* Generating Keys::   Creating new key pairs.
* Signing Keys::   Adding key signatures to public keys.
* Exporting Keys::   Retrieving key data from the key ring.
* Importing Keys::   Adding keys to the key ring.
* Deleting Keys::   Removing keys from the key ring.
* Changing Passphrases::   Change the passphrase of a key.
* Changing TOFU Data::   Changing data pertaining to TOFU.
* Advanced Key Editing::   Advanced key edit operation.
@end menu

@node Key objects
@subsection Key objects

The keys are represented in GPGME by
structures which may only be read
by the application but never be allocated or changed. They are valid
as long as the key object itself is valid.

@deftp {Data type} gpgme_key_t

The @code{gpgme_key_t} type is a pointer to a key object. It has the
following members:

@table @code
@item gpgme_keylist_mode_t keylist_mode
@since{0.9.0}

The keylist mode that was active when the key was retrieved.

@item unsigned int revoked : 1
This is true if the key is revoked.

@item unsigned int expired : 1
This is true if the key is expired.

@item unsigned int disabled : 1
This is true if the key is disabled.

@item unsigned int invalid : 1
This is true if the key is invalid. This might have several reasons,
for a example for the S/MIME backend, it will be set during key
listings if the key could not be validated due to missing
certificates or unmatched policies.

@item unsigned int can_encrypt : 1
This is true if the key (ie one of its subkeys) can be used for
encryption.

@item unsigned int can_sign
: 1
This is true if the key (ie one of its subkeys) can be used to create
data signatures.

@item unsigned int can_certify : 1
This is true if the key (ie one of its subkeys) can be used to create
key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the key (ie one of its subkeys) can be used for

authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the key can be used for qualified signatures according
to local government regulations.

@item unsigned int secret : 1
This is true if the key is a secret key. Note, that this will always
be true even if the corresponding subkey flag may be false
(offline/stub keys). This is only set if a listing of secret keys has
been requested or if @code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this key.

@item gpgme_protocol_t protocol
This is the protocol supported by this key.

@item char *issuer_serial
If
 @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer serial.

@item char *issuer_name
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
issuer name.

@item char *chain_id
If @code{protocol} is @code{GPGME_PROTOCOL_CMS}, then this is the
chain ID, which can be used to built the certificate chain.

@item gpgme_validity_t owner_trust
If @code{protocol} is @code{GPGME_PROTOCOL_OpenPGP}, then this is the
owner trust.

@item gpgme_subkey_t subkeys
This is a linked list with the subkeys of the key. The first subkey
in the list is the primary key and usually available.

@item gpgme_user_id_t uids
This is a linked list with the user IDs of the key. The first user ID
in the list is the main (or primary) user ID.

@item char *fpr

@since{1.7.0}

This field gives the fingerprint of the primary key. Note that
this is a copy of the fingerprint of the first subkey. For an
incomplete key (for example from a verification result) a subkey may
be missing but this field
 may be set nevertheless.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this key.

@end table
@end deftp

@deftp {Data type} gpgme_subkey_t
@since{1.5.0}

The @code{gpgme_subkey_t} type is a pointer to a subkey structure.
Subkeys are one component of a @code{gpgme_key_t} object. In fact,
subkeys are those parts that contains the real information about the
individual cryptographic keys that belong to the same key object. One
@code{gpgme_key_t} can contain several subkeys. The first subkey in
the linked list is also called the primary key.

The subkey structure has the following members:

@table @code
@item gpgme_subkey_t next
This is a pointer to the next subkey structure in the linked list, or
@code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the subkey is revoked.

@item unsigned int expired : 1
This is true if the subkey is expired.

@item unsigned int disabled : 1
This is true if the subkey
 is disabled.

@item unsigned int invalid : 1
This is true if the subkey is invalid.

@item unsigned int can_encrypt : 1

This is true if the subkey can be used for encryption.

@item unsigned int can_sign : 1
This is true if the subkey can be used to create data signatures.

@item unsigned int can_certify : 1
This is true if the subkey can be used to create key certificates.

@item unsigned int can_authenticate : 1
@since{0.4.5}

This is true if the subkey can be used for authentication.

@item unsigned int is_qualified : 1
@since{1.1.0}

This is true if the subkey can be used for qualified signatures
according to local government regulations.

@item unsigned int is_de_vs : 1
@since{1.8.0}

This is true if the subkey complies with the rules for classified
information in Germany at the restricted level (VS-NfD). This are
currently RSA keys of at least 2048 bits or ECDH/ECDSA keys using a
Brainpool curve.

@item unsigned int secret : 1
This is true if the subkey is a secret key. Note that
it will be
false if the key is actually a stub key; i.e. a secret key operation
is currently not possible (offline-key). This is only set if a
listing of secret keys has been requested or if
@code{GPGME_KEYLIST_MODE_WITH_SECRET} is active.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm supported by this subkey.

@item unsigned int length
This is the length of the subkey (in bits).

@item char *keyid
This is the key ID of the subkey in hexadecimal digits.

@item char *fpr
This is the fingerprint of the subkey in hexadecimal digits, if
available.

@item char *keygrip
@since{1.7.0}

The keygrip of the subkey in hex digit form or @code{NULL} if not
available.

@item long int timestamp
This is the creation timestamp of the subkey. This is -1 if the
timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the subkey, or 0 if the subkey
does not expire.

@item unsigned int is_cardkey : 1
@since{1.2.0}

True if
 the secret key is stored on a smart card.

@item char *card_number
@since{1.2.0}

The serial number of a smart card holding this key or @code{NULL}.

@item char *curve
For ECC algorithms the name of the curve.

@end table
@end deftp

@deftp {Data type} gpgme_user_id_t

A user ID is a component of a @code{gpgme_key_t} object. One key can
have many user IDs. The first one in the list is the main (or
primary) user ID.

The user ID structure has the following members.

@table @code
@item gpgme_user_id_t next
This is a pointer to the next user ID structure in the linked list, or
@code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the user ID is revoked.

@item unsigned int invalid : 1

This is true if the user ID is invalid.

@item gpgme_validity_t validity
This specifies the validity of the user ID.

@item char *uid
This is the user ID string.

@item char *name
This is the name component of @code{uid}, if available.

@item char *comment
This is the comment
component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item char *address;
The mail address (addr-spec from RFC-5322) of the user ID string.
This is general the same as the @code{email} part of this structure
but might be slightly different. If no mail address is available
@code{NULL} is stored.

@item gpgme_tofu_info_t tofu
@since{1.7.0}

If not @code{NULL} information from the TOFU database pertaining to
this user id.

@item gpgme_key_sig_t signatures
This is a linked list with the signatures on this user ID.

@item unsigned int origin : 5
@since{1.8.0}

Reserved for the origin of this user ID.

@item unsigned long last_update
@since{1.8.0}

Reserved for the time of the last update of this user ID.

@item char *uidhash;
A string used by gpg to identify a user ID. This string can be used
at certain prompts of @code{gpgme_op_edit} to select a user ID. Users
must be prepared to see a @code{NULL} value here. The format

of the
value is not specified and may depend on the GPGME or GnuPG version.

@end table
@end deftp

@deftp {Data type} gpgme_tofu_info_t

@since{1.7.0}

The @code{gpgme_tofu_info_t} type is a pointer to a tofu info
structure. Tofu info structures are one component of a
@code{gpgme_user_id_t} object, and provide information from the TOFU
database pertaining to the user ID.

The tofu info structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next tofu info structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int validity : 3
This is the TOFU validity. It can have the following values:

@table @code
@item 0
The value @code{0} indicates a conflict.

@item 1
The value @code{1} indicates a key without history.

@item 2
The value @code{2} indicates a key with too little history.

@item 3
The value @code{3} indicates a key with enough history for basic trust.

@item 4
The value @code{4} indicates a key
with a lot of history.

@end table

@item unsigned int policy : 4
This is the TOFU policy, see @code{gpgme_tofu_policy_t}.

@item unsigned short signcount
This is the number of signatures seen for this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned short encrcount
This is the number of encryptions done with this binding (or
@code{USHRT_MAX} if there are more than that).

@item unsigned long signfirst
Number of seconds since Epoch when the first signature was seen with
this binding.

@item unsigned long signlast
Number of seconds since Epoch when the last signature was seen with
this binding.

@item unsigned long encrfirst
Number of seconds since Epoch when the first encryption was done with
this binding.

@item unsigned long encrlast
Number of seconds since Epoch when the last encryption was done with
this binding.

@item char *description
A human-readable string summarizing the TOFU data (or NULL).

@end table
@end deftp

@deftp {Data type} gpgme_key_sig_t

The
@code{gpgme_key_sig_t} type is a pointer to a key signature structure.
Key signatures are one component of a @code{gpgme_key_t} object, and
validate user IDs on the key in the OpenPGP protocol.

The signatures on a key are only available if the key was retrieved
via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS} mode
enabled, because it can be expensive to retrieve all signatures of a
key.

The signature notations on a key signature are only available if the
key was retrieved via a listing operation with the
@code{GPGME_KEYLIST_MODE_SIG_NOTATIONS} mode enabled, because it can
be expensive to retrieve all signature notations.

The key signature structure has the following members:

@table @code
@item gpgme_key_sig_t next
This is a pointer to the next key signature structure in the linked
list, or @code{NULL} if this is the last element.

@item unsigned int revoked : 1
This is true if the key signature is a revocation signature.

@item unsigned int expired : 1
This is
true if the key signature is expired.

@item unsigned int invalid : 1
This is true if the key signature is invalid.

@item unsigned int exportable : 1
This is true if the key signature is exportable.

@item gpgme_pubkey_algo_t pubkey_algo
This is the public key algorithm used to create the signature.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used to create
the signature.

@item long int timestamp
This is the creation timestamp of the key signature. This is -1 if
the timestamp is invalid, and 0 if it is not available.

@item long int expires
This is the expiration timestamp of the key signature, or 0 if the key
signature does not expire.

@item gpgme_error_t status
This is the status of the signature and has the same meaning as the
member of the same name in a @code{gpgme_signature_t} object.

@item unsigned int sig_class
This specifies the signature class of the key signature. The meaning
is specific to the crypto engine.

@item char *uid
This is the main
user ID of the key used to create the signature.

@item char *name

This is the name component of @code{uid}, if available.

@item char *comment
This is the comment component of @code{uid}, if available.

@item char *email
This is the email component of @code{uid}, if available.

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.
@end table
@end deftp

@node Listing Keys
@subsection Listing Keys
@cindex listing keys
@cindex key listing
@cindex key listing, start
@cindex key ring, list
@cindex key ring, search

@deftypefun gpgme_error_t gpgme_op_keylist_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}}, @w{int @var{secret_only}})

The function @code{gpgme_op_keylist_start} initiates a key listing operation inside the context @var{ctx}. It sets everything up so that subsequent invocations of @code{gpgme_op_keylist_next} return the keys in the list.

If @var{pattern} is @code{NULL}, all available keys are returned. Otherwise,
@var{pattern} contains an engine specific expression that is used to limit the list to all keys matching the pattern. Note that the total length of the pattern is restricted to an engine-specific maximum (a couple of hundred characters are usually accepted). The pattern should be used to restrict the search to a certain common name or user, not to list many specific keys at once by listing their fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list is restricted to secret keys only.

The context will be busy until either all keys are received (and @code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or @code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{int @var{secret_only}}, @w{int @var{reserved}})

The function @code{gpgme_op_keylist_ext_start} initiates an extended
key listing operation inside the context @var{ctx}. It sets
everything up so that subsequent invocations of
@code{gpgme_op_keylist_next} return the keys in the list.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys
are returned. Otherwise, @var{pattern} is a @code{NULL} terminated
array of strings that are used to limit the list to all keys matching
at least one of the patterns verbatim. Note that the total length of
all patterns is restricted to an engine-specific maximum (the exact
limit also depends on the number of patterns and amount of quoting
required, but a couple of hundred characters are usually accepted).
Patterns should be used to restrict the search to a certain common
name or user, not to list many specific keys at once by listing their
fingerprints or key IDs.

If @var{secret_only} is not @code{0}, the list
is restricted to secret
keys only.

The value of @var{reserved} must be @code{0}.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_from_data_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_data_t @var{data}}, @
@w{int @var{reserved}})

@since{1.8.0}

The function @code{gpgme_op_keylist_from_data_start} initiates a key
listing operation inside the context @var{ctx}. In contrast to the

other key listing operation the keys are read from the supplied
@var{data} and not from the local key database. The keys are also not
imported into the local key database. The function
 sets everything up
so that subsequent invocations of @code{gpgme_op_keylist_next} return
the keys from @var{data}.

The value of @var{reserved} must be @code{0}.

This function requires at least GnuPG version 2.1.14 and currently
works only with OpenPGP keys.

The context will be busy until either all keys are received (and
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}), or
@code{gpgme_op_keylist_end} is called to finish the operation.
While the context is busy @var{data} may not be released.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_next (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{r_key}})

The function @code{gpgme_op_keylist_next} returns the next key in the
list created by a previous @code{gpgme_op_keylist_start} operation in
the context @var{ctx}. The key will have
 one reference for the user.
@xref{Manipulating Keys}.

This is the only way to get at @code{gpgme_key_t} objects in
@acronym{GPGME}.

If the last key in the list has already been returned,
@code{gpgme_op_keylist_next} returns @code{GPG_ERR_EOF}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{r_key} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if there is not enough memory for the operation.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keylist_end (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_keylist_end} ends a pending key list
operation in the context @var{ctx}.

After the operation completed successfully, the result of the key

listing operation can be retrieved with
@code{gpgme_op_keylist_result}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, and @code{GPG_ERR_ENOMEM} if at some
time during the operation there was not enough memory available.
@end deftypefun

The following
 example illustrates how all keys containing a certain
string (@code{g10code}) can be listed with their key ID and the name
and email address of the main user ID:

@example
gpgme_ctx_t ctx;
gpgme_key_t key;
gpgme_error_t err = gpgme_new (&ctx);

if (!err)
 @{
  err = gpgme_op_keylist_start (ctx, "g10code", 0);
  while (!err)
    @{
      err = gpgme_op_keylist_next (ctx, &key);
      if (err)
        break;
      printf ("%s:", key->subkeys->keyid);
      if (key->uids && key->uids->name)
        printf (" %s", key->uids->name);
      if (key->uids && key->uids->email)
        printf (" <%s>", key->uids->email);
      putchar ('\n');
      gpgme_key_release (key);
    @}
  gpgme_release (ctx);
 @}
if (gpg_err_code (err) != GPG_ERR_EOF)
 @{
  fprintf (stderr, "can not list keys: %s\n", gpgme_strerror (err));
  exit (1);
 @}
@end example

@deftp {Data type} {gpgme_keylist_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_keylist_*}
 operation. After successfully ending a key
listing operation, you can retrieve the pointer to the result with

@code{gpgme_op_keylist_result}. The structure contains the following
member:

@table @code
@item unsigned int truncated : 1
This is true if the crypto backend had to truncate the result, and
less than the desired keys could be listed.
@end table
@end deftp

@deftypefun gpgme_keylist_result_t gpgme_op_keylist_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_keylist_result} returns a
@code{gpgme_keylist_result_t} pointer to a structure holding the
result of a @code{gpgme_op_keylist_*} operation. The pointer is only
valid if the last operation on the context was a key listing
operation, and if this operation finished successfully. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

In a simple program, for which a blocking operation is acceptable, the
following function can be used to retrieve
 a single key.

@deftypefun gpgme_error_t gpgme_get_key (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{fpr}},
@w{gpgme_key_t *@var{r_key}}, @w{int @var{secret}})
The function @code{gpgme_get_key} gets the key with the fingerprint
(or key ID) @var{fpr} from the crypto backend and return it in
@var{r_key}. If @var{secret} is true, get the secret key. The
currently active keylist mode is used to retrieve the key. The key
will have one reference for the user.

If the key is not found in the keyring, @code{gpgme_get_key} returns
the error code @code{GPG_ERR_EOF} and *@var{r_key} will be set to
@code{NULL}.

The function returns the error code @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{r_key} is not a valid pointer or @var{fpr} is not a
fingerprint or key ID, @code{GPG_ERR_AMBIGUOUS_NAME} if the key ID was
not a unique specifier for a key, and @code{GPG_ERR_ENOMEM} if at some
time during the operation there was not enough memory available.
@end deftypefun

@node Information About Keys
@subsection
 Information About Keys
@cindex key, information about

@cindex key, attributes
@cindex attributes, of a key

Please see the beginning of this section for more information about
@code{gpgme_key_t} objects.

@deftp {Data type} gpgme_validity_t
The @code{gpgme_validity_t} type is used to specify the validity of a user ID
in a key. The following validities are defined:

@table @code
@item GPGME_VALIDITY_UNKNOWN
The user ID is of unknown validity. The string representation of this
validity is ``?''.

@item GPGME_VALIDITY_UNDEFINED
The validity of the user ID is undefined. The string representation of this
validity is ``q''.

@item GPGME_VALIDITY_NEVER
The user ID is never valid. The string representation of this
validity is ``n''.

@item GPGME_VALIDITY_MARGINAL
The user ID is marginally valid. The string representation of this
validity is ``m''.

@item GPGME_VALIDITY_FULL
The user ID is fully valid. The string representation of this
validity is ``f''.

@item GPGME_VALIDITY_ULTIMATE
The
 user ID is ultimately valid. The string representation of this
validity is ``u''.
@end table
@end deftp

@node Manipulating Keys
@subsection Manipulating Keys
@cindex key, manipulation

@deftypefun void gpgme_key_ref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_ref} acquires an additional reference for
the key @var{key}.

@end deftypefun

@deftypefun void gpgme_key_unref (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_unref} releases a reference for the key
@var{key}. If this was the last reference, the key will be destroyed
and all resources associated to it will be released.
@end deftypefun

@c
@c gpgme_op_setexpire
@c
@deftypefun gpgme_error_t gpgme_op_setexpire @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{unsigned long @var{expires}}, @
     @w{const char *@var{subfprs}}, @
     @w{unsigned int @var{reserved}});

@since{1.14.1}

The function @code{gpgme_op_setexpire} sets the expiration time of
the
 key @var{key} or of the specified subkeys.
This function requires at least version 2.1.22 of GnuPG.

@var{key} specifies the key to operate on.

@var{expires} specifies the expiration time in seconds from now.
To be similar to other usages where expiration times are provided
in unsigned long this is similar to the key creation date
and so it is in seconds from NOW.

The common case is to use 0 to not set an expiration time.
Note that this parameter takes an unsigned long value and not
a @code{time_t} to avoid problems on systems which use a signed
32 bit @code{time_t}. Note further that the OpenPGP protocol
uses 32 bit values for timestamps and thus can
only encode dates up to the year 2106.

@var{subfprs} selects the subkey(s) for which the expiration time
should be set. If @var{subfprs} is set to @code{NULL}, then the
expiration time of the primary key is set. If @var{subfprs} is
an asterisk (@code{*}), then the expiration times of all non-revoked
and not yet expired subkeys are set.
  To select more than one subkey
put all subkey fingerprints into one string separated by linefeeds
characters (@code{\n}).

@var{reserved} is reserved for later use and must be @code{0}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_setexpire_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{unsigned long @var{expires}}, @
     @w{const char *@var{subfprs}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_setexpire_start} initiates a
@code{gpgme_op_setexpire}
 operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@node Generating Keys
@subsection Generating Keys
@cindex key, creation
@cindex key ring, add

GPGME provides a set of functions to create public key pairs. Most of
these functions require the use of GnuPG 2.1 and later; for older
GnuPG versions the @code{gpgme_op_genkey} function can be used.
Existing code which wants to update to the new functions or new code

which shall supports older GnuPG versions may try the new functions
first and provide a fallback to the old function if the error code
@code{GPG_ERR_NOT_SUPPORTED} is received.

@c
@c gpgme_op_createkey
@c
@deftypefun gpgme_error_t gpgme_op_createkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{userid}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{gpgme_key_t @var{extrakey}},
 @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey} generates a new key for the
procotol active in the context @var{ctx}. As of now this function
does only work for OpenPGP and requires at least version 2.1.13 of
GnuPG.

@var{userid} is commonly the mail address associated with the key.
GPGME does not require a specific syntax but if more than a mail
address is given, RFC-822 style format is suggested. The value is
expected to be in UTF-8 encoding (i.e. no IDN encoding for mail
addresses). This is a required parameter.

@var{algo} specifies the algorithm for the new key (actually a keypair
of public and private key). For a list of supported algorithms, see
the GnuPG manual. If @var{algo} is @code{NULL} or the string
"default", the key is generated using the default algorithm of the
engine. If the string "future-default" is used the engine may use an
algorithm which is planned to be the default in a future release of
the engine;
 however existing implementation of the protocol may not be
able to already handle such future algorithms. For the OpenPGP
protocol, the specification of a default algorithm, without requesting
a non-default usage via @var{flags}, triggers the creation of a
primary key plus a secondary key (subkey).

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note

that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode dates up to the year
2106.

@var{extrakey} is currently not used and must be set to @code{NULL}.
A future version of GPGME may use this parameter to create X.509 keys.

@var{flags} can be set to the bit-wise OR of the following
 flags:

@table @code
@item GPGME_CREATE_SIGN
@itemx GPGME_CREATE_ENCR
@itemx GPGME_CREATE_CERT
@itemx GPGME_CREATE_AUTH
@since{1.7.0}

Do not create the key with the default capabilities (key usage) of the
requested algorithm but use those explicitly given by these flags:
``signing", ``encryption", ``certification", or ``authentication".
The allowed combinations depend on the algorithm.

If any of these flags are set and a default algorithm has been
selected only one key is created in the case of the OpenPGP
protocol.

@item GPGME_CREATE_NOPASSWD
@since{1.7.0}

Request generation of the key without password protection.

@item GPGME_CREATE_SELFSIGNED
@since{1.7.0}

For an X.509 key do not create a CSR but a self-signed certificate.
This has not yet been implemented.

@item GPGME_CREATE_NOSTORE
@since{1.7.0}

Do not store the created key in the local key database.
This has not yet been implemented.

@item GPGME_CREATE_WANTPUB
@itemx GPGME_CREATE_WANTSEC
@since{1.7.0}

Return
the public or secret key as part of the result structure.
This has not yet been implemented.

@item GPGME_CREATE_FORCE
@since{1.7.0}

The engine does not allow the creation of a key with a user ID
already existing in the local key database. This flag can be used to
override this check.

@item GPGME_CREATE_NOEXPIRE
@since{1.9.0}

Request generation of keys that do not expire.

@end table

After the operation completed successfully, information about the
created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{userid}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{gpgme_key_t @var{extrakey}}, @
     @w{unsigned int
 @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createkey_start} initiates a
@code{gpgme_op_createkey} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_createsubkey
@c
@deftypefun gpgme_error_t gpgme_op_createsubkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey} creates and adds a new
subkey to the primary OpenPGP key given by @var{KEY}. The only
allowed protocol in @var{ctx} is @code{GPGME_PROTOCOL_OPENPGP}.
Subkeys (aka secondary keys) are a concept in the OpenPGP protocol to
bind several keys to a primary key. As of now this function requires
at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate
 on.

@var{algo} specifies the algorithm for the new subkey. For a list of
supported algorithms, see the GnuPG manual. If @var{algo} is
@code{NULL} or the string "default", the subkey is generated using the
default algorithm for an encryption subkey of the engine. If the
string "future-default" is used the engine may use an encryption
algorithm which is planned to be the default in a future release of
the engine; however existing implementation of the protocol may not be
able to already handle such future algorithms.

@var{reserved} must be set to zero.

@var{expires} specifies the expiration time in seconds. If you supply
0, a reasonable expiration time is chosen. Use the flag
@code{GPGME_CREATE_NOEXPIRE} to create keys that do not expire. Note
that this parameter takes an unsigned long value and not a
@code{time_t} to avoid problems on systems which use a signed 32 bit
@code{time_t}. Note further that the OpenPGP protocol uses 32 bit
values for timestamps and thus can only encode
 dates up to the year
2106.

@var{flags} takes the same values as described above for
@code{gpgme_op_createkey}.

After the operation completed successfully, information about the

created key can be retrieved with @code{gpgme_op_genkey_result}.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_createsubkey_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{algo}}, @
     @w{unsigned long @var{reserved}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_createsubkey_start} initiates a
@code{gpgme_op_createsubkey} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_adduid
@c
@deftypefun gpgme_error_t
 gpgme_op_adduid @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid} adds a new user ID to the OpenPGP
key given by @var{KEY}. Adding additional user IDs after key creation
is a feature of the OpenPGP protocol and thus the protocol for the
context @var{ctx} must be set to OpenPGP. As of now this function
requires at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to add to the key. A user ID is commonly

the mail address to be associated with the key. GPGME does not require a specific syntax but if more than a mail address is given, RFC-822 style format is suggested. The value is expected to be in UTF-8 encoding (i.e. no IDN encoding for mail addresses). This is a required parameter.

@var{flags} are currently not used and must be set to zero.

The function returns zero
 on success, @code{GPG_ERR_NOT_SUPPORTED} if the engine does not support the command, or a bunch of other error codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_adduid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_adduid_start} initiates a @code{gpgme_op_adduid} operation; see there for details. It must be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revuid
@c
@deftypefun gpgme_error_t gpgme_op_revuid @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_revuid} revokes a user ID from the OpenPGP key given by @var{KEY}. Revoking user IDs after key creation is a feature of the OpenPGP protocol and thus the protocol
 for the context
@var{ctx} must be set to OpenPGP. As of now this function requires at least version 2.1.13 of GnuPG.

@var{key} specifies the key to operate on.

@var{userid} is the user ID to be revoked from the key. The user ID
must be given verbatim because the engine does an exact and case
sensitive match. Thus the @code{uid} field from the user ID object
(@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{flags} are currently not used and must be set to zero.

Note that the engine won't allow to revoke the last valid user ID. To
change a user ID is better to first add the new user ID, then revoke
the old one, and finally publish the key.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revuid_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}},
 @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_revuid_start} initiates a
@code{gpgme_op_revuid} operation; see there for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_set_uid_flag
@c
@deftypefun gpgme_error_t gpgme_op_set_ui_flag @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{cons char * @var{name}}, @
     @w{cons char * @var{value}});

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag} is used to set flags on a user ID from the OpenPGP key given by @var{KEY}. Setting flags on user IDs after key creation is a feature of the OpenPGP protocol and thus the protocol for the context @var{ctx} must be set to OpenPGP.

@var{key} specifies the key to operate on. This parameters is required.

@var{userid} is the user ID of the key to be manipulated. This user ID must
be given verbatim because the engine does an exact and case sensitive match. Thus the @code{uid} field from the user ID object (@code{gpgme_user_id_t}) is to be used. This is a required parameter.

@var{name} names the flag which is to be changed. The only currently supported flag is:

@table @code
@item primary
This sets the primary key flag on the given user ID. All other primary key flag on other user IDs are removed. @var{value} must be given as NULL. For technical reasons this functions bumps the creation timestamp of all affected self-signatures up by one second. At least GnuPG version 2.1.20 is required.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if the engine does not support the command, or a bunch of other error codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_set_uid_flag_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{cons char * @var{name}},
@
@w{cons char * @var{value}});

@since{1.8.0}

The function @code{gpgme_op_set_uid_flag_start} initiates a @code{gpgme_op_set_uid_flag} operation; see there for details. It must be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_genkey
@c
@deftypefun gpgme_error_t gpgme_op_genkey @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{const char *@var{parms}}, @
     @w{gpgme_data_t @var{public}}, @
     @w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey} generates a new key pair in the context @var{ctx}. The meaning of @var{public} and @var{secret} depends on the crypto backend.

GPG does not support @var{public} and @var{secret}, they should be @code{NULL}. GnuPG will generate a key pair and add it to the standard key ring. The fingerprint of the generated key is available with @code{gpgme_op_genkey_result}.

GpgSM requires @var{public} to be a writable data object. GpgSM will generate
 a secret key (which will be stored by @command{gpg-agent}, and return a certificate request in @var{public}, which then needs to be signed by the certification authority and imported before it can be used. GpgSM does not make the fingerprint available.

The argument @var{parms} specifies parameters for the key in an string that looks something like XML. The details about the format of @var{parms} are specific to the crypto engine used by @var{ctx}. The first line of the parameters must be @code{<GnupgKeyParams format="internal">} and the last line must be @code{</GnupgKeyParams>}. Every line in between the first and last lines is treated as a Header: Value pair. In particular, no XML escaping is necessary if you need to include the characters @code{<}, @code{>}, or @code{&}.

Here is an example for GnuPG as the crypto engine (all parameters of OpenPGP key generation are documented in the GPG manual):

@example
<GnupgKeyParms format="internal">
Key-Type: default
Subkey-Type: default
Name-Real:
 Joe Tester
Name-Comment: with stupid passphrase
Name-Email: joe@@foo.bar

Expire-Date: 0
Passphrase: abc
</GnupgKeyParms>
@end example

Here is an example for GpgSM as the crypto engine (all parameters of
OpenPGP key generation are documented in the GPGSM manual):

@example
<GnupgKeyParms format="internal">
Key-Type: RSA
Key-Length: 1024
Name-DN: C=de,O=g10 code,OU=Testlab,CN=Joe 2 Tester
Name-Email: joe@@foo.bar
</GnupgKeyParms>
@end example

Strings should be given in UTF-8 encoding. The only format supported
for now is ``internal''. The content of the @code{GnupgKeyParms}
container is passed verbatim to the crypto backend. Control
statements are not allowed.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_genkey_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a well-formed string (e.g. does not have the
expected
 tag-like headers and footers), @code{GPG_ERR_NOT_SUPPORTED}
if @var{public} or @var{secret} is not valid, and
@code{GPG_ERR_GENERAL} if no key was created by the backend.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_genkey_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{parms}}, @w{gpgme_data_t @var{public}}, @w{gpgme_data_t @var{secret}})

The function @code{gpgme_op_genkey_start} initiates a
@code{gpgme_op_genkey} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{parms} is not a valid XML string, and
@code{GPG_ERR_NOT_SUPPORTED} if @var{public} or @var{secret} is not
@code{NULL}.
@end deftypefun

@c
@c gpgme_op_genkey_result
@c
@deftp {Data type} {gpgme_genkey_result_t}

This is a pointer to a structure used to store the result of a
@code{gpgme_op_genkey} operation.
 After successfully generating a
key, you can retrieve the pointer to the result with
@code{gpgme_op_genkey_result}. The structure contains the following
members:

@table @code
@item unsigned int primary : 1
This flag is set to 1 if a primary key was created and to 0
if not.

@item unsigned int sub : 1
This flag is set to 1 if a subkey was created and to 0 if not.

@item unsigned int uid : 1
This flag is set to 1 if a user ID was created and to 0 if not.

@item char *fpr
This is the fingerprint of the key that was created. If both a
primary and a subkey were generated, the fingerprint of the primary
key will be returned. If the crypto engine does not provide the
fingerprint, @code{fpr} will be a null pointer.

@item gpgme_data_t pubkey
@since{1.7.0}

This will eventually be used to return the public key. It is
currently not used.

@item gpgme_data_t seckey
@since{1.7.0}

This will eventually be used to return the secret key. It is
currently not used.

@end table
@end deftp

@deftypefun
 gpgme_genkey_result_t gpgme_op_genkey_result (@w{gpgme_ctx_t @var{ctx}})

The function @code{gpgme_op_genkey_result} returns a @code{gpgme_genkey_result_t} pointer to a structure holding the result of a @code{gpgme_op_genkey} operation. The pointer is only valid if the last operation on the context was a @code{gpgme_op_genkey} or @code{gpgme_op_genkey_start} operation, and if this operation finished successfully. The returned pointer is only valid until the next operation is started on the context.

@end deftypefun

@c
@c SIGNING KEYS
@c
@node Signing Keys
@subsection Signing Keys
@cindex key, signing

Key signatures are a unique concept of the OpenPGP protocol. They can be used to certify the validity of a key and are used to create the Web-of-Trust (WoT). Instead of using the @code{gpgme_op_interact} function along with a finite state machine, GPGME provides a convenient function to create key signatures when using modern GnuPG versions.

@c
@c gpgme_op_keysign
@c
@deftypefun
gpgme_error_t gpgme_op_keysign @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{key}}, @
@w{const char *@var{userid}}, @
@w{unsigned long @var{expires}}, @
@w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign} adds a new key signature to the public key @var{KEY}. This function requires at least version 2.1.12 of GnuPG.

@var{CTX} is the usual context which describes the protocol to use (which must be OpenPGP) and has also the list of signer keys to be used for the signature. The common case is to use the default key for signing other keys. If another key or more than one key shall be used for a key signature, @code{gpgme_signers_add} can be used.

@xref{Selecting Signers}.

@var{key} specifies the key to operate on.

@var{userid} selects the user ID or user IDs to be signed. If
@var{userid} is set to @code{NULL} all valid user IDs are signed. The
user ID must be given verbatim because the engine does an exact
and
case sensitive match. Thus the @code{uid} field from the user ID
object (@code{gpgme_user_id_t}) is to be used. To select more than
one user ID put them all into one string separated by linefeeds
characters (@code{\n}) and set the flag @code{GPGME_KEYSIGN_LFSEP}.

@var{expires} specifies the expiration time of the new signature in
seconds. The common case is to use 0 to not set an expiration date.
However, if the configuration of the engine defines a default
expiration for key signatures, that is still used unless the flag
@code{GPGME_KEYSIGN_NOEXPIRE} is used. Note that this parameter takes
an unsigned long value and not a @code{time_t} to avoid problems on
systems which use a signed 32 bit @code{time_t}. Note further that
the OpenPGP protocol uses 32 bit values for timestamps and thus can
only encode dates up to the year 2106.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_KEYSIGN_LOCAL
@since{1.7.0}

Instead of creating an exportable
key signature, create a key
signature which is is marked as non-exportable.

@item GPGME_KEYSIGN_LFSEP
@since{1.7.0}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@item GPGME_KEYSIGN_NOEXPIRE
Force the creation of a key signature without an expiration date. This
overrides @var{expire} and any local configuration of the engine.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error

codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_keysign_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned long @var{expires}}, @
     @w{unsigned int @var{flags}});

@since{1.7.0}

The function @code{gpgme_op_keysign_start} initiates a
@code{gpgme_op_keysign} operation; see there for details. It must
be
 completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c gpgme_op_revsig
@c
@deftypefun gpgme_error_t gpgme_op_revsig @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig} revokes key signatures of the
public key @var{key} made with the key @var{signing_key}. This
function requires at least version 2.2.24 of GnuPG.

@var{key} specifies the key to operate on.

@var{signing_key} specifies the key whose signatures shall be revoked.

@var{userid} selects the user ID or user IDs whose signatures shall
be revoked. If @var{userid} is set to @code{NULL} the signatures
on all user IDs are revoked. The user ID must be given verbatim
because the engine does an exact and case sensitive match. Thus the
@code{uid} field from the user ID object

(@code{gpgme_user_id_t}) is to
be used. To select more than one user ID put them all into one string
separated by linefeeds characters (@code{\n}) and set the flag
@code{GPGME_REVSIG_LFSEP}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_REVSIG_LFSEP
@since{1.14.1}

Although linefeeds are uncommon in user IDs this flag is required to
explicitly declare that @var{userid} may contain several linefeed
separated user IDs.

@end table

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_revsig_start @
    (@w{gpgme_ctx_t @var{ctx}}, @
     @w{gpgme_key_t @var{key}}, @
     @w{gpgme_key_t @var{signing_key}}, @
     @w{const char *@var{userid}}, @
     @w{unsigned int @var{flags}});

@since{1.14.1}

The function @code{gpgme_op_revsig_start} initiates a
@code{gpgme_op_revsig} operation; see there
 for details. It must
be completed by calling @code{gpgme_wait} on the context.
@xref{Waiting For Completion}.

@end deftypefun

@c
@c EXPORTING KEYS
@c
@node Exporting Keys
@subsection Exporting Keys
@cindex key, export

@cindex key ring, export from

Exporting keys means the same as running @command{gpg} with the command
@option{--export}. However, a mode flag can be used to change the way
the export works. The available mode flags are described below, they
may be or-ed together.

@table @code

@item GPGME_EXPORT_MODE_EXTERN
If this bit is set, the output is send directly to the default
keyserver. This is currently only allowed for OpenPGP keys. It is good
practise to not send more than a few dozens key to a keyserver at one
time. Using this flag requires that the @var{keydata} argument of the
export function is set to @code{NULL}.

@item GPGME_EXPORT_MODE_MINIMAL
@since{1.3.1}

If this bit is set, the smallest possible key is exported. For OpenPGP
keys it removes all signatures
 except for the latest self-signatures.
For X.509 keys it has no effect.

@item GPGME_EXPORT_MODE_SSH
@since{1.4.0}

If this bit is set, the latest authentication key of the requested
OpenPGP key is exported in the OpenSSH public key format. This
accepts just a single key; to force the export of a specific subkey
a fingerprint pattern with an appended exclamation mark may be used.

@item GPGME_EXPORT_MODE_SECRET
@since{1.6.0}

Instead of exporting the public key, the secret key is exported. This
may not be combined with @code{GPGME_EXPORT_MODE_EXTERN}. For X.509
the export format is PKCS#8.

@item GPGME_EXPORT_MODE_RAW
@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509
key the export format will be changed to PKCS#1. This flag may not be
used with OpenPGP.

@item GPGME_EXPORT_MODE_PKCS12

@since{1.6.0}

If this flag is used with @code{GPGME_EXPORT_MODE_SECRET} for an X.509
key the export format will be changed to PKCS#12 which also includes
the
certificate. This flag may not be used with OpenPGP.

@item GPGME_EXPORT_MODE_NOUID
@since{1.12.0 - experimental}
Do not export user ids. Works only with certain gpg version.

@end table

@deftypefun gpgme_error_t gpgme_op_export (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{pattern}},
@w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

If @var{pattern} is @code{NULL}, all available keys are returned.
Otherwise, @var{pattern} contains an engine specific expression that
is used to limit the list to all keys matching the pattern.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation
completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export_start} initiates a
@code{gpgme_op_export} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const char

*@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_export} extracts public
keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

If @var{pattern} or @var{*pattern} is @code{NULL}, all available keys
are returned. Otherwise, @var{pattern} is a @code{NULL} terminated
array of strings that are used to limit the list to all keys matching
at least one of the patterns verbatim.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, and passes through any
errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const char
*@var{pattern}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_export_ext_start} initiates a
@code{gpgme_op_export_ext} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t keys[]},
@w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys} extracts public keys and returns
them in the data buffer @var{keydata}. The output format of the key
data returned is determined by the @acronym{ASCII} armor attribute set
for the context @var{ctx}, or, if that is not set, by the encoding
specified for @var{keydata}.

The keys to export are taken form the @code{NULL} terminated array
@var{keys}. Only
keys of the currently selected protocol of
@var{ctx} which do have a fingerprint set are considered for export.

Other keys specified by the @var{keys} are ignored. In particular
OpenPGP keys retrieved via an external key listing are not included.

@var{mode} is usually 0; other values are described above.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA}
if no useful keys are in @var{keys} and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_export_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{keys}[]}, @w{gpgme_export_mode_t @var{mode}}, @w{gpgme_data_t @var{keydata}})
@since{1.2.0}

The function @code{gpgme_op_export_keys_start} initiates a
@code{gpgme_op_export_ext} operation. It can be completed by calling
@code{gpgme_wait} on the
 context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{keydata} is not a valid empty data buffer, @code{GPG_ERR_NO_DATA}
if no useful keys are in @var{keys} and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@node Importing Keys
@subsection Importing Keys
@cindex key, import
@cindex key ring, import to

Importing keys means the same as running @command{gpg} with the command
@option{--import}.

@deftypefun gpgme_error_t gpgme_op_import (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}})
The function @code{gpgme_op_import} adds the keys in the data buffer
@var{keydata} to the key ring of the crypto engine used by @var{ctx}.
The format of @var{keydata} can be @acronym{ASCII} armored, for example,
but the details are specific to the crypto engine.

After the operation completed successfully, the result
 can be
retrieved with @code{gpgme_op_import_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx} or @var{keydata} is not a valid pointer,
and @code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{keydata}})
The function @code{gpgme_op_import_start} initiates a
@code{gpgme_op_import} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{keydata} is not a valid pointer, and
@code{GPG_ERR_NO_DATA} if @var{keydata} is an empty data buffer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t *@var{keys}})
@since{1.2.0}

The
function @code{gpgme_op_import_keys} adds the keys described by
the @code{NULL} terminated array @var{keys} to the key ring of the
crypto engine used by @var{ctx}. It is used to actually import and
make keys permanent which have been retrieved from an external source
(i.e. using @code{GPGME_KEYLIST_MODE_EXTERN}) earlier. The external
keylisting must have been made with the same context configuration (in
particular the same home directory). @footnote{Thus it is a
replacement for the usual workaround of exporting and then importing a
key to make an X.509 key permanent.} Note that for OpenPGP this may
require another access to the keyserver over the network.

Only keys of the currently selected protocol of @var{ctx} are
considered for import. Other keys specified by the @var{keys} are
ignored. As of now all considered keys must have been retrieved using
the same method, i.e. the used key listing mode must be identical.

After the operation completed successfully,
the result can be
retrieved with @code{gpgme_op_import_result}.

To move keys from one home directory to another, export and import the
keydata using @code{gpgme_op_export} and @code{gpgme_op_import}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the

import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} is not a valid pointer, @code{GPG_ERR_CONFLICT} if the key
listing mode does not match, and @code{GPG_ERR_NO_DATA} if no keys are
considered for export.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_keys_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
*@var{keys}})
@since{1.2.0}

The function @code{gpgme_op_import_keys_start} initiates a
@code{gpgme_op_import_keys} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
import was completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{keydata} if @var{ctx}
 or @var{keydata} is not a valid pointer,
@code{GPG_ERR_CONFLICT} if the key listing mode does not match, and
@code{GPG_ERR_NO_DATA} if no keys are considered for export.
@end deftypefun

@deftp {Data type} {gpgme_import_status_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_import} operation. For each considered key one
status is added that contains information about the result of the
import. The structure contains the following members:

@table @code
@item gpgme_import_status_t next
This is a pointer to the next status structure in the linked list, or
@code{NULL} if this is the last element.

@item char *fpr
This is the fingerprint of the key that was considered.

@item gpgme_error_t result
If the import was not successful, this is the error value that caused
the import to fail. Otherwise the error code is
@code{GPG_ERR_NO_ERROR}.

@item unsigned int status
This is a bit-wise OR of the following flags that give more
information about what
 part of the key was imported. If the key was
already known, this might be 0.

@table @code

@item GPGME_IMPORT_NEW
The key was new.

@item GPGME_IMPORT_UID
The key contained new user IDs.

@item GPGME_IMPORT_SIG
The key contained new signatures.

@item GPGME_IMPORT_SUBKEY
The key contained new sub keys.

@item GPGME_IMPORT_SECRET
The key contained a secret key.
@end table
@end table
@end deftp

@deftp {Data type} {gpgme_import_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_import} operation. After a successful import
operation, you can retrieve the pointer to the result with
@code{gpgme_op_import_result}. The structure contains the following
members:

@table @code
@item int considered
The total number of considered keys.

@item int no_user_id
The number of keys without user ID.

@item int imported
The total number of imported keys.

@item int imported_rsa
The number of imported RSA keys.

@item int unchanged
The number of unchanged keys.

@item
int new_user_ids
The number of new user IDs.

@item int new_sub_keys
The number of new sub keys.

@item int new_signatures
The number of new signatures.

@item int new_revocations
The number of new revocations.

@item int secret_read
The total number of secret keys read.

@item int secret_imported
The number of imported secret keys.

@item int secret_unchanged
The number of unchanged secret keys.

@item int not_imported
The number of keys not imported.

@item gpgme_import_status_t imports
A list of gpgme_import_status_t objects which contain more information
about the keys for which an import was attempted.

@item int skipped_v3_keys
For security reasons modern versions of GnuPG do not anymore support
v3 keys (created with PGP 2.x) and ignores them on import. This
counter provides the number of such skipped v3 keys.

@end table
@end deftp

@deftypefun gpgme_import_result_t gpgme_op_import_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_import_result} returns a
@code{gpgme_import_result_t}
 pointer to a structure holding the result
of a @code{gpgme_op_import} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_import} or
@code{gpgme_op_import_start} operation, and if this operation finished
successfully. The returned pointer is only valid until the next
operation is started on the context.
@end deftypefun

@node Deleting Keys
@subsection Deleting Keys
@cindex key, delete
@cindex key ring, delete from

@deftypefun gpgme_error_t gpgme_op_delete_ext (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{unsigned int @var{flags}})

@since{1.9.1}

The function @code{gpgme_op_delete_ext} deletes the key @var{key} from
the key ring of the crypto engine used by @var{ctx}.

@var{flags} can be set to the bit-wise OR of the following flags:

@table @code
@item GPGME_DELETE_ALLOW_SECRET
@since{1.9.1}

If not set, only public keys are deleted. If set, secret keys are
deleted as well, if that is supported.

@item
GPGME_DELETE_FORCE
@since{1.9.1}

If set, the user is not asked to confirm the deletion.
@end table

The function returns the error code @code{GPG_ERR_NO_ERROR} if the key
was deleted successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or
@var{key} is not a valid pointer, @code{GPG_ERR_NO_PUBKEY} if
@var{key} could not be found in the keyring,
@code{GPG_ERR_AMBIGUOUS_NAME} if the key was not specified
unambiguously, and @code{GPG_ERR_CONFLICT} if the secret key for
@var{key} is available, but @var{allow_secret} is zero.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_ext_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{unsigned int @var{flags}})
@since{1.9.1}

The function @code{gpgme_op_delete_ext_start} initiates a
@code{gpgme_op_delete} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully,
and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

The following functions allow only to use one particular flag.

@deftypefun gpgme_error_t gpgme_op_delete (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t
@var{key}}, @w{int @var{allow_secret}})

Similar to @code{gpgme_op_delete_ext}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_delete_start (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}}, @w{int @var{allow_secret}})
Similar to @code{gpgme_op_delete_ext_start}, but only the flag
@code{GPGME_DELETE_ALLOW_SECRET} can be provided.
@end deftypefun

@node Changing Passphrases
@subsection Changing Passphrases
@cindex passphrase, change

@deftypefun gpgme_error_t gpgme_op_passwd @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd}
changes the passphrase of the
private key associated with @var{key}. The only allowed value for
@var{flags} is @code{0}. The backend engine will usually popup a window
to ask for the old and the new passphrase. Thus this function is not
useful in a server application (where passphrases are not required
anyway).

Note that old @code{gpg} engines (before version 2.0.15) do not support
this command and will silently ignore it.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_passwd_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{const gpgme_key_t @var{key}}, @
@w{unsigned int @var{flags}})

@since{1.3.0}

The function @code{gpgme_op_passwd_start} initiates a
@code{gpgme_op_passwd} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the

```
 oepration
could not be started.
@end deftypefun


@c
@c  CHANGING TOFU DATA
@c
@node Changing TOFU Data
@subsection Changing TOFU Data
@cindex validity, TOFU

The OpenPGP engine features a Trust-On-First-Use (TOFU) key validation
model.  For resolving conflicts it is necessary to declare the policy
for a key.  See the GnuPG manual for details on the TOFU
implementation.

@deftp {Data type} {enum gpgme_tofu_policy_t}
@since{1.7.0}

@tindex gpgme_tofu_policy_t
The @code{gpgme_tofu_policy_t} type specifies the set of possible
policy values that are supported by @acronym{GPGME}:

@table @code
@item GPGME_TOFU_POLICY_AUTO
Set the policy to ``auto''.
@item GPGME_TOFU_POLICY_GOOD
Set the policy to ``good''.
@item GPGME_TOFU_POLICY_BAD
Set the policy to ``bad''.
@item GPGME_TOFU_POLICY_ASK
Set the policy to ``ask''.
@item GPGME_TOFU_POLICY_UNKNOWN
Set the policy to ``unknown''.
@end table

@end deftp

To change the policy for a key the following functions can be used:

@deftypefun gpgme_error_t
 gpgme_op_tofu_policy @
          (@w{gpgme_ctx_t @var{ctx}},       @
           @w{const gpgme_key_t @var{key}}, @
           @w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}
```

The function @code{gpgme_op_tofu_policy} changes the TOFU policy of
@var{key}. The valid values for @var{policy} are listed above. As of
now this function does only work for OpenPGP and requires at least
version 2.1.10 of GnuPG.

The function returns zero on success, @code{GPG_ERR_NOT_SUPPORTED} if
the engine does not support the command, or a bunch of other error
codes.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_tofu_policy_start @
          (@w{gpgme_ctx_t @var{ctx}},   @
           @w{const gpgme_key_t @var{key}}, @
           @w{gpgme_tofu_policy_t @var{policy}})

@since{1.7.0}

The function @code{gpgme_op_tofu_policy_start} initiates a
@code{gpgme_op_tofu_policy} operation.   It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The
 function returns @code{0} if the operation was started successfully,
and an error code if one of the arguments is not valid or the oepration
could not be started.

@end deftypefun

@node Advanced Key Editing
@subsection Advanced Key Editing
@cindex key, edit

@deftp {Data type} {gpgme_error_t (*gpgme_interact_cb_t) @
  (@w{void *@var{handle}}, @
   @w{const char *@var{status}}, @
   @w{const char *@var{args}}, @
   @w{int @var{fd}})}

@since{1.7.0}

@tindex gpgme_interact_cb_t
The @code{gpgme_interact_cb_t} type is the type of functions which
@acronym{GPGME} calls if it a key interact operation is on-going. The
status keyword @var{status} and the argument line @var{args} are
passed through by @acronym{GPGME} from the crypto engine. An empty

string represents EOF. The file descriptor @var{fd} is -1 for normal
status messages. If @var{status} indicates a command rather than a
status message, the response to the command should be written to
@var{fd}. The @var{handle} is
 provided by the user at start of
operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_interact (@w{gpgme_ctx_t @var{ctx}}, @
 @w{gpgme_key_t @var{key}}, @
 @w{unsigned int @var{flags}}, @
 @w{gpgme_interact_cb_t @var{fnc}}, @
 @w{void *@var{handle}}, @
 @w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact} processes the key @var{KEY}
interactively, using the interact callback function @var{FNC} with the
handle @var{HANDLE}. The callback is invoked for every status and
command request from the crypto engine. The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.

@var{flags} modifies the behaviour
 of the function; the only defined
bit value is:

@table @code
@item GPGME_INTERACT_CARD
@since{1.7.0}

This is used for smartcard based keys and uses gpgs
@code{--card-edit} command.

@end table

The function returns @code{0} if the edit operation completes
successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx} or @var{key} is
not a valid pointer, and any error returned by the crypto engine or
the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_interact_start (@w{gpgme_ctx_t @var{ctx}}, @
 @w{gpgme_key_t @var{key}}, @
 @w{unsigned int @var{flags}}, @
 @w{gpgme_interact_cb_t @var{fnc}}, @
 @w{void *@var{handle}}, @
 @w{gpgme_data_t @var{out}})

@since{1.7.0}

The function @code{gpgme_op_interact_start} initiates a
@code{gpgme_op_interact} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns @code{0} if the operation was started
successfully, and @code{GPG_ERR_INV_VALUE}
 if @var{ctx} or @var{key}
is not a valid pointer.
@end deftypefun

@node Crypto Operations
@section Crypto Operations
@cindex cryptographic operation

Sometimes, the result of a crypto operation returns a list of invalid
keys encountered in processing the request. The following structure
is used to hold information about such a key.

@deftp {Data type} {gpgme_invalid_key_t}
This is a pointer to a structure used to store a part of the result of
a crypto operation which takes user IDs as one input parameter. The
structure contains the following members:

@table @code
@item gpgme_invalid_key_t next
This is a pointer to the next invalid key structure in the linked
list, or @code{NULL} if this is the last element.

@item char *fpr
The fingerprint or key ID of the invalid key encountered.

@item gpgme_error_t reason
An error code describing the reason why the key was found invalid.
@end table
@end deftp

@menu
* Decrypt:: Decrypting a ciphertext.
* Verify::
  Verifying a signature.
* Decrypt and Verify:: Decrypting a signed ciphertext.
* Sign:: Creating a signature.
* Encrypt:: Encrypting a plaintext.
@end menu

@node Decrypt
@subsection Decrypt
@cindex decryption
@cindex cryptographic operation, decryption

@deftypefun gpgme_error_t gpgme_op_decrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt} decrypts the ciphertext in the data object @var{cipher} and stores it into the data object @var{plain}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer, @code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to decrypt, @code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the secret key could not be retrieved, and passes through some errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_start} initiates a @code{gpgme_op_decrypt} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be started successfully, and @code{GPG_ERR_INV_VALUE} if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext (@
  @w{gpgme_ctx_t @var{ctx}}, @
  @w{gpgme_decrypt_flags_t @var{flags}}, @

@w{gpgme_data_t @var{cipher}}, @
@w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext} is the same as
@code{gpgme_op_decrypt}
but has an additional argument
@var{flags}. If @var{flags} is 0 both function behave identically.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_DECRYPT_VERIFY
@since{1.8.0}

The @code{GPGME_DECRYPT_VERIFY} symbol specifies that this function
shall exactly act as @code{gpgme_op_decrypt_verify}.

@item GPGME_DECRYPT_UNWRAP
@since{1.8.0}

The @code{GPGME_DECRYPT_UNWRAP} symbol specifies that the output shall
be an OpenPGP message with only the encryption layer removed. This
requires GnuPG 2.1.12 and works only for OpenPGP. This is the
counterpart to @code{GPGME_ENCRYPT_WRAP}.

@end table

The function returns the error codes as described for
@code{gpgme_op_decrypt}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_ext_start (@
@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_decrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{cipher}}, @

@w{gpgme_data_t @var{plain}})

@since{1.8.0}

The function @code{gpgme_op_decrypt_ext_start} initiates a
@code{gpgme_op_decrypt_ext} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the

operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{cipher} or @var{plain} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_recipient_t}
@since{1.1.0}

This is a pointer to a structure used to store information about the
recipient of an encrypted text which is decrypted in a
@code{gpgme_op_decrypt} operation. This information (except for the
status field) is even available before the operation finished
successfully, for example in a passphrase callback. The structure
contains the following members:

@table @code
@item gpgme_recipient_t next
This is a pointer to the next recipient structure in the linked list,
or @code{NULL} if this is
the last element.

@item gpgme_pubkey_algo_t
The public key algorithm used in the encryption.

@item char *keyid
This is the key ID of the key (in hexadecimal digits) used as
recipient.

@item gpgme_error_t status
This is an error number with the error code GPG_ERR_NO_SECKEY if the
secret key for this recipient is not available, and 0 otherwise.
@end table
@end deftp

@deftp {Data type} {gpgme_decrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_decrypt} operation. After successfully decrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_decrypt_result}. As with all result structures, it
this structure shall be considered read-only and an application must
not allocate such a strucure on its own. The structure contains the
following members:

@table @code
@item char *unsupported_algorithm
If an unsupported algorithm was encountered, this string describes the
algorithm that is not supported.

@item unsigned int wrong_key_usage
: 1
@since{0.9.0}
This is true if the key was not used according to its policy.

@item unsigned int legacy_cipher_nomdc : 1
@since{1.11.2}
The message was made by a legacy algorithm without any integrity
protection. This might be an old but legitimate message.

@item unsigned int is_mime : 1;
@since{1.11.0}
The message claims that the content is a MIME object.

@item unsigned int is_de_vs : 1;
@since{1.10.0}
The message was encrypted in a VS-NfD compliant way. This is a
specification in Germany for a restricted communication level.

@item gpgme_recipient_t recipients
@since{1.1.0}

This is a linked list of recipients to which this message was encrypted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer.

@item char *session_key
@since{1.8.0}

A textual representation (nul-terminated string) of the session key
used in symmetric encryption of the message, if the context has been
set to export session
keys (see @code{gpgme_set_ctx_flag,
"export-session-key"}), and a session key was available for the most
recent decryption operation. Otherwise, this is a null pointer.

You must not try to access this member of the struct unless
@code{gpgme_set_ctx_flag (ctx, "export-session-key")} returns success
or @code{gpgme_get_ctx_flag (ctx, "export-session-key")} returns true
(non-empty string).

@item char *symkey_algo
@since{1.11.0}

A string with the symmetric encryption algorithm and mode using the
format "<algo>.<mode>". Note that the deprecated non-MDC encryption mode of

OpenPGP is given as "PGPCFB".

@end table
@end deftp

@deftypefun gpgme_decrypt_result_t gpgme_op_decrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_decrypt_result} returns a
@code{gpgme_decrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_decrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_decrypt} or @code{gpgme_op_decrypt_start}
 operation.
If the operation failed this might be a @code{NULL} pointer. The
returned pointer is only valid until the next operation is started on
the context.
@end deftypefun

@node Verify
@subsection Verify
@cindex verification
@cindex signature, verification
@cindex cryptographic operation, verification
@cindex cryptographic operation, signature check
@cindex signature notation data
@cindex notation data

@deftypefun gpgme_error_t gpgme_op_verify (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{sig}},
@w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify} verifies that the signature in the
data object @var{sig} is a valid signature. If @var{sig} is a
detached signature, then the signed text should be provided in
@var{signed_text} and @var{plain} should be a null pointer.
Otherwise, if @var{sig} is a normal (or cleartext) signature,
@var{signed_text} should be a null pointer and @var{plain} should be a
writable data object
 that will contain the plaintext after successful
verification.

The results of the individual signature verifications can be retrieved
with @code{gpgme_op_verify_result}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be completed successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{sig} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{sig} does not contain any data to
verify, and passes through any errors that are reported by the crypto
engine support routines.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_data_t @var{signed_text}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_verify_start} initiates a
@code{gpgme_op_verify} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started
successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{sig} or @var{plain} is not a valid pointer, and
@code{GPG_ERR_NO_DATA} if @var{sig} or @var{plain} does not contain
any data to verify.
@end deftypefun

@deftp {Data type} {gpgme_sig_notation_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_verify} operation. The structure contains the
following members:

@table @code
@item gpgme_sig_notation_t next
This is a pointer to the next new signature notation structure in the
linked list, or @code{NULL} if this is the last element.

@item char *name
The name of the notation field. If this is @code{NULL}, then the
member @code{value} will contain a policy URL.

@item int name_len
The length of the @code{name} field. For strings the length is
counted without the trailing binary zero.

@item char *value
The value of the notation field. If @code{name} is @code{NULL}, then
this is a policy URL.

@item int value_len
The length of the @code{value}
field. For strings the length is
counted without the trailing binary zero.

@item gpgme_sig_notation_flags_t flags
The accumulated flags field. This field contains the flags associated
with the notation data in an accumulated form which can be used as an
argument to the function @code{gpgme_sig_notation_add}. The value
@code{flags} is a bitwise-or combination of one or multiple of the

following bit values:

@table @code
@item GPGME_SIG_NOTATION_HUMAN_READABLE
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_HUMAN_READABLE} symbol specifies that the notation data is in human readable form

@item GPGME_SIG_NOTATION_CRITICAL
@since{1.1.0}

The @code{GPGME_SIG_NOTATION_CRITICAL} symbol specifies that the notation data is critical.

@end table

@item unsigned int human_readable : 1
This is true if the @code{GPGME_SIG_NOTATION_HUMAN_READABLE} flag is set and false otherwise. This flag is only valid for notation data, not for policy URLs.

@item unsigned int critical : 1
This is true if the
@code{GPGME_SIG_NOTATION_CRITICAL} flag is set and false otherwise. This flag is valid for notation data and policy URLs.

@end table
@end deftp

@deftp {Data type} {gpgme_signature_t}
This is a pointer to a structure used to store a part of the result of a @code{gpgme_op_verify} operation. The structure contains the following members:

@table @code
@item gpgme_signature_t next
This is a pointer to the next new signature structure in the linked list, or @code{NULL} if this is the last element.

@item gpgme_sigsum_t summary
This is a bit vector giving a summary of the signature status. It provides an easy interface to a defined semantic of the signature status. Checking just one bit is sufficient to see whether a signature is valid without any restrictions. This means that you can check for GPGME_SIGSUM_VALID like this:

@example

if ((sig.summary & GPGME_SIGSUM_VALID))
@{
  ..do stuff if valid..
@}
else
@{
  ..do stuff if not fully valid..
@}
@end example

The defined bits are:
  @table @code
 @item GPGME_SIGSUM_VALID
 The signature is fully valid.

 @item GPGME_SIGSUM_GREEN
 The signature is good but one might want to display some extra
 information. Check the other bits.

 @item GPGME_SIGSUM_RED
 The signature is bad. It might be useful to check other bits and
 display more information, i.e. a revoked certificate might not render a
 signature invalid when the message was received prior to the cause for
 the revocation.

 @item GPGME_SIGSUM_KEY_REVOKED
 The key or at least one certificate has been revoked.

 @item GPGME_SIGSUM_KEY_EXPIRED
 The key or one of the certificates has expired. It is probably a good
 idea to display the date of the expiration.

 @item GPGME_SIGSUM_SIG_EXPIRED
 The signature has expired.

 @item GPGME_SIGSUM_KEY_MISSING
 Can't verify due to a missing key or certificate.

 @item GPGME_SIGSUM_CRL_MISSING
 The CRL (or an equivalent mechanism) is not available.

 @item GPGME_SIGSUM_CRL_TOO_OLD
 Available CRL is too
 old.

 @item GPGME_SIGSUM_BAD_POLICY
 A policy requirement was not met.

@item GPGME_SIGSUM_SYS_ERROR
A system error occurred.

@item GPGME_SIGSUM_TOFU_CONFLICT
A TOFU conflict was detected.
@end table

@item char *fpr
This is the fingerprint or key ID of the signature.

@item gpgme_error_t status
This is the status of the signature. In particular, the following
status codes are of interest:

@table @code
@item GPG_ERR_NO_ERROR
This status indicates that the signature could be verified or that
there is no signature. For the combined result this status
means that all signatures could be verified.

Note: This does not mean that a valid signature could be found. Check
the @code{summary} field for that.

For example a @code{gpgme_op_decrypt_verify} returns a verification
result with GPG_ERR_NO_ERROR for encrypted but unsigned data.

@item GPG_ERR_SIG_EXPIRED
This status indicates that the signature is valid but expired. For
the combined result this
status means that all signatures are valid
and expired.

@item GPG_ERR_KEY_EXPIRED
This status indicates that the signature is valid but the key used to
verify the signature has expired. For the combined result this status
means that all signatures are valid and all keys are expired.

@item GPG_ERR_CERT_REVOKED
This status indicates that the signature is valid but the key used
to verify the signature has been revoked. For the combined result
this status means that all signatures are valid and all keys are
revoked.

@item GPG_ERR_BAD_SIGNATURE
This status indicates that the signature is invalid. For the combined
result this status means that all signatures are invalid.

@item GPG_ERR_NO_PUBKEY

This status indicates that the signature could not be verified due to
a missing key. For the combined result this status means that all
signatures could not be checked due to missing keys.

@item GPG_ERR_GENERAL
This status indicates that there was some other
error which prevented
the signature verification.
@end table

@item gpgme_sig_notation_t notations
This is a linked list with the notation data and policy URLs.

@item unsigned long timestamp
The creation timestamp of this signature.

@item unsigned long exp_timestamp
The expiration timestamp of this signature, or 0 if the signature does
not expire.

@item unsigned int wrong_key_usage : 1
This is true if the key was not used according to its policy.

@item unsigned int pka_trust : 2
This is set to the trust information gained by means of the PKA system.
Values are:
@table @code
@item 0
    No PKA information available or verification not possible.
@item 1
    PKA verification failed.
@item 2
    PKA verification succeeded.
@item 3
    Reserved for future use.
@end table
Depending on the configuration of the engine, this metric may also be
reflected by the validity of the signature.

@item unsigned int chain_model : 1
@since{1.1.6}

This is true if the
validity of the signature has been checked using the
chain model. In the chain model the time the signature has been created
must be within the validity period of the certificate and the time the
certificate itself has been created must be within the validity period
of the issuing certificate. In contrast the default validation model

checks the validity of signature as well at the entire certificate chain
at the current time.

@item gpgme_validity_t validity
The validity of the signature.

@item gpgme_error_t validity_reason
If a signature is not valid, this provides a reason why.

@item gpgme_pubkey_algo_t
The public key algorithm used to create this signature.

@item gpgme_hash_algo_t
The hash algorithm used to create this signature.

@item char *pka_address
The mailbox from the PKA information or @code{NULL}.

@item gpgme_key_t key
@since{1.7.0}

An object describing the key used to create the signature. This key
object may be incomplete in that it only conveys information
availabale
directly with a signature. It may also be @code{NULL} if
such information is not readily available.

@end table
@end deftp

@deftp {Data type} {gpgme_verify_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_verify} operation. After verifying a signature, you
can retrieve the pointer to the result with
@code{gpgme_op_verify_result}. If the operation failed this might be
a @code{NULL} pointer. The structure contains the following member:

@table @code
@item gpgme_signature_t signatures
A linked list with information about all signatures for which a
verification was attempted.

@item char *file_name
This is the filename of the original plaintext message file if it is
known, otherwise this is a null pointer. Warning: The filename is
not covered by the signature.

@item unsigned int is_mime : 1;
@since{1.11.0}

The message claims that the content is a MIME object. Warning: This
flag is not covered by the signature.

@end table
@end deftp

@deftypefun
gpgme_verify_result_t gpgme_op_verify_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_verify_result} returns a
@code{gpgme_verify_result_t} pointer to a structure holding the result
of a @code{gpgme_op_verify} operation. The pointer is only valid if
the last operation on the context was a @code{gpgme_op_verify},
@code{gpgme_op_verify_start}, @code{gpgme_op_decrypt_verify} or
@code{gpgme_op_decrypt_verify_start} operation, and if this operation
finished successfully (for @code{gpgme_op_decrypt_verify} and
@code{gpgme_op_decrypt_verify_start}, the error code
@code{GPG_ERR_NO_DATA} counts as successful in this context). The
returned pointer is only valid until the next operation is started on
the context.
@end deftypefun

@node Decrypt and Verify
@subsection Decrypt and Verify
@cindex decryption and verification
@cindex verification and decryption
@cindex signature check
@cindex cryptographic operation, decryption and verification

@deftypefun gpgme_error_t gpgme_op_decrypt_verify
(@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify} decrypts the ciphertext in
the data object @var{cipher} and stores it into the data object
@var{plain}. If @var{cipher} contains signatures, they will be
verified.

After the operation completed, @code{gpgme_op_decrypt_result} and
@code{gpgme_op_verify_result} can be used to retrieve more information
about the signatures.

If the error code @code{GPG_ERR_NO_DATA} is returned, @var{cipher}
does not contain any data to decrypt. However, it might still be
signed. The information about detected signatures is available with
@code{gpgme_op_verify_result} in this case.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
ciphertext could be decrypted successfully, @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{cipher} or @var{plain} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if @var{cipher} does not contain any data to
decrypt,
 @code{GPG_ERR_DECRYPT_FAILED} if @var{cipher} is not a valid
cipher text, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the
secret key could not be retrieved, and passes through any errors that
are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_decrypt_verify_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{cipher}}, @w{gpgme_data_t @var{plain}})
The function @code{gpgme_op_decrypt_verify_start} initiates a
@code{gpgme_op_decrypt_verify} operation. It can be completed by
calling @code{gpgme_wait} on the context. @xref{Waiting For
Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{cipher}, @var{plain} or @var{r_stat} is not a valid
pointer, and @code{GPG_ERR_NO_DATA} if @var{cipher} does not contain
any data to decrypt.
@end deftypefun

When processing mails it is sometimes useful to extract the actual
mail
 address (the ``addr-spec'') from a string. GPGME provides this
helper function which uses the same semantics as the internal
functions in GPGME and GnuPG:

@deftypefun @w{char *} gpgme_addrspec_from_uid (@w{const char *@var{uid}})

@since{1.7.1}

Return the mail address (called ``addr-spec'' in RFC-5322) from the
string @var{uid} which is assumed to be a user id (called ``address''
in RFC-5322). All plain ASCII characters (i.e. those with bit 7
cleared) in the result are converted to lowercase. Caller must free
the result using @code{gpgme_free}. Returns @code{NULL} if no valid
address was found (in which case @code{ERRNO} is set to @code{EINVAL})
or for other errors.

@end deftypefun

@node Sign
@subsection Sign

@cindex signature, creation
@cindex sign
@cindex cryptographic operation, signing

A signature can contain signatures by one or more keys. The set of keys used to create a signatures is contained in a context, and is applied to all following signing operations in this context (until the set is changed).

@menu
* Selecting Signers:: How to choose the keys to sign with.
* Creating a Signature:: How to create a signature.
* Signature Notation Data:: How to add notation data to a signature.
@end menu

@node Selecting Signers
@subsubsection Selecting Signers
@cindex signature, selecting signers
@cindex signers, selecting

The key or the keys used to create a signature are stored in the context. The following functions can be used to manipulate this list. If no signer has been set into the context a default key is used for signing.

@deftypefun void gpgme_signers_clear (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_signers_clear} releases a reference for each key on the signers list and removes the list of signers from the context @var{ctx}.

Every context starts with an empty list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_signers_add (@w{gpgme_ctx_t @var{ctx}}, @w{const gpgme_key_t @var{key}})
The function @code{gpgme_signers_add} adds the key @var{key} to the list of signers in the context @var{ctx}.

Calling this function acquires an additional reference for the key.
@end deftypefun

@deftypefun @w{unsigned int} gpgme_signers_count (@w{const gpgme_ctx_t @var{ctx}})
@since{1.4.3}

The function @code{gpgme_signers_count} returns the number of signer keys in

the context @var{ctx}.
@end deftypefun

@deftypefun gpgme_key_t gpgme_signers_enum (@w{const gpgme_ctx_t @var{ctx}}, @w{int @var{seq}})
The function @code{gpgme_signers_enum} returns the @var{seq}th key in
the list of signers in the context @var{ctx}. An additional reference
is acquired for the user.

If @var{seq} is out of range, @code{NULL} is returned.
@end deftypefun

@node Creating a Signature
@subsubsection Creating a Signature

@deftp {Data type} {enum gpgme_sig_mode_t}
@tindex gpgme_sig_mode_t
The @code{gpgme_sig_mode_t} type is used to specify the desired type of a
signature. The following modes are available:

@table @code
@item
GPGME_SIG_MODE_NORMAL
A normal signature is made, the output includes the plaintext and the
signature.

@item GPGME_SIG_MODE_DETACH
A detached signature is made.

@item GPGME_SIG_MODE_CLEAR
A clear text signature is made. The @acronym{ASCII} armor and text
mode settings of the context are ignored.
@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t @var{plain}},
@w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign} creates a signature for the text in
the data object @var{plain} and returns it in the data object
@var{sig}. The type of the signature created is determined by the
@acronym{ASCII} armor (or, if that is not set, by the encoding
specified for @var{sig}), the text mode attributes set for the context
@var{ctx} and the requested signature mode @var{mode}.

After the operation completed successfully, the result can be
retrieved with @code{gpgme_op_sign_result}.

If an S/MIME

signed message is created using the CMS crypto engine,
the number of certificates to include in the message can be specified
with @code{gpgme_set_include_certs}. @xref{Included Certificates}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
signature could be created successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{plain} or @var{sig} is not a valid pointer,
@code{GPG_ERR_NO_DATA} if the signature could not be created,
@code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the secret key
could not be retrieved, @code{GPG_ERR_UNUSABLE_SECKEY} if there are
invalid signers, and passes through any errors that are reported by the
crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{plain}}, @w{gpgme_data_t @var{sig}}, @w{gpgme_sig_mode_t @var{mode}})
The function @code{gpgme_op_sign_start} initiates a
@code{gpgme_op_sign} operation. It can be completed by calling
@code{gpgme_wait}
 on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the operation could be
started successfully, and @code{GPG_ERR_INV_VALUE} if @var{ctx},
@var{plain} or @var{sig} is not a valid pointer.
@end deftypefun

@deftp {Data type} {gpgme_new_signature_t}
This is a pointer to a structure used to store a part of the result of
a @code{gpgme_op_sign} operation. The structure contains the
following members:

@table @code
@item gpgme_new_signature_t next
This is a pointer to the next new signature structure in the linked
list, or @code{NULL} if this is the last element.

@item gpgme_sig_mode_t type
The type of this signature.

@item gpgme_pubkey_algo_t pubkey_algo
The public key algorithm used to create this signature.

@item gpgme_hash_algo_t hash_algo
The hash algorithm used to create this signature.

@item unsigned int sig_class
The signature class of this signature.

@item long int timestamp
The creation timestamp of this signature.

@item
char *fpr
The fingerprint of the key which was used to create this signature.
@end table
@end deftp

@deftp {Data type} {gpgme_sign_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_sign} operation. After successfully generating a
signature, you can retrieve the pointer to the result with
@code{gpgme_op_sign_result}. The structure contains the following
members:

@table @code
@item gpgme_invalid_key_t invalid_signers
A linked list with information about all invalid keys for which a
signature could not be created.

@item gpgme_new_signature_t signatures
A linked list with information about all signatures created.
@end table
@end deftp

@deftypefun gpgme_sign_result_t gpgme_op_sign_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_sign_result} returns a
@code{gpgme_sign_result_t} pointer to a structure holding the result
of a @code{gpgme_op_sign} operation. The pointer is only valid if the
last operation on the context was
a @code{gpgme_op_sign},
@code{gpgme_op_sign_start}, @code{gpgme_op_encrypt_sign} or
@code{gpgme_op_encrypt_sign_start} operation. If that operation
failed, the function might return a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@node Signature Notation Data
@subsubsection Signature Notation Data
@cindex notation data
@cindex signature notation data
@cindex policy URL

Using the following functions, you can attach arbitrary notation data
to a signature. This information is then available to the user when

the signature is verified.

@deftypefun void gpgme_sig_notation_clear (@w{gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_clear} removes the notation data
from the context @var{ctx}. Subsequent signing operations from this
context will not include any notation data.

Every context starts with an empty notation data list.
@end deftypefun

@deftypefun gpgme_error_t gpgme_sig_notation_add
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{name}}, @w{const char *@var{value}},
@w{gpgme_sig_notation_flags_t @var{flags}})
@since{1.1.0}

The function @code{gpgme_sig_notation_add} adds the notation data with
the name @var{name} and the value @var{value} to the context
@var{ctx}.

Subsequent signing operations will include this notation data, as well
as any other notation data that was added since the creation of the
context or the last @code{gpgme_sig_notation_clear} operation.

The arguments @var{name} and @var{value} must be @code{NUL}-terminated
strings in human-readable form. The flag
@code{GPGME_SIG_NOTATION_HUMAN_READABLE} is implied
(non-human-readable notation data is currently not supported). The
strings must be in UTF-8 encoding.

If @var{name} is @code{NULL}, then @var{value} should be a policy URL.

The function @code{gpgme_sig_notation_add} returns the error code
@code{GPG_ERR_NO_ERROR} if the notation data could be added
successfully, @code{GPG_ERR_INV_VALUE}
if @var{ctx} is not a valid
pointer, or if @var{name}, @var{value} and @var{flags} are an invalid
combination. The function also passes through any errors that are
reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_sig_notation_t gpgme_sig_notation_get (@w{const gpgme_ctx_t @var{ctx}})
@since{1.1.0}

The function @code{gpgme_sig_notation_get} returns the linked list of
notation data structures that are contained in the context @var{ctx}.

If @var{ctx} is not a valid pointer, or there is no notation data
added for this context, @code{NULL} is returned.
@end deftypefun

@node Encrypt
@subsection Encrypt
@cindex encryption
@cindex cryptographic operation, encryption

One plaintext can be encrypted for several recipients at the same
time. The list of recipients is created independently of any context,
and then passed to the encryption operation.

@menu
* Encrypting a Plaintext:: How to encrypt a plaintext.
@end menu

@node Encrypting a
Plaintext
@subsubsection Encrypting a Plaintext

@deftypefun gpgme_error_t gpgme_op_encrypt (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t
@var{cipher}})
The function @code{gpgme_op_encrypt} encrypts the plaintext in the
data object @var{plain} for the recipients @var{recp} and stores the
ciphertext in the data object @var{cipher}. The type of the
ciphertext created is determined by the @acronym{ASCII} armor (or, if
that is not set, by the encoding specified for @var{cipher}) and the
text mode attributes set for the context @var{ctx}.

@var{recp} must be a @code{NULL}-terminated array of keys. The user
must keep references for all keys during the whole duration of the
call (but see @code{gpgme_op_encrypt_start} for the requirements with
the asynchronous variant).

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_ENCRYPT_ALWAYS_TRUST
The
@code{GPGME_ENCRYPT_ALWAYS_TRUST} symbol specifies that all the
recipients in @var{recp} should be trusted, even if the keys do not
have a high enough validity in the keyring. This flag should be used
with care; in general it is not a good idea to use any untrusted keys.

@item GPGME_ENCRYPT_NO_ENCRYPT_TO
@since{1.2.0}

The @code{GPGME_ENCRYPT_NO_ENCRYPT_TO} symbol specifies that no
default or hidden default recipients as configured in the crypto
backend should be included. This can be useful for managing different
user profiles.

@item GPGME_ENCRYPT_NO_COMPRESS
@since{1.5.0}

The @code{GPGME_ENCRYPT_NO_COMPRESS} symbol specifies that the
plaintext shall not be compressed before it is encrypted. This is
in some cases useful if the length of the encrypted message
may reveal information about the plaintext.

@item GPGME_ENCRYPT_PREPARE
@itemx GPGME_ENCRYPT_EXPECT_SIGN
The @code{GPGME_ENCRYPT_PREPARE} symbol is used with the UI Server
protocol to prepare an encryption
 (i.e. sending the
@code{PREP_ENCRYPT} command). With the
@code{GPGME_ENCRYPT_EXPECT_SIGN} symbol the UI Server is advised to
also expect a sign command.

@item GPGME_ENCRYPT_SYMMETRIC
@since{1.7.0}

The @code{GPGME_ENCRYPT_SYMMETRIC} symbol specifies that the
output should be additionally encrypted symmetrically even
if recipients are provided. This feature is only supported
for the OpenPGP crypto engine.

@item GPGME_ENCRYPT_THROW_KEYIDS
@since{1.8.0}

The @code{GPGME_ENCRYPT_THROW_KEYIDS} symbols requests that the
identifiers for the decrption keys are not included in the ciphertext.
On the receiving side, the use of this flag may slow down the
decryption process because all available secret keys must be tried.
This flag is only honored for OpenPGP encryption.

@item GPGME_ENCRYPT_WRAP
@since{1.8.0}

The @code{GPGME_ENCRYPT_WRAP} symbol specifies that the input is an
OpenPGP message and not a plain data. This is the counterpart to

@code{GPGME_DECRYPT_UNWRAP}.

@item GPGME_ENCRYPT_WANT_ADDRESS
@since{1.11.0}

The
@code{GPGME_ENCRYPT_WANT_ADDRESS} symbol requests that all supplied keys or key specifications include a syntactically valid mail address. If this is not the case the operation is not even tried and the error code @code{GPG_ERR_INV_USER_ID} is returned. Only the address part of the key specification is conveyed to the backend. As of now the key must be specified using the @var{recpstring} argument of the extended encrypt functions. This feature is currently only supported for the OpenPGP crypto engine.

@end table

If @code{GPG_ERR_UNUSABLE_PUBKEY} is returned, some recipients in @var{recp} are invalid, but not all. In this case the plaintext might be encrypted for all valid recipients and returned in @var{cipher} (if this happens depends on the crypto engine). More information about the invalid recipients is available with @code{gpgme_op_encrypt_result}.

If @var{recp} is @code{NULL}, symmetric rather than public key encryption is performed.
Symmetrically encrypted cipher text can be deciphered with @code{gpgme_op_decrypt}. Note that in this case the crypto backend needs to retrieve a passphrase from the user. Symmetric encryption is currently only supported for the OpenPGP crypto backend.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the ciphertext could be created successfully, @code{GPG_ERR_INV_VALUE} if @var{ctx}, @var{recp}, @var{plain} or @var{cipher} is not a valid pointer, @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{recp} contains some invalid recipients, @code{GPG_ERR_BAD_PASSPHRASE} if the passphrase for the symmetric key could not be retrieved, and passes through any errors that are reported by the crypto engine support routines.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_start} initiates a
@code{gpgme_op_encrypt} operation. It can be completed by calling @code{gpgme_wait} on the context. @xref{Waiting For Completion}.

References to the keys only need to be held for the duration of this
call. The user can release its references to the keys after this
function returns, even if the operation is not yet finished.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid
pointer, and @code{GPG_ERR_UNUSABLE_PUBKEY} if @var{rset} does not
contain any valid recipients.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_ext @
        (@w{gpgme_ctx_t @var{ctx}}, @
         @w{gpgme_key_t @var{recp}[]}, @
         @w{const char *@var{recpstring}}, @
         @w{gpgme_encrypt_flags_t @var{flags}}, @
         @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended
 version of @code{gpgme_op_encrypt} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there is no need
to first create key objects. Leading and trailing white space is
remove from each line in @var{recpstring}. The keys are then passed
verbatim to the backend engine.

For the OpenPGP backend several special keywords are supported to
modify the operation. These keywords are given instead of a key
specification. The currently supported keywords are:

@table @code
@item --hidden
@itemx --no-hidden
These keywords toggle between normal and hidden recipients for all
following key specifications. When a hidden recipient is requested
the gpg option @option{-R} (or @option{-F} in file mode) is used
instead of @option{-r} (@option{-f} in file mode).

@item --file
@itemx
 --no-file
These keywords toggle between regular and file mode for all following
key specification. In file mode the option @option{-f} or @option{-F}

is passed to gpg. At least GnuPG version 2.1.14 is required to handle
these options. The @code{GPGME_ENCRYPT_WANT_ADDRESS} flag is ignored
in file mode.

@item --
This keyword disables all keyword detection up to the end of the
string. All keywords are treated as verbatim arguments.

@end table

To create a @var{recpstring} it is often useful to employ a strconcat
style function. For example this function creates a string to encrypt
to two keys:

@example
char *
xbuild_recpstring (const char *key1, const char *key2)
@{
 char *result = gpgrt_strconcat ("--\n", key1, "\n", key2, NULL);
 if (!result)
   @{ perror ("strconcat failed"); exit (2); @}
 return result;
@}
@end example

Note the use of the double dash here; unless you want to specify a
keyword, it is a good idea to avoid any possible trouble with key
specifications starting
 with a double dash. The used strconcat
function is available in Libgpg-error 1.28 and later; Libgpg-error
(aka Gpgrt) is a dependency of GPGME. The number of arguments to
@code{gpgrt_strconcat} is limited to 47 but that should always be
sufficient. In case a larger and non-fixed number of keys are to be
supplied the following code can be used:

@example
char *
xbuild_long_recpstring (void)
@{
 gpgrt_stream_t memfp;
 const char *s;
 void *result;

 memfp = gpgrt_fopenmem (0, "w+b");
 if (!memfp)
   @{ perror ("fopenmem failed"); exit (2); @}
 gpgrt_fputs ("--", memfp);
 while ((s = get_next_keyspec ()))

```
  @{
    gpgrt_fputc ('\n', memfp);
    gpgrt_fputs (s, memfp);
  @}
 gpgrt_fputc (0, memfp);
 if (gpgrt_ferror (memfp))
   @{ perror ("writing to memstream failed"); exit (2); @}
 if (gpgrt_fclose_snatch (memfp, &result, NULL))
   @{ perror ("fclose_snatch failed"); exit (2); @}
 return result;
@}
@end example

In this example @code{get_next_keyspec} is expected
 to return the next
key to be added to the string.  Please take care: Encrypting to a
large number of recipients is often questionable due to security
reasons and also for the technicality that all keys are currently
passed on the command line to @command{gpg} which has as a platform
specific length limitation.
@end deftypefun


@deftypefun gpgme_error_t gpgme_op_encrypt_ext_start @
        (@w{gpgme_ctx_t @var{ctx}}, @
         @w{gpgme_key_t @var{recp}[]}, @
         @w{const char *@var{recpstring}}, @
         @w{gpgme_encrypt_flags_t @var{flags}}, @
         @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_start} with
@var{recpstring} as additional parameter.  If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications.  In contrast to
@var{recp} the keys are given directly as strings and there
 is no need
to first create key objects.  The keys are passed verbatim to the
backend engine.

@end deftypefun

@deftp {Data type} {gpgme_encrypt_result_t}
This is a pointer to a structure used to store the result of a
@code{gpgme_op_encrypt} operation.  After successfully encrypting
data, you can retrieve the pointer to the result with
@code{gpgme_op_encrypt_result}.  The structure contains the following
```

members:

@table @code
@item gpgme_invalid_key_t invalid_recipients
A linked list with information about all invalid keys for which
the data could not be encrypted.
@end table
@end deftp

@deftypefun gpgme_encrypt_result_t gpgme_op_encrypt_result (@w{gpgme_ctx_t @var{ctx}})
The function @code{gpgme_op_encrypt_result} returns a
@code{gpgme_encrypt_result_t} pointer to a structure holding the
result of a @code{gpgme_op_encrypt} operation. The pointer is only
valid if the last operation on the context was a
@code{gpgme_op_encrypt}, @code{gpgme_op_encrypt_start},
@code{gpgme_op_sign} or
@code{gpgme_op_sign_start} operation. If this
operation failed, this might be a @code{NULL} pointer. The returned
pointer is only valid until the next operation is started on the
context.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_sign} does a combined encrypt and
sign operation. It is used like @code{gpgme_op_encrypt}, but the
ciphertext also contains signatures for the signers listed in
@var{ctx}.

The combined encrypt and sign operation is currently only available
for the OpenPGP crypto engine.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{recp}[]}, @w{gpgme_encrypt_flags_t @var{flags}}, @w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})
The function @code{gpgme_op_encrypt_sign_start}
initiates a
@code{gpgme_op_encrypt_sign} operation. It can be completed by
calling @code{gpgme_wait} on the context. @xref{Waiting For
Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation could be started successfully, and @code{GPG_ERR_INV_VALUE}
if @var{ctx}, @var{rset}, @var{plain} or @var{cipher} is not a valid
pointer.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp}
the keys are given directly as strings and there is no need
to first create the key objects. The keys are passed verbatim to the
backend engine.

@end deftypefun

@deftypefun gpgme_error_t gpgme_op_encrypt_sign_ext_start @
(@w{gpgme_ctx_t @var{ctx}}, @
@w{gpgme_key_t @var{recp}[]}, @
@w{const char *@var{recpstring}}, @
@w{gpgme_encrypt_flags_t @var{flags}}, @
@w{gpgme_data_t @var{plain}}, @w{gpgme_data_t @var{cipher}})

@since{1.11.0}

This is an extended version of @code{gpgme_op_encrypt_sign_start} with
@var{recpstring} as additional parameter. If @var{recp} is NULL and
@var{recpstring} is not NULL, the latter is expected to be a linefeed
delimited string with the set of key specifications. In contrast to
@var{recp} the keys are given directly as strings and there is no need
to first create the key objects. The keys are passed verbatim to the
backend engine.

@end deftypefun

@node Miscellaneous
@section Miscellaneous
operations

Here are some support functions which are sometimes useful.

@menu
* Running other Programs::   Running other Programs
* Using the Assuan protocol::   Using the Assuan protocol
* Checking for updates::   How to check for software updates
@end menu

@node Running other Programs
@subsection Running other Programs

GPGME features an internal subsystem to run the actual backend
engines. Along with data abstraction object this subsystem can be
used to run arbitrary simple programs which even need not be related
to cryptographic features. It may for example be used to run tools
which are part of the GnuPG system but are not directly accessible
with the GPGME API.

@deftypefun gpgme_error_t gpgme_op_spawn @
        (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
         @w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @
         @w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
         @w{unsigned int @var{flags}})

@since{1.5.0}

The
 function @code{gpgme_op_spawn} runs the program @var{file} with
the arguments taken from the NULL terminated array @var{argv}. If no
arguments are required @var{argv} may be given as @code{NULL}. In the
latter case or if @code{argv[0]} is the empty string, GPGME uses the
basename of @var{file} for @code{argv[0]}. The file descriptors
@code{stdin}, @code{stdout}, and @code{stderr} are connected to the
data objects @var{datain}, @var{dataout}, and @var{dataerr}. If NULL
is passed for one of these data objects the corresponding file
descriptor is connected to @file{/dev/null}.

The value in @var{flags} is a bitwise-or combination of one or
multiple of the following bit values:

@table @code
@item GPGME_SPAWN_DETACHED
@since{1.5.0}

Under Windows this flag inhibits the allocation of a new console for
the program. This is useful for a GUI application which needs to call
a command line helper tool.

@item GPGME_SPAWN_ALLOW_SET_FG
@since{1.5.0}

Under Windows
this flag allows the called program to put itself into
the foreground.
@end table
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_spawn_start @
(@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{file}}, @
@w{const char *@var{argv}[]}, @w{gpgme_data_t @var{datain}}, @
@w{gpgme_data_t @var{dataout}}, @w{gpgme_data_t @var{dataerr}}, @
@w{unsigned int @var{flags}})

@since{1.5.0}

This is the asynchronous variant of @code{gpgme_op_spawn}.
@end deftypefun

@node Using the Assuan protocol
@subsection Using the Assuan protocol

The Assuan protocol can be used to talk to arbitrary Assuan servers.
By default it is connected to the GnuPG agent, but it may be connected
to arbitrary servers by using @code{gpgme_ctx_set_engine_info},
passing the location of the servers socket as @var{file_name}
argument, and an empty string as @var{home_dir} argument.

The Assuan protocol functions use three kinds of callbacks to transfer
data:

@deftp {Data type}
{gpgme_error_t (*gpgme_assuan_data_cb_t) @
(@w{void *@var{opaque}}, @w{const void *@var{data}}, @
@w{size_t @var{datalen}})}

@since{1.2.0}

This callback receives any data sent by the server. @var{opaque} is
the pointer passed to @code{gpgme_op_assuan_transact_start},
@var{data} of length @var{datalen} refers to the data sent.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_inquire_cb_t) @
(@w{void *@var{opaque}}, @w{const char *@var{name}}, @
@w{const char *@var{args}}, @w{gpgme_data_t *@var{r_data}})}

@since{1.2.0}

This callback is used to provide additional data to the Assuan server.
@var{opaque} is the pointer passed to
@code{gpgme_op_assuan_transact_start}, @var{name} and @var{args}
specify what kind of data the server requested, and @var{r_data} is
used to return the actual data.

Note: Returning data is currently not implemented in @acronym{GPGME}.
@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_assuan_status_cb_t) @

 (@w{void *@var{opaque}}, @w{const char *@var{status}}, @
    @w{const char *@var{args}})}

@since{1.2.0}

This callback receives any status lines sent by the server.
@var{opaque} is the pointer passed to
@code{gpgme_op_assuan_transact_start}, @var{status} and @var{args}
denote the status update sent.
@end deftp

@deftypefun gpgme_error_t gpgme_op_assuan_transact_start @
        (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
         @w{gpgme_assuan_data_cb_t @var{data_cb}}, @
         @w{void * @var{data_cb_value}}, @
         @w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
         @w{void * @var{inquire_cb_value}}, @
         @w{gpgme_assuan_status_cb_t @var{status_cb}}, @
         @w{void * @var{status_cb_value}})

@since{1.2.0}

Send the Assuan @var{command} and return results via the callbacks.
Any callback may be @code{NULL}. The result of the operation may be
retrieved using @code{gpgme_wait_ext}.

Asynchronous variant.
@end deftypefun

@deftypefun
 gpgme_error_t gpgme_op_assuan_transact_ext @
        (@w{gpgme_ctx_t @var{ctx}}, @w{const char *@var{command}}, @
         @w{gpgme_assuan_data_cb_t @var{data_cb}}, @
         @w{void * @var{data_cb_value}}, @

@w{gpgme_assuan_inquire_cb_t @var{inquire_cb}}, @
@w{void * @var{inquire_cb_value}}, @
@w{gpgme_assuan_status_cb_t @var{status_cb}}, @
@w{void * @var{status_cb_value}}, @
@w{gpgme_error_t *@var{op_err}})

Send the Assuan @var{command} and return results via the callbacks.
The result of the operation is returned in @var{op_err}.

Synchronous variant.
@end deftypefun

@node Checking for updates
@subsection How to check for software updates

The GnuPG Project operates a server to query the current versions of
software packages related to GnuPG. GPGME can be used to
access this online database and check whether a new version of a
software package is available.

@deftp {Data type} {gpgme_query_swdb_result_t}
@since{1.8.0}

This
 is a pointer to a structure used to store the result of a
@code{gpgme_op_query_swdb} operation. After success full call to that
function, you can retrieve the pointer to the result with
@code{gpgme_op_query_swdb_result}. The structure contains the
following member:

@table @code
@item name
This is the name of the package.

@item iversion
The currently installed version or an empty string. This value is
either a copy of the argument given to @code{gpgme_op_query_swdb} or
the version of the installed software as figured out by GPGME or GnuPG.

@item created
This gives the date the file with the list of version numbers has
originally be created by the GnuPG project.

@item retrieved
This gives the date the file was downloaded.

@item warning

If this flag is set either an error has occurred or some of the
information in this structure are not properly set. For example if
the version number of the installed software could not be figured out,
the
 @code{update} flag may not reflect a required update status.

@item update
If this flag is set an update of the software is available.

@item urgent
If this flag is set an available update is important.

@item noinfo
If this flag is set, no valid information could be retrieved.

@item unknown
If this flag is set the given @code{name} is not known.

@item tooold
If this flag is set the available information is not fresh enough.

@item error
If this flag is set some other error has occurred.

@item version
The version string of the latest released version.

@item reldate
The release date of the latest released version.

@end table
@end deftp

@deftypefun gpgme_error_t gpgme_op_query_swdb @
        (@w{gpgme_ctx_t @var{ctx}},   @
         @w{const char *@var{name}},   @
         @w{const char *@var{iversion}}, @
         @w{gpgme_data_t @var{reserved}})

@since{1.8.0}

Query the software version database for software package @var{name}
and check against the installed
 version given by @var{iversion}. If
@var{iversion} is given as @code{NULL} a check is only done if GPGME
can figure out the version by itself (for example when using
"gpgme" or "gnupg"). If @code{NULL} is used for @var{name} the
current gpgme version is checked. @var{reserved} must be set to 0.

@end deftypefun

@deftypefun gpgme_query_swdb_result_t gpgme_op_query_swdb_result @
(@w{gpgme_ctx_t @var{ctx}})

@since{1.8.0}

The function @code{gpgme_op_query_swdb_result} returns a
@code{gpgme_query_swdb_result_t} pointer to a structure holding the
result of a @code{gpgme_op_query_swdb} operation. The pointer is only
valid if the last operation on the context was a successful call to
@code{gpgme_op_query_swdb}. If that call failed, the result might
be a @code{NULL} pointer. The returned pointer is only valid until
the next operation is started on the context @var{ctx}.
@end deftypefun

@noindent
Here is an example on how to check whether GnuPG is current:

@example
#include
 <gpgme.h>

int
main (void)
@{
 gpg_error_t err;
 gpgme_ctx_t ctx;
 gpgme_query_swdb_result_t result;

 gpgme_check_version (NULL);
 err = gpgme_new (&ctx);
 if (err)
  fprintf (stderr, "error creating context: %s\n", gpg_strerror (err));
 else
  @{
   gpgme_set_protocol (ctx, GPGME_PROTOCOL_GPGCONF);

   err = gpgme_op_query_swdb (ctx, "gnupg", NULL, 0);
   if (err)
    fprintf (stderr, "error querying swdb: %s\n", gpg_strerror (err));
   else
    @{
     result = gpgme_op_query_swdb_result (ctx);
     if (!result)
      fprintf (stderr, "error querying swdb\n");
     if (!result->warning && !result->update)

```
          printf ("GnuPG version %s is current\n",
                result->iversion);
        else if (!result->warning && result->update)
          printf ("GnuPG version %s can be updated to %s\n",
                result->iversion, result->version);
        else
          fprintf (stderr, "error finding the
 update status\n");
      @}
    gpgme_release (ctx);
  @}
 return 0;
@}
@end example


@node Run Control
@section Run Control
@cindex run control
@cindex cryptographic operation, running

@acronym{GPGME} supports running operations synchronously and
asynchronously.  You can use asynchronous operation to set up a
context up to initiating the desired operation, but delay performing
it to a later point.

Furthermore, you can use an external event loop to control exactly
when @acronym{GPGME} runs.  This ensures that @acronym{GPGME} only
runs when necessary and also prevents it from blocking for a long
time.

@menu
* Waiting For Completion::        Waiting until an operation is completed.
* Using External Event Loops::    Advanced control over what happens when.
* Cancellation::                  How to end pending operations prematurely.
@end menu


@node Waiting For Completion
@subsection Waiting For Completion
@cindex cryptographic operation, wait for
@cindex wait for completion

@deftypefun
 gpgme_ctx_t gpgme_wait (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_error_t *@var{status}}, @w{int
@var{hang}})
The function @code{gpgme_wait} continues the pending operation within
the context @var{ctx}.  In particular, it ensures the data exchange
```

between @acronym{GPGME} and the crypto backend and watches over the
run time status of the backend process.

If @var{hang} is true, the function does not return until the
operation is completed or cancelled. Otherwise the function will not
block for a long time.

The error status of the finished operation is returned in @var{status}
if @code{gpgme_wait} does not return @code{NULL}.

The @var{ctx} argument can be @code{NULL}. In that case,
@code{gpgme_wait} waits for any context to complete its operation.

@code{gpgme_wait} can be used only in conjunction with any context
that has a pending operation initiated with one of the
@code{gpgme_op_*_start} functions except @code{gpgme_op_keylist_start}
and @code{gpgme_op_trustlist_start} (for
 which you should use the
corresponding @code{gpgme_op_*_next} functions). If @var{ctx} is
@code{NULL}, all of such contexts are waited upon and possibly
returned. Synchronous operations running in parallel, as well as key
and trust item list operations, do not affect @code{gpgme_wait}.

In a multi-threaded environment, only one thread should ever call
@code{gpgme_wait} at any time, regardless of whether @var{ctx} is specified
or not. This means that all calls to this function should be fully
synchronized by locking primitives. It is safe to start asynchronous
operations while a thread is running in @code{gpgme_wait}.

The function returns the @var{ctx} of the context which has finished
the operation. If @var{hang} is false, and the timeout expires,
@code{NULL} is returned and @code{*status} will be set to 0. If an
error occurs, @code{NULL} is returned and the error is returned in
@code{*status}.
@end deftypefun

@node Using External Event Loops
@subsection Using External Event
 Loops
@cindex event loop, external

@acronym{GPGME} hides the complexity of the communication between the
library and the crypto engine. The price of this convenience is that
the calling thread can block arbitrary long waiting for the data
returned by the crypto engine. In single-threaded programs, in
particular if they are interactive, this is an unwanted side-effect.
OTOH, if @code{gpgme_wait} is used without the @var{hang} option being

enabled, it might be called unnecessarily often, wasting CPU time that
could be used otherwise.

The I/O callback interface described in this section lets the user
take control over what happens when. @acronym{GPGME} will provide the
user with the file descriptors that should be monitored, and the
callback functions that should be invoked when a file descriptor is
ready for reading or writing. It is then the user's responsibility to
decide when to check the file descriptors and when to invoke the
callback functions. Usually this is done in an event
loop, that also
checks for events in other parts of the program. If the callback
functions are only called when the file descriptors are ready,
@acronym{GPGME} will never block. This gives the user more control
over the program flow, and allows to perform other tasks when
@acronym{GPGME} would block otherwise.

By using this advanced mechanism, @acronym{GPGME} can be integrated
smoothly into GUI toolkits like GTK+ even for single-threaded
programs.

@menu
* I/O Callback Interface:: How I/O callbacks are registered.
* Registering I/O Callbacks:: How to use I/O callbacks for a context.
* I/O Callback Example:: An example how to use I/O callbacks.
* I/O Callback Example GTK+:: How to use @acronym{GPGME} with GTK+.
* I/O Callback Example GDK:: How to use @acronym{GPGME} with GDK.
* I/O Callback Example Qt:: How to use @acronym{GPGME} with Qt.
@end menu

@node I/O Callback Interface
@subsubsection I/O Callback Interface

@deftp {Data type} {gpgme_error_t
(*gpgme_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}})}
@tindex gpgme_io_cb_t
The @code{gpgme_io_cb_t} type is the type of functions which
@acronym{GPGME} wants to register as I/O callback handlers using the
@code{gpgme_register_io_cb_t} functions provided by the user.

@var{data} and @var{fd} are provided by @acronym{GPGME} when the I/O
callback handler is registered, and should be passed through to the
handler when it is invoked by the user because it noticed activity on
the file descriptor @var{fd}.

The callback handler always returns @code{0}, but you should consider
the return value to be reserved for later use.

@end deftp

@deftp {Data type} {gpgme_error_t (*gpgme_register_io_cb_t) (@w{void *@var{data}}, @w{int @var{fd}}, @w{int @var{dir}}, @w{gpgme_io_cb_t @var{fnc}}, @w{void *@var{fnc_data}}, @w{void **@var{tag}})}
@tindex gpgme_register_io_cb_t
The @code{gpgme_register_io_cb_t} type is the type of functions which can be called by @acronym{GPGME} to register an I/O callback function
@var{fnc} for the file descriptor @var{fd} with the user.
@var{fnc_data} should be passed as the first argument to @var{fnc} when the handler is invoked (the second argument should be @var{fd}).
If @var{dir} is 0, @var{fnc} should be called by the user when @var{fd} is ready for writing. If @var{dir} is 1, @var{fnc} should be called when @var{fd} is ready for reading.

@var{data} was provided by the user when registering the @code{gpgme_register_io_cb_t} function with @acronym{GPGME} and will always be passed as the first argument when registering a callback function. For example, the user can use this to determine the event loop to which the file descriptor should be added.

@acronym{GPGME} will call this function when a crypto operation is initiated in a context for which the user has registered I/O callback handler functions with @code{gpgme_set_io_cbs}. It can also call this function when it is in an I/O callback handler for a file descriptor associated to this context.

The user should return a unique handle in @var{tag} identifying this I/O callback registration, which will be passed to the @code{gpgme_register_io_cb_t} function without interpretation when the file descriptor should not be monitored anymore.
@end deftp

@deftp {Data type} {void (*gpgme_remove_io_cb_t) (@w{void *@var{tag}})}
The @code{gpgme_remove_io_cb_t} type is the type of functions which can be called by @acronym{GPGME} to remove an I/O callback handler that was registered before. @var{tag} is the handle that was returned by the @code{gpgme_register_io_cb_t} for this I/O callback.

@acronym{GPGME} can call this function when a crypto operation is in an I/O callback. It will also call this function when the context is destroyed while an operation is pending.
@end deftp

@deftp {Data type} {enum gpgme_event_io_t}
@tindex gpgme_event_io_t
The @code{gpgme_event_io_t} type specifies the type of an event that is

reported to the user by @acronym{GPGME} as a consequence of an I/O
operation.
  The following events are defined:

@table @code
@item GPGME_EVENT_START
The operation is fully initialized now, and you can start to run the
registered I/O callback handlers now. Note that registered I/O
callback handlers must not be run before this event is signalled.
@var{type_data} is @code{NULL} and reserved for later use.

@item GPGME_EVENT_DONE
The operation is finished, the last I/O callback for this operation
was removed. The accompanying @var{type_data} points to a
@code{struct gpgme_io_event_done_data} variable that contains the
status of the operation that finished. This event is signalled after
the last I/O callback has been removed.

@item GPGME_EVENT_NEXT_KEY
In a @code{gpgme_op_keylist_start} operation, the next key was
received from the crypto engine. The accompanying @var{type_data} is
a @code{gpgme_key_t} variable that contains the key with one reference
for the user.

@end table
@end deftp

@deftp {Data type} {void (*gpgme_event_io_cb_t) (@w{void *@var{data}},
 @w{gpgme_event_io_t @var{type}}, @w{void *@var{type_data}})}
The @code{gpgme_event_io_cb_t} type is the type of functions which can be
called by @acronym{GPGME} to signal an event for an operation running
in a context which has I/O callback functions registered by the user.

@var{data} was provided by the user when registering the
@code{gpgme_event_io_cb_t} function with @acronym{GPGME} and will always be
passed as the first argument when registering a callback function.
For example, the user can use this to determine the context in which
this event has occurred.

@var{type} will specify the type of event that has occurred.
@var{type_data} specifies the event further, as described in the above
list of possible @code{gpgme_event_io_t} types.

@acronym{GPGME} can call this function in an I/O callback handler.
@end deftp

@node Registering I/O Callbacks

@subsubsection Registering I/O Callbacks

@deftp {Data type} {struct gpgme_io_cbs}
@tindex gpgme_event_io_t
This structure
 is used to store the I/O callback interface functions
described in the previous section. It has the following members:

@table @code
@item gpgme_register_io_cb_t add
This is the function called by @acronym{GPGME} to register an I/O
callback handler. It must be specified.

@item void *add_priv
This is passed as the first argument to the @code{add} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine the event loop to which the file descriptor should be added.

@item gpgme_remove_io_cb_t remove
This is the function called by @acronym{GPGME} to remove an I/O
callback handler. It must be specified.

@item gpgme_event_io_cb_t event
This is the function called by @acronym{GPGME} to signal an event for
an operation. It must be specified, because at least the start event
must be processed.

@item void *event_priv
This is passed as the first argument to the @code{event} function when
it is called by @acronym{GPGME}. For example, it can be used to
determine
 the context in which the event has occurred.
@end table
@end deftp

@deftypefun void gpgme_set_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_set_io_cbs} enables the I/O callback
interface for the context @var{ctx}. The I/O callback functions are
specified by @var{io_cbs}.

If @var{io_cbs}->@code{add} is @code{NULL}, the I/O callback interface
is disabled for the context, and normal operation is restored.
@end deftypefun

@deftypefun void gpgme_get_io_cbs (@w{gpgme_ctx_t @var{ctx}}, @w{struct gpgme_io_cbs *@var{io_cbs}})
The function @code{gpgme_get_io_cbs} returns the I/O callback
functions set with @code{gpgme_set_io_cbs} in @var{io_cbs}.
@end deftypefun

@node I/O Callback Example
@subsubsection I/O Callback Example

To actually use an external event loop, you have to implement the I/O
callback functions that are used by @acronym{GPGME} to register and
unregister file descriptors. Furthermore, you have to actually
monitor these
 file descriptors for activity and call the appropriate
I/O callbacks.

The following example illustrates how to do that. The example uses
locking to show in which way the callbacks and the event loop can
run concurrently. For the event loop, we use a fixed array. For a
real-world implementation, you should use a dynamically sized
structure because the number of file descriptors needed for a crypto
operation in @acronym{GPGME} is not predictable.

@example
#include <assert.h>
#include <errno.h>
#include <stdlib.h>
#include <pthread.h>
#include <sys/types.h>
#include <gpgme.h>

/* The following structure holds the result of a crypto operation. */
struct op_result
@{
 int done;
 gpgme_error_t err;
@};

/* The following structure holds the data associated with one I/O
callback. */
struct one_fd
@{
 int fd;
 int dir;
 gpgme_io_cb_t fnc;
 void *fnc_data;
 void *loop;
@};

struct event_loop
@{
 pthread_mutex_t lock;

```
#define MAX_FDS 32
 /* Unused slots are marked with FD being
 -1.  */
 struct one_fd fds[MAX_FDS];
@};
@end example
```

The following functions implement the I/O callback interface.

```
@example
gpgme_error_t
add_io_cb (void *data, int fd, int dir, gpgme_io_cb_t fnc, void *fnc_data,
    void **r_tag)
@{
 struct event_loop *loop = data;
 struct one_fd *fds = loop->fds;
 int i;

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS; i++)
   @{
     if (fds[i].fd == -1)
 @{
   fds[i].fd = fd;
   fds[i].dir = dir;
   fds[i].fnc = fnc;
   fds[i].fnc_data = fnc_data;
   fds[i].loop = loop;
   break;
 @}
   @}
 pthread_mutex_unlock (&loop->lock);
 if (i == MAX_FDS)
   return gpg_error (GPG_ERR_GENERAL);
 *r_tag = &fds[i];
 return 0;
@}

void
remove_io_cb (void *tag)
@{
 struct one_fd *fd = tag;
 struct event_loop *loop = fd->loop;

 pthread_mutex_lock (&loop->lock);
 fd->fd = -1;
 pthread_mutex_unlock (&loop->lock);
@}
```

```
void
event_io_cb (void *data, gpgme_event_io_t type, void *type_data)
@{
 struct op_result *result = data;

 /* We
 don't support list operations here.  */
 if (type == GPGME_EVENT_DONE)
   @{
     result->done = 1;
     result->err = *type_data;
   @}
@}
@end example
```

The final missing piece is the event loop, which will be presented
next. We only support waiting for the success of a single operation.

```
@example
int
do_select (struct event_loop *loop)
@{
 fd_set rfds;
 fd_set wfds;
 int i, n;
 int any = 0;
 struct timeval tv;
 struct one_fd *fdlist = loop->fds;

 pthread_mutex_lock (&loop->lock);
 FD_ZERO (&rfds);
 FD_ZERO (&wfds);
 for (i = 0; i < MAX_FDS; i++)
   if (fdlist[i].fd != -1)
     FD_SET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds);
 pthread_mutex_unlock (&loop->lock);

 tv.tv_sec = 0;
 tv.tv_usec = 1000;

 do
   @{
     n = select (FD_SETSIZE, &rfds, &wfds, NULL, &tv);
   @}
 while (n < 0 && errno == EINTR);

 if (n < 0)
```

```
  return n; /* Error or timeout.  */

 pthread_mutex_lock (&loop->lock);
 for (i = 0; i < MAX_FDS && n; i++)
  @{
    if (fdlist[i].fd
!= -1)
@{
  if (FD_ISSET (fdlist[i].fd, fdlist[i].dir ? &rfds : &wfds))
    @{
      assert (n);
      n--;
      any = 1;
          /* The I/O callback handler can register/remove callbacks,
             so we have to unlock the file descriptor list.  */
          pthread_mutex_unlock (&loop->lock);
      (*fdlist[i].fnc) (fdlist[i].fnc_data, fdlist[i].fd);
          pthread_mutex_lock (&loop->lock);
    @}
@}
  @}
 pthread_mutex_unlock (&loop->lock);
 return any;
@}

void
wait_for_op (struct event_loop *loop, struct op_result *result)
@{
 int ret;

 do
  @{
    ret = do_select (loop);
  @}
 while (ret >= 0 && !result->done);
@}
@end example
```

The main function shows how to put it all together.

```
@example
int
main (int argc, char *argv[])
@{
 struct event_loop loop;
 struct op_result result;
 gpgme_ctx_t ctx;
 gpgme_error_t err;
```

```
gpgme_data_t sig, text;
int i;
pthread_mutexattr_t attr;
struct gpgme_io_cbs io_cbs =
@{
  add_io_cb,
   &loop,
  remove_io_cb,
  event_io_cb,
  &result
@};

init_gpgme ();

/* Initialize the loop structure.  */

/* The mutex must be recursive, since remove_io_cb (which acquires a
   lock) can be called while holding a lock acquired in do_select.  */
pthread_mutexattr_init (&attr);
pthread_mutexattr_settype (&attr, PTHREAD_MUTEX_RECURSIVE);
pthread_mutex_init (&loop.lock, &attr);
pthread_mutexattr_destroy (&attr);

for (i = 0; i < MAX_FDS; i++)
  loop.fds[i].fd = -1;

/* Initialize the result structure.  */
result.done = 0;

err = gpgme_data_new_from_file (&sig, "signature", 1);
if (!err)
  err = gpgme_data_new_from_file (&text, "text", 1);
if (!err)
  err = gpgme_new (&ctx);
if (!err)
  @{
     gpgme_set_io_cbs (ctx, &io_cbs);
     err = gpgme_op_verify_start (ctx, sig, text, NULL);
  @}
if (err)
  @{
    fprintf (stderr, "gpgme error: %s: %s\n",
             gpgme_strsource (err), gpgme_strerror (err));
    exit (1);

  @}

wait_for_op (&loop, &result);
```

```
 if (!result.done)
   @{
     fprintf (stderr, "select error\n");
     exit (1);
   @}
 if (!result.err)
   @{
     fprintf (stderr, "verification failed: %s: %s\n",
              gpgme_strsource (result.err), gpgme_strerror (result.err));
     exit (1);
   @}
 /* Evaluate verify result.  */
 @dots{}
 return 0;
@}
@end example


@node I/O Callback Example GTK+
@subsubsection I/O Callback Example GTK+
@cindex GTK+, using @acronym{GPGME} with

The I/O callback interface can be used to integrate @acronym{GPGME}
with the GTK+ event loop.  The following code snippets shows how this
can be done using the appropriate register and remove I/O callback
functions.  In this example, the private data of the register I/O
callback function is unused.  The event notifications is missing
because it does not require any GTK+ specific setup.

@example
#include <gtk/gtk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 guint input_handler_id
@};

void
my_gpgme_io_cb
 (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
```

```
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gtk_input_remove (data->input_handler_id);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,
                               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;
 iocb->data = fnc_data;
 iocb->input_handler_id = gtk_input_add_full (fd, dir
                                              ? GDK_INPUT_READ
                                              : GDK_INPUT_WRITE,
                                             my_gpgme_io_callback,
                                             0, iocb, NULL);
 *tag = iocb;
 return 0;
@}
@end example


@node I/O Callback Example GDK
@subsubsection I/O Callback Example
 GDK
@cindex GDK, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the GDK event loop.  The following code snippets
shows how this can be done using the appropriate register and remove
I/O callback functions.  In this example, the private data of the
register I/O callback function is unused.  The event notifications is
missing because it does not require any GDK specific setup.

It is very similar to the GTK+ example in the previous section.

@example
#include <gdk/gdk.h>

struct my_gpgme_io_cb
@{
 gpgme_io_cb_t fnc;
 void *fnc_data;
 gint tag;
@};
```

```
void
my_gpgme_io_cb (gpointer data, gint source, GdkInputCondition condition)
@{
 struct my_gpgme_io_cb *iocb = data;
 (*(iocb->fnc)) (iocb->data, source);
@}

void
my_gpgme_remove_io_cb (void *data)
@{
 struct my_gpgme_io_cb *iocb = data;
 gdk_input_remove (data->tag);
@}

void
my_gpgme_register_io_callback (void *data, int fd, int dir, gpgme_io_cb_t fnc,

               void *fnc_data, void **tag)
@{
 struct my_gpgme_io_cb *iocb = g_malloc (sizeof (struct my_gpgme_io_cb));
 iocb->fnc = fnc;
 iocb->data = fnc_data;
 iocb->tag = gtk_input_add_full (fd, dir ? GDK_INPUT_READ : GDK_INPUT_WRITE,
                                 my_gpgme_io_callback, iocb, NULL);
 *tag = iocb;
 return 0;
@}
@end example
```

@node I/O Callback Example Qt
@subsubsection I/O Callback Example Qt
@cindex Qt, using @acronym{GPGME} with

The I/O callback interface can also be used to integrate
@acronym{GPGME} with the Qt event loop. The following code snippets
show how this can be done using the appropriate register and remove
I/O callback functions. In this example, the private data of the
register I/O callback function is unused. The event notifications is
missing because it does not require any Qt specific setup.

```
@example
#include <qsocketnotifier.h>
#include <qapplication.h>

struct IOCB @{
 IOCB( GpgmeIOCb f, void * d, QSocketNotifier * n )
   : func(
```

```
 f ), data( d ), notifier( n ) @{@}
 GpgmeIOCb func;
 void * data;
 QSocketNotifier * notifier;
@}

class MyApp : public QApplication @{

 // ...

 static void registerGpgmeIOCallback( void * data, int fd, int dir,
                                      GpgmeIOCb func, void * func_data,
                                      void ** tag ) @{
   QSocketNotifier * n =
     new QSocketNotifier( fd, dir ? QSocketNotifier::Read
                                  : QSocketNotifier::Write );
   connect( n, SIGNAL(activated(int)),
            qApp, SLOT(slotGpgmeIOCallback(int)) );
   qApp->mIOCBs.push_back( IOCB( func, func_data, n ) );
   *tag = (void*)n;
 @}

 static void removeGpgmeIOCallback( void * tag ) @{
   if ( !tag ) return;
   QSocketNotifier * n = static_cast<QSocketNotifier*>( tag );
   for ( QValueList<IOCB>::iterator it = qApp->mIOCBs.begin() ;
         it != qApp->mIOCBs.end() ; ++it )
     if ( it->notifier == n ) @{
       delete it->notifier;
       qApp->mIOCBs.erase(
 it );
       return;
     @}
 @}

public slots:
 void slotGpgmeIOCallback( int fd ) @{
   for ( QValueList<IOCB>::const_iterator it = mIOCBs.begin() ;
         it != mIOCBs.end() ; ++it )
     if ( it->notifier && it->notifier->socket() == fd )
       (*(it->func)) ( it->func_data, fd );
 @}

 // ...

private:
 QValueList<IOCB> mIOCBs;
 // ...
```

@};
@end example

@node Cancellation
@subsection Cancellation
@cindex cryptographic operation, aborting
@cindex cryptographic operation, cancelling
@cindex aborting operations
@cindex cancelling operations

Sometimes you do not want to wait for an operation to finish.
@acronym{GPGME} provides two different functions to achieve that. The
function @code{gpgme_cancel} takes effect immediately. When it
returns, the operation is effectively canceled. However, it has some
limitations and can not be used with synchronous operations. In
contrast, the function @code{gpgme_cancel_async} can be used with any
context and from
any thread, but it is not guaranteed to take effect
immediately. Instead, cancellation occurs at the next possible time
(typically the next time I/O occurs in the target context).

@deftypefun gpgme_ctx_t gpgme_cancel (@w{gpgme_ctx_t @var{ctx}})
@since{0.4.5}

The function @code{gpgme_cancel} attempts to cancel a pending
operation in the context @var{ctx}. This only works if you use the
global event loop or your own event loop.

If you use the global event loop, you must not call @code{gpgme_wait}
during cancellation. After successful
cancellation, you can call @code{gpgme_wait} (optionally waiting on
@var{ctx}), and the context @var{ctx} will appear as if it had
finished with the error code @code{GPG_ERR_CANCEL}.

If you use an external event loop, you must ensure that no I/O
callbacks are invoked for this context (for example by halting the
event loop). On successful cancellation, all registered I/O callbacks
for this context will be unregistered, and a @code{GPGME_EVENT_DONE}
event
with the error code @code{GPG_ERR_CANCEL} will be signalled.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@deftypefun gpgme_ctx_t gpgme_cancel_async (@w{gpgme_ctx_t @var{ctx}})

@since{1.1.7}

The function @code{gpgme_cancel_async} attempts to cancel a pending
operation in the context @var{ctx}. This can be called by any thread
at any time after starting an operation on the context, but will not
take effect immediately. The actual cancellation happens at the next
time GPGME processes I/O in that context.

The function returns an error code if the cancellation failed (in this
case the state of @var{ctx} is not modified).
@end deftypefun

@c **
@c ******************** Appendices **************************
@c **

@include uiserver.texi

@node Debugging
@appendix How to solve problems
@cindex
 debug
@cindex GPGME_DEBUG

Everyone knows that software often does not do what it should do and thus
there is a need to track down problems. This is in particular true
for applications using a complex library like @acronym{GPGME} and of
course also for the library itself. Here we give a few hints on how
to solve such problems.

First of all you should make sure that the keys you want to use are
installed in the GnuPG engine and are usable. Thus the first test is
to run the desired operation using @command{gpg} or @command{gpgsm} on
the command line. If you can't figure out why things don't work, you
may use @acronym{GPGME}'s built in trace feature. This feature is
either enabled using the environment variable @code{GPGME_DEBUG} or,
if this is not possible, by calling the function
@code{gpgme_set_global_flag}. The value is the trace level and
an optional file name. If no file name is given the trace output is
printed to @code{stderr}.

@noindent
For example
@smallexample
GPGME_DEBUG=9:/home/user/mygpgme.log
@end
 smallexample
@noindent

(Note that under Windows you use a semicolon in place of the colon to
separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start
off with a lower level. The exact definition of the trace levels and
the output format may change with any release; you need to check the
source code for details. In any case the trace log should be helpful
to understand what is going going on. Warning: The trace log may
reveal sensitive details like passphrases or other data you use in
your application. If you are asked to send a log file, make sure that
you run your tests only with play data.

@node Deprecated Functions
@appendix Deprecated Functions
@cindex deprecated

For backward compatibility @acronym{GPGME} has a number of functions,
data types and constants which are deprecated and should not be used
anymore. We document here those which are really old to help
understanding old code and to allow migration
to their modern
counterparts.

@strong{Warning:} These interfaces will be removed in a future version
of @acronym{GPGME}.

@deftypefun void gpgme_key_release (@w{gpgme_key_t @var{key}})
The function @code{gpgme_key_release} is equivalent to
@code{gpgme_key_unref}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_import_ext (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_data_t
@var{keydata}}, @w{int *@var{nr}})
@since{0.3.9}

The function @code{gpgme_op_import_ext} is equivalent to:

@example
gpgme_error_t err = gpgme_op_import (ctx, keydata);
if (!err)
  @{
    gpgme_import_result_t result = gpgme_op_import_result (ctx);
    *nr = result->considered;
  @}
@end example
@end deftypefun

@deftp {Data type} {gpgme_error_t (*gpgme_edit_cb_t) @
 (@w{void *@var{handle}}, @
  @w{gpgme_status_code_t @var{status}}, @
  @w{const char *@var{args}}, @
  @w{int @var{fd}})}
@tindex gpgme_edit_cb_t
The @code{gpgme_edit_cb_t} type is the type of functions which
@acronym{GPGME} calls
 if it a key edit operation is on-going. The
status code @var{status} and the argument line @var{args} are passed
through by @acronym{GPGME} from the crypto engine. The file
descriptor @var{fd} is -1 for normal status messages. If @var{status}
indicates a command rather than a status message, the response to the
command should be written to @var{fd}. The @var{handle} is provided
by the user at start of operation.

The function should return @code{GPG_ERR_FALSE} if it did not handle
the status code, @code{0} for success, or any other error value.
@end deftp

@deftypefun gpgme_error_t gpgme_op_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t @var{key}},
@w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact} instead.

The function @code{gpgme_op_edit} processes the key @var{KEY}
interactively, using the edit callback function @var{FNC} with the
handle @var{HANDLE}. The callback
 is invoked for every status and
command request from the crypto engine. The output of the crypto
engine is written to the data object @var{out}.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by @acronym{GPGME}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
edit operation completes successfully, @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer, and any error returned
by the crypto engine or the edit callback handler.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})

@since{0.3.9}

Note: This function is deprecated, please use
@code{gpgme_op_interact_start} instead.

The function @code{gpgme_op_edit_start} initiates a
@code{gpgme_op_edit} operation.
It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated, please use @code{gpgme_op_interact}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit} is analogous to
@code{gpgme_op_edit}, but should be used to process the smart card corresponding to the key @var{key}.
@end deftypefun

@deftypefun gpgme_error_t gpgme_op_card_edit_start (@w{gpgme_ctx_t @var{ctx}}, @w{gpgme_key_t
@var{key}}, @w{gpgme_edit_cb_t @var{fnc}}, @w{void *@var{handle}}, @w{gpgme_data_t @var{out}})
Note: This function is deprecated,
please use @code{gpgme_op_interact_start}
with the flag @code{GPGME_INTERACT_CARD} instead.

The function @code{gpgme_op_card_edit_start} initiates a
@code{gpgme_op_card_edit} operation. It can be completed by calling
@code{gpgme_wait} on the context. @xref{Waiting For Completion}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
operation was started successfully, and @code{GPG_ERR_INV_VALUE} if
@var{ctx} or @var{key} is not a valid pointer.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_new_with_read_cb (@w{gpgme_data_t *@var{dh}}, @w{int
(*@var{readfunc})} (@w{void *@var{hook}}, @w{char *@var{buffer}}, @w{size_t @var{count}}, @w{size_t
*@var{nread}}), @w{void *@var{hook_value}})
The function @code{gpgme_data_new_with_read_cb} creates a new
@code{gpgme_data_t} object and uses the callback function @var{readfunc}
to retrieve the data on demand. As the callback function can supply

the data in any way it wants, this is the most flexible data type
@acronym{GPGME}
 provides. However, it can not be used to write data.

The callback function receives @var{hook_value} as its first argument
whenever it is invoked. It should return up to @var{count} bytes in
@var{buffer}, and return the number of bytes actually read in
@var{nread}. It may return @code{0} in @var{nread} if no data is
currently available. To indicate @code{EOF} the function should
return with an error code of @code{-1} and set @var{nread} to
@code{0}. The callback function may support to reset its internal
read pointer if it is invoked with @var{buffer} and @var{nread} being
@code{NULL} and @var{count} being @code{0}.

The function returns the error code @code{GPG_ERR_NO_ERROR} if the
data object was successfully created, @code{GPG_ERR_INV_VALUE} if
@var{dh} or @var{readfunc} is not a valid pointer, and
@code{GPG_ERR_ENOMEM} if not enough memory is available.
@end deftypefun

@deftypefun gpgme_error_t gpgme_data_rewind (@w{gpgme_data_t @var{dh}})
The function @code{gpgme_data_rewind}
 is equivalent to:

@example
 return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
   ? gpgme_error_from_errno (errno) : 0;
@end example
@end deftypefun

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key or trust item
attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of a sub key. It is representable as a string.

@item GPGME_ATTR_FPR
This is the fingerprint of a sub key. It is representable as a
string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm for which the sub key can be used. It
is representable as a string and as a number. The numbers correspond
to the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a
number.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is
representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration time of
 a sub key. It is representable as a
number.

@item GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a
@var{gpgme_key_t} object. The first one (with index 0) is the primary
user ID. The user ID is representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable
as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a
string.

@item GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a
string and as a number. See below for a list of available validities.

@item GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a
number, and is @code{1} if the user ID is revoked, and @code{0}
otherwise.

@item GPGME_ATTR_UID_INVALID
This specifies if a user ID is invalid. It is representable as a
number,
 and is @code{1} if the user ID is invalid, and @code{0}
otherwise.

@item GPGME_ATTR_TYPE
This returns information about the type of key. For the string function
this will eother be "PGP" or "X.509". The integer function returns 0
for PGP and 1 for X.509.

@item GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable as a
number, and is @code{1} if the key is revoked, and @code{0} otherwise.

@item GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable as a
number, and is @code{1} if the key is invalid, and @code{0} otherwise.

@item GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable as a
number, and is @code{1} if the key is expired, and @code{0} otherwise.

@item GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled.
 It is representable as a
number, and is @code{1} if the key is disabled, and @code{0} otherwise.

@item GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is
representable as a string. The string contains the letter ``e'' if
the key can be used for encryption, ``s'' if the key can be used for
signatures, and ``c'' if the key can be used for certifications.

@item GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is
representable as a number, and is @code{1} if the sub key can be used
for encryption, and @code{0} otherwise.

@item GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data signatures. It
is representable as a number, and is @code{1} if the sub key can be
used for signatures, and @code{0} otherwise.

@item GPGME_ATTR_CAN_CERTIFY
This specifies if a sub key can be used to create key certificates.
It is representable as a number, and is @code{1} if the sub key can be
used for certifications,
 and @code{0} otherwise.

@item GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is representable as
a string.

@item GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is representable as a
string.

@item GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification chain. It
is representable as a string.
@end table
@end deftp

@deftypefun {const char *} gpgme_key_get_string_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_string_attr} returns the value of the
string-representable attribute @var{what} of key @var{key}. If the
attribute is an attribute of a sub key or an user ID, @var{idx}
specifies the sub key or user ID of which the attribute value is
returned. The argument @var{reserved} is reserved for later use and
should be @code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0}
 if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{idx} out of range,
or @var{reserved} not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_get_ulong_attr} returns the value of the
number-representable attribute @var{what} of key @var{key}. If the
attribute is an attribute of a sub key or an user ID, @var{idx}
specifies the sub key or user ID of which the attribute value is
returned. The argument @var{reserved} is reserved for later use and
should be @code{NULL}.

The function returns @code{0} if the attribute can't be returned as a
number, @var{key} is not a valid pointer, @var{idx} out of range, or
@var{reserved} not @code{NULL}.
@end deftypefun

@c
@c Key Signatures
@c
The signatures on a key are only available if the key was retrieved
via a listing operation with the @code{GPGME_KEYLIST_MODE_SIGS}

mode
enabled, because it is expensive to retrieve all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a key, you have to make sure that the key was listed with signatures enabled. One convenient, but blocking, way to do this is to use the function @code{gpgme_get_key}.

@deftp {Data type} gpgme_attr_t
The @code{gpgme_attr_t} type is used to specify a key signature attribute. The following attributes are defined:

@table @code
@item GPGME_ATTR_KEYID
This is the key ID of the key which was used for the signature. It is representable as a string.

@item GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It is representable as a string and as a number. The numbers correspond to the @code{enum gcry_pk_algos} values in the gcrypt library.

@item GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It is representable as a number.

@item GPGME_ATTR_EXPIRE
This is the expiration
time of the signature. It is representable as
a number.

@item GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is representable as a number.

@item GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

@item GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature. It is

representable as a number, and is @code{1} if the key is revoked, and
@code{0} otherwise.

@c @item GPGME_ATTR_KEY_EXPIRED
@c This specifies if a key signature is expired. It is representable as
@c a number, and is @code{1} if the key is revoked, and @code{0}
@c otherwise.
@c
@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific
 to the crypto
engine.

@item GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is
representable as a number. The meaning is specific to the crypto
engine.

@item GPGME_ATTR_SIG_STATUS
This is the same value as returned by @code{gpgme_get_sig_status}.
@end table
@end deftp

@deftypefun {const char *} gpgme_key_sig_get_string_attr (@w{gpgme_key_t @var{key}}, @w{int
@var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_string_attr} returns the value of
the string-representable attribute @var{what} of the signature
@var{idx} on the user ID @var{uid_idx} in the key @var{key}. The
argument @var{reserved} is reserved for later use and should be
@code{NULL}.

The string returned is only valid as long as the key is valid.

The function returns @code{0} if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx}
out of range, or @var{reserved}
 not @code{NULL}.
@end deftypefun

@deftypefun {unsigned long} gpgme_key_sig_get_ulong_attr (@w{gpgme_key_t @var{key}}, @w{int
@var{uid_idx}}, @w{gpgme_attr_t @var{what}}, @w{const void *@var{reserved}}, @w{int @var{idx}})
The function @code{gpgme_key_sig_get_ulong_attr} returns the value of
the number-representable attribute @var{what} of the signature
@var{idx} on the user ID @var{uid_idx} in the key @var{key}. The
argument @var{reserved} is reserved for later use and should be
@code{NULL}.

The function returns @code{0} if an attribute can't be returned as a
string, @var{key} is not a valid pointer, @var{uid_idx} or @var{idx}
out of range, or @var{reserved} not @code{NULL}.
@end deftypefun

@deftp {Data type} {enum gpgme_sig_stat_t}
@tindex gpgme_sig_stat_t
The @code{gpgme_sig_stat_t} type holds the result of a signature check, or
the combined result of all signatures. The following results are
possible:

@table @code
@item GPGME_SIG_STAT_NONE
This status should not occur
in normal operation.

@item GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined
result this status means that all signatures are valid.

@item GPGME_SIG_STAT_GOOD_EXP
This status indicates that the signature is valid but expired. For
the combined result this status means that all signatures are valid
and expired.

@item GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to
verify the signature has expired. For the combined result this status
means that all signatures are valid and all keys are expired.

@item GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined
result this status means that all signatures are invalid.

@item GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to
a missing key. For the combined result this status means that all
signatures could not be checked due to missing keys.

@item GPGME_SIG_STAT_NOSIG
This
status indicates that the signature data provided was not a real
signature.

@item GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented
the signature verification.

@item GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures
have a different status. You can get each key's status with
@code{gpgme_get_sig_status}.
@end table
@end deftp

@deftypefun {const char *} gpgme_get_sig_status (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_sig_stat_t *@var{r_stat}}, @w{time_t *@var{r_created}})
The function @code{gpgme_get_sig_status} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   @{
     sig = sig->next;
     idx--;
   @}
 if (!sig || idx)
   return NULL;

 if (r_stat)
   @{
     switch (gpg_err_code (sig->status))
 @{
 case GPG_ERR_NO_ERROR:
   *r_stat = GPGME_SIG_STAT_GOOD;

  break;

 case GPG_ERR_BAD_SIGNATURE:
   *r_stat = GPGME_SIG_STAT_BAD;
   break;

 case GPG_ERR_NO_PUBKEY:
   *r_stat = GPGME_SIG_STAT_NOKEY;
   break;

 case GPG_ERR_NO_DATA:
   *r_stat = GPGME_SIG_STAT_NOSIG;
   break;

```
case GPG_ERR_SIG_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXP;
  break;

case GPG_ERR_KEY_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
  break;

default:
  *r_stat = GPGME_SIG_STAT_ERROR;
  break;
@}
  @}
if (r_created)
  *r_created = sig->timestamp;
return sig->fpr;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_string_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_string_attr} is equivalent to:

@example
gpgme_verify_result_t result;
gpgme_signature_t sig;

result = gpgme_op_verify_result (ctx);
sig = result->signatures;

while (sig && idx)
  @{
    sig = sig->next;
    idx--;
  @}
if (!sig || idx)
  return
NULL;

switch (what)
  @{
  case GPGME_ATTR_FPR:
    return sig->fpr;

  case GPGME_ATTR_ERRTOK:
    if (whatidx == 1)
      return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
    else
```

```
 return "";
  default:
    break;
  @}

 return NULL;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_ulong_attr (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_attr_t @var{what}}, @w{int @var{whatidx}})
The function @code{gpgme_get_sig_ulong_attr} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
  @{
    sig = sig->next;
    idx--;
  @}
if (!sig || idx)
  return 0;

 switch (what)
  @{
  case GPGME_ATTR_CREATED:
    return sig->timestamp;

  case GPGME_ATTR_EXPIRE:
    return sig->exp_timestamp;

  case GPGME_ATTR_VALIDITY:
    return (unsigned long) sig->validity;

  case GPGME_ATTR_SIG_STATUS:
     switch (sig->status)
@{
 case GPG_ERR_NO_ERROR:
  return GPGME_SIG_STAT_GOOD;

 case GPG_ERR_BAD_SIGNATURE:
  return GPGME_SIG_STAT_BAD;
```

```
 case GPG_ERR_NO_PUBKEY:
  return GPGME_SIG_STAT_NOKEY;

 case GPG_ERR_NO_DATA:
  return GPGME_SIG_STAT_NOSIG;

 case GPG_ERR_SIG_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXP;

 case GPG_ERR_KEY_EXPIRED:
  return GPGME_SIG_STAT_GOOD_EXPKEY;

 default:
  return GPGME_SIG_STAT_ERROR;
 @}

  case GPGME_ATTR_SIG_SUMMARY:
    return sig->summary;

  default:
    break;
  @}
 return 0;
@end example
@end deftypefun

@deftypefun {const char *} gpgme_get_sig_key (@w{gpgme_ctx_t @var{ctx}}, @w{int @var{idx}},
@w{gpgme_key_t *@var{r_key}})
The function @code{gpgme_get_sig_key} is equivalent to:

@example
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
  @{
    sig = sig->next;
    idx--;
  @}
 if (!sig || idx)
  return gpg_error
 (GPG_ERR_EOF);

 return gpgme_get_key (ctx, sig->fpr, r_key, 0);
@end example
```

@end deftypefun

@include lesser.texi

@include gpl.texi

@node Concept Index
@unnumbered Concept Index

@printindex cp

@node Function and Data Index
@unnumbered Function and Data Index

@printindex fn

@bye

```
{
  "dec_info":    {
     "symkey_algo":  "TWOFISH.CFB",
     "wrong_key_usage":     false,
     "is_de_vs":    false,
     "is_mime":     false,
     "legacy_cipher_nomdc":  false,
     "recipients":   [{
        "keyid":       "6AE6D7EE46A871F8",
        "pubkey_algo_name":    "ELG-E",
        "status_string":       "Success",
        "status_code":  0
     }]
  },
  "info": {
     "is_mime":     false,
     "signatures":   [{
        "summary":     {
           "sigsum":      [],
           "valid":       false,
           "green":       false,
           "red":  false,
           "revoked":     false,
           "key-expired":  false,
           "sig-expired":  false,
           "key-missing":  false,
```

```
            "crl-missing":  false,
            "crl-too-old":  false,
            "bad-policy":   false,
            "sys-error":    false
          },

  "wrong_key_usage":      false,
        "chain_model":  false,
        "is_de_vs":     false,
        "status_string":        "Success",
        "fingerprint":  "A0FF4590BB6122EDEF6E3C542D727CC768697734",
        "validity_string":      "unknown",
        "pubkey_algo_name":     "DSA",
        "hash_algo_name":       "RIPEMD160",
        "status_code":  0,
        "timestamp":    1542200353,
        "exp_timestamp":        0,
        "pka_trust":    0,
        "validity":     0,
        "validity_reason":      0
     }]
  },
  "type": "plaintext",
  "base64":       false,
  "data": "Hello world"
}
(21:protected-private-key(3:elg(1:p193:5*n^f"Q'R0_6<ymec \=c7S8u[5
ZF'xf5yi9F@T=KhZdU0(k5nZEI/ R]njVITPU$W<xs-Yx)(1:g1:)(1:y192:O9GNR{?]Y_W[FD*zuRmk%'R\'>>e9pe
eU)uS%VJ!5F)yH*O
]l'7{@wJmQP^jurx'V2H2j[G{q_"8()(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:o"%7:5242880)16:Hs*}u
)256:Gzk3%\Kb2=oOO@,}eBBI3F|OQP3eD%n,;~L-6UH^=64i);l
e+sG"(mlH_2sn_BBO7hRcZUt(p6,{5|37C3m8EY9=gQ )(12:protected-at15:20101008T070148)))
{
  "type": "ciphertext",
  "base64":       false
}
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFsMHecBCACqdJgqa+CeNYwPCK+MpOwAV6uFVjDyO2LmOs6+XfDWRBU/Zjtz
8zdYNKSbLjkWN4ujV5aiyA7MtEofszzYLEoKUt1wiDScHMpW8qmEFDvl9g26MeAV
rTno9D5KodHvEIs8wnrqBs8ix0WLbh6J1Dtt8HQgIbN+v3gaRQrgBFe6z2ZYpHHx
ZfOu3iFKlm2WE/NekRkvvFIo3ApGvRhGIYw6JMmugBlo7s5xosJK0I9dkPGlEEtt
aF1RkcMj8sWG9vHAXcjlGgFfXSN9YLppydXpkuZGm4+gjLB2a3rbQCZVFnxCyG4O
ybjkP8Jw6Udm89bK2ucYFfjdrmYn/nJqRxeNABEBAAG0I1Rlc3QgTm9Qcml2S2V5
IDxub2JvZHlAZXhhbXBsZS5vcmc+iQFOBBMBCAA4FiEE4Fmh4IZtMa4TEXCITZou
EzBBU9EFAlsMHecCGwMFCwkIBwIGFQoJCAsCBBYCAwECHgECF4AACgkQTZouEzBB
U9F+qwf/SHj4uRnTWgyJ71FBxQDYCBq3jbi6e7hMkRPbJyJdnPIMAb2p0PJjBgjW
0pp4+kDPZans3UDHbma1u/SFI4/y6isJiK94Bk5xp5YliLGnUceTjgDFe6lBhfQ1
```

```
zVWZC/NF3tPgbziIxXQTNt34nS+9dbV/QFDLW0POcN7C0jR/hgkBjMEH2PezWhSj
mL/yLfLfUYAoxVpXjfC5aPJKqw0tR7m5ibznjCphE+FUMRg8EOmJcg6soeJ5QspU
k2dPN3+Y0zCTNRgAHEI+yIQbM6pio6v2c+UCtT1QhW4xSI38/kcEG8QiM55r1TUy
FcWAY5n5t1nNZtMxxse3LqEon3rKiLkBDQRbDB3nAQgAqfAjSjcngERtM+ZYOwN0
QF2v2FuEuMe8mhju7Met7SN2zGv1LnjhTNshEa9IABEfjZirE2Tqx4xCWDwDedK4
u1ToFvcnuAMnq2O47Sh+eTypsf6WPFtPBWf6ctKY31hFXjgoyDBULBvl43XU/D9C
Mt7nsKDPYHVrrnge/qWPYVcb+cO0sSwNImMcwQSdTQ3VBq7MeNS9ZeBcXi+XCjhN
kjNum2AQqpkHHDQV7871yQ8RIILvZSSfkLb0/SNDU+bGaw2G3lcyKdIfZi2EWWZT
oCbH38I/+LV7nAEe4zFpHwW8X0Dkx2aLgxe6UszDH9L3eGhTLpJhOSiaanG+zZKm
+QARAQABiQE2BBgBCAAgFiEE4Fmh4IZtMa4TEXCITZouEzBBU9EFAlsMHecCGwwA
CgkQTZouEzBBU9H5TQgAolWvIsez/WW8N2tmZEnX0LOFNB+1S4L4X983njwNdoVI
w19pbj+8RIHF/H9kcPGi7jK96gvlykQn3uez/95D2AiRFW5KYdOouFisKgHpv8Ay
BrhclHv11yK+X/0iTD0scYaG7np5162xLkaxSO9hsz2fGv20RKaXCWkI69fWw0BR
XlI5pZh2YFei2ZhH/tIMIW65h3w0gtgaZBBdpZTOOW4zvghyN+0MSObqkI1BvUJu
caDFI4d6ZTmp5SY+pZyktZ4bg/vMH5VFxdIKgbLx9uVeTvOupvbAW0TNulYGUBQE
nm+S0zr3W18t64e4sS3oHse8zCqo1iiImpba6F1Oaw==
=y6DD
-----END
 PGP PUBLIC KEY BLOCK-----
;;;; gpgme.lisp

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

;;; TODO

;;; Set up the library.

(in-package :gpgme)

(deftype byte-array ()
 '(simple-array (unsigned-byte 8) (*)))
```

```
(deftype character-array ()
 '(simple-array character (*)))

;;;
 Debugging.

(defvar *debug* nil "If debugging output should be given or not.")

;;; Load the foreign library.

(define-foreign-library libgpgme
 (:unix "libgpgme.so")
 (t (:default "libgpgme")))

(use-foreign-library libgpgme)

;;; System dependencies.

; Access to ERRNO.
(defcfun ("strerror" c-strerror) :string
 (err :int))

(defun get-errno ()
 *errno*)

(defun set-errno (errno)
 (setf *errno* errno))

(define-condition system-error (error)
 ((errno :initarg :errno :reader system-error-errno))
 (:report (lambda (c stream)
     (format stream "System error: ~A: ~A"
      (system-error-errno c)
      (c-strerror (system-error-errno c)))))
 (:documentation "Signalled when an errno is encountered."))

; Needed to write passphrases.
(defcfun ("write" c-write) ssize-t
 (fd :int)
 (buffer :string) ; Actually :pointer, but we only need string.
 (size size-t))

(defun system-write (fd buffer size)
 (let ((res (c-write fd buffer size)))
   (when (< res 0) (error 'system-error
 :errno (get-errno)))
   res))
```

```
;;;
;;; C Interface Definitions
;;;

;;; Data Type Interface

;;; Some new data types used for easier translation.

;;; The number of include certs.  Translates to NIL for default.
(defctype cert-int-t
  (:wrapper :int
   :from-c translate-cert-int-t-from-foreign
   :to-c translate-cert-int-t-to-foreign))

;;; A string that may be NIL to indicate a null pointer.
(defctype string-or-nil-t
  (:wrapper :string
   :to-c translate-string-or-nil-t-to-foreign))

;;; Some opaque data types used by GPGME.

(defctype gpgme-ctx-t
  (:wrapper :pointer
   :to-c translate-gpgme-ctx-t-to-foreign)
 "The GPGME context type.")

(defctype gpgme-data-t
  (:wrapper :pointer
   :to-c translate-gpgme-data-t-to-foreign)
 "The GPGME data object type.")

;;; Wrappers for the libgpg-error library.

(defctype gpgme-error-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-t-from-foreign
   :to-c translate-gpgme-error-t-to-foreign)
 "The
 GPGME error type.")

(defctype gpgme-error-no-signal-t
  (:wrapper gpg-error::gpg-error-t
   :from-c translate-gpgme-error-no-signal-t-from-foreign)
 "The GPGME error type (this version does not signal conditions in translation.")

(defctype gpgme-err-code-t gpg-error::gpg-err-code-t
 "The GPGME error code type.")
```

```
(defctype gpgme-err-source-t gpg-error::gpg-err-source-t
 "The GPGME error source type.")

(defun gpgme-err-make (source code)
 "Construct an error value from an error code and source."
 (gpg-err-make source code))

(defun gpgme-error (code)
 "Construct an error value from an error code."
 (gpgme-err-make :gpg-err-source-gpgme code))

(defun gpgme-err-code (err)
 "Retrieve an error code from the error value ERR."
 (gpg-err-code err))

(defun gpgme-err-source (err)
 "Retrieve an error source from the error value ERR."
 (gpg-err-source err))

(defun gpgme-strerror (err)
 "Return a string containing a description of the error code."
 (gpg-strerror err))

(defun
 gpgme-strsource (err)
 "Return a string containing a description of the error source."
 (gpg-strsource err))

(defun gpgme-err-code-from-errno (err)
 "Retrieve the error code for the system error.  If the system error
  is not mapped, :gpg-err-unknown-errno is returned."
 (gpg-err-code-from-errno err))

(defun gpgme-err-code-to-errno (code)
 "Retrieve the system error for the error code.  If this is not a
  system error, 0 is returned."
 (gpg-err-code-to-errno code))

(defun gpgme-err-make-from-errno (source err)
 (gpg-err-make-from-errno source err))

(defun gpgme-error-from-errno (err)
 (gpg-error-from-errno err))

;;;

(defcenum gpgme-data-encoding-t
 "The possible encoding mode of gpgme-data-t objects."
```

```
 (:none 0)
 (:binary 1)
 (:base64 2)
 (:armor 3)
 (:url 4)
 (:urlesc 5)
 (:url0 6)
 (:mime 7))

;;;

(defcenum gpgme-pubkey-algo-t
 "Public key algorithms from libgcrypt."
 (:rsa 1)
 (:rsa-e 2)
 (:rsa-s 3)
 (:elg-e 16)
 (:dsa 17)
 (:ecc 18)
 (:elg 20)
  (:ecdsa 301)
 (:ecdh 302)
 (:eddsa 303))

(defcenum gpgme-hash-algo-t
 "Hash algorithms from libgcrypt."
 (:none 0)
 (:md5 1)
 (:sha1 2)
 (:rmd160 3)
 (:md2 5)
 (:tiger 6)
 (:haval 7)
 (:sha256 8)
 (:sha384 9)
 (:sha512 10)
 (:sha224 11)
 (:md4 301)
 (:crc32 302)
 (:crc32-rfc1510 303)
 (:crc24-rfc2440 304))

;;;

(defcenum gpgme-sig-mode-t
 "The available signature modes."
 (:none 0)
 (:detach 1)
```

```
 (:clear 2))

;;;

(defcenum gpgme-validity-t
 "The available validities for a trust item or key."
 (:unknown 0)
 (:undefined 1)
 (:never 2)
 (:marginal 3)
 (:full 4)
 (:ultimate 5))

;;;

(defcenum gpgme-protocol-t
 "The available protocols."
 (:openpgp 0)
 (:cms 1)
 (:gpgconf 2)
 (:assuan 3)
 (:g13 4)
 (:uiserver 5)
 (:spawn 6)
 (:default 254)
 (:unknown 255))

;;;

(defbitfield (gpgme-keylist-mode-t :unsigned-int)
 "The available keylist mode flags."
 (:local 1)
 (:extern 2)
 (:sigs 4)
 (:sig-notations)
 (:with-secret 16)
 (:with-tofu 32)
 (:ephemeral
 128)
 (:validate 256))

;;;

(defbitfield (gpgme-sig-notation-flags-t :unsigned-int)
 "The available signature notation flags."
 (:human-readable 1)
 (:critical 2))
```

```
(defctype gpgme-sig-notation-t
  (:wrapper :pointer
   :from-c translate-gpgme-sig-notation-t-from-foreign)
 "Signature notation pointer type.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-sig-notation-bitfield :unsigned-int)
 (:human-readable 1)
 (:critical 2))

(defcstruct gpgme-sig-notation
 "Signature notations."
 (next gpgme-sig-notation-t)
 (name :pointer)
 (value :pointer)
 (name-len :int)
 (value-len :int)
 (flags gpgme-sig-notation-flags-t)
 (bitfield gpgme-sig-notation-bitfield))

;;;

(defcenum gpgme-status-code-t
 "The possible status codes for the edit operation."
 (:eof 0)
 (:enter 1)
 (:leave 2)
 (:abort 3)
 (:goodsig 4)
 (:badsig 5)
 (:errsig 6)
 (:badarmor 7)
 (:rsa-or-idea 8)
 (:keyexpired 9)
 (:keyrevoked 10)
 (:trust-undefined 11)
 (:trust-never
 12)
 (:trust-marginal 13)
 (:trust-fully 14)
 (:trust-ultimate 15)
 (:shm-info 16)
 (:shm-get 17)
 (:shm-get-bool 18)
 (:shm-get-hidden 19)
 (:need-passphrase 20)
 (:validsig 21)
 (:sig-id 22)
```

(:enc-to 23)
(:nodata 24)
(:bad-passphrase 25)
(:no-pubkey 26)
(:no-seckey 27)
(:need-passphrase-sym 28)
(:decryption-failed 29)
(:decryption-okay 30)
(:missing-passphrase 31)
(:good-passphrase 32)
(:goodmdc 33)
(:badmdc 34)
(:errmdc 35)
(:imported 36)
(:import-ok 37)
(:import-problem 38)
(:import-res 39)
(:file-start 40)
(:file-done 41)
(:file-error 42)
(:begin-decryption 43)
(:end-decryption 44)
(:begin-encryption 45)
(:end-encryption 46)
(:delete-problem 47)
(:get-bool 48)
(:get-line 49)
(:get-hidden 50)
(:got-it 51)
(:progress 52)
(:sig-created 53)
(:session-key 54)
(:notation-name 55)
(:notation-data 56)
(:policy-url 57)
(:begin-stream 58)
(:end-stream 59)
(:key-created 60)
(:userid-hint 61)
(:unexpected
62)
(:inv-recp 63)
(:no-recp 64)
(:already-signed 65)
(:sigexpired 66)
(:expsig 67)
(:expkeysig 68)
(:truncated 69)

```
 (:error 70)
 (:newsig 71)
 (:revkeysig 72)
 (:sig-subpacket 73)
 (:need-passphrase-pin 74)
 (:sc-op-failure 75)
 (:sc-op-success 76)
 (:cardctrl 77)
 (:backup-key-created 78)
 (:pka-trust-bad 79)
 (:pka-trust-good 80)
 (:plaintext 81)
 (:inv-sgnr 82)
 (:no-sgnr 83)
 (:success 84)
 (:decryption-info 85)
 (:plaintext-length 86)
 (:mountpoint 87)
 (:pinentry-launched 88)
 (:attribute 89)
 (:begin-signing 90)
 (:key-not-created 91)
 (:inquire-maxlen 92)
 (:failure 93)
 (:key-considered 94)
 (:tofu-user 95)
 (:tofu-stats 96)
 (:tofu-stats-long 97)
 (:notation-flags 98)
 (:decryption-compliance-mode 99)
 (:verification-compliance-mode 100))

;;;

(defctype gpgme-engine-info-t
   (:wrapper :pointer
    :from-c translate-gpgme-engine-info-t-to-foreign)
 "The engine information structure pointer type.")

(defcstruct gpgme-engine-info
  "Engine information."
 (next gpgme-engine-info-t)
 (protocol gpgme-protocol-t)
 (file-name :string)
 (version :string)
 (req-version :string)
 (home-dir :string))
```

```
;;;

(defctype gpgme-subkey-t
   (:wrapper :pointer
    :from-c translate-gpgme-subkey-t-from-foreign)
 "A subkey from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-subkey-bitfield :unsigned-int)
 "The subkey bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512)
 (:is-cardkey 1024)
 (:is-de-vs 2048))

(defcstruct gpgme-subkey
 "Subkey from a key."
 (next gpgme-subkey-t)
 (bitfield gpgme-subkey-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (length :unsigned-int)
 (keyid :string)
 (-keyid :char :count 17)
 (fpr :string)
 (timestamp :long)
 (expires :long))


(defctype gpgme-key-sig-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-sig-t-from-foreign)
  "A signature on a user ID.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-sig-bitfield :unsigned-int)
 "The key signature bitfield."
 (:revoked 1)
 (:expired 2)
 (:invalid 4)
 (:exportable 16))
```

```
(defcstruct gpgme-key-sig
 "A signature on a user ID."
 (next gpgme-key-sig-t)
 (bitfield gpgme-key-sig-bitfield)
 (pubkey-algo gpgme-pubkey-algo-t)
 (keyid :string)
 (-keyid :char :count 17)
 (timestamp :long)
 (expires :long)
 (status gpgme-error-no-signal-t)
 (-class :unsigned-int)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (sig-class :unsigned-int))


(defctype gpgme-user-id-t
   (:wrapper :pointer
    :from-c translate-gpgme-user-id-t-from-foreign)
 "A user ID from a key.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-user-id-bitfield :unsigned-int)
 "The user ID bitfield."
 (:revoked 1)
 (:invalid 2))

(defcstruct gpgme-user-id
 "A user ID from a key."
 (next
 gpgme-user-id-t)
 (bitfield gpgme-user-id-bitfield)
 (validity gpgme-validity-t)
 (uid :string)
 (name :string)
 (email :string)
 (comment :string)
 (signatures gpgme-key-sig-t)
 (-last-keysig gpgme-key-sig-t))


(defctype gpgme-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-key-t-from-foreign
    :to-c translate-gpgme-key-t-to-foreign)
```

```
 "A key from the keyring.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-key-bitfield :unsigned-int)
 "The key bitfield."
 (:revoked 1)
 (:expired 2)
 (:disabled 4)
 (:invalid 8)
 (:can-encrypt 16)
 (:can-sign 32)
 (:can-certify 64)
 (:secret 128)
 (:can-authenticate 256)
 (:is-qualified 512))

(defcstruct gpgme-key
 "A signature on a user ID."
 (-refs :unsigned-int)
 (bitfield gpgme-key-bitfield)
 (protocol gpgme-protocol-t)
 (issuer-serial :string)
 (issuer-name :string)
 (chain-id :string)
 (owner-trust gpgme-validity-t)
 (subkeys gpgme-subkey-t)
 (uids gpgme-user-id-t)
 (-last-subkey gpgme-subkey-t)
  (-last-uid gpgme-user-id-t)
 (keylist-mode gpgme-keylist-mode-t))

;;;

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-passphrase-cb-t :pointer)

(defctype gpgme-progress-cb-t :pointer)

(defctype gpgme-edit-cb-t :pointer)


;;;
;;; Function Interface
;;;

;;; Context management functions.
```

```
(defcfun ("gpgme_new" c-gpgme-new) gpgme-error-t
 (ctx :pointer))

(defcfun ("gpgme_release" c-gpgme-release) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_protocol" c-gpgme-set-protocol) gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t))

(defcfun ("gpgme_get_protocol" c-gpgme-get-protocol) gpgme-protocol-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_get_protocol_name" c-gpgme-get-protocol-name) :string
 (proto gpgme-protocol-t))

(defcfun ("gpgme_set_armor" c-gpgme-set-armor) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_armor" c-gpgme-get-armor) :boolean
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_textmode" c-gpgme-set-textmode) :void
 (ctx gpgme-ctx-t)
 (yes :boolean))

(defcfun ("gpgme_get_textmode" c-gpgme-get-textmode) :boolean
 (ctx gpgme-ctx-t))

(defconstant +include-certs-default+ -256)

(defcfun ("gpgme_set_include_certs" c-gpgme-set-include-certs) :void
 (ctx gpgme-ctx-t)
 (nr-of-certs cert-int-t))

(defcfun ("gpgme_get_include_certs" c-gpgme-get-include-certs) cert-int-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_set_keylist_mode" c-gpgme-set-keylist-mode) gpgme-error-t
 (ctx gpgme-ctx-t)
 (mode gpgme-keylist-mode-t))

(defcfun ("gpgme_get_keylist_mode" c-gpgme-get-keylist-mode)
   gpgme-keylist-mode-t
 (ctx gpgme-ctx-t))
```

```
(defcfun ("gpgme_set_passphrase_cb" c-gpgme-set-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-passphrase-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_passphrase_cb" c-gpgme-get-passphrase-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_progress_cb"
 c-gpgme-set-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb gpgme-progress-cb-t)
 (hook-value :pointer))

(defcfun ("gpgme_get_progress_cb" c-gpgme-get-progress-cb) :void
 (ctx gpgme-ctx-t)
 (cb-p :pointer)
 (hook-value-p :pointer))

(defcfun ("gpgme_set_locale" c-gpgme-set-locale) gpgme-error-t
 (ctx gpgme-ctx-t)
 (category :int)
 (value string-or-nil-t))

(defcfun ("gpgme_ctx_get_engine_info" c-gpgme-ctx-get-engine-info)
   gpgme-engine-info-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_ctx_set_engine_info" c-gpgme-ctx-set-engine-info)
   gpgme-error-t
 (ctx gpgme-ctx-t)
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir string-or-nil-t))

;;;

(defcfun ("gpgme_pubkey_algo_name" c-gpgme-pubkey-algo-name) :string
 (algo gpgme-pubkey-algo-t))

(defcfun ("gpgme_hash_algo_name" c-gpgme-hash-algo-name) :string
 (algo gpgme-hash-algo-t))

;;;

(defcfun ("gpgme_signers_clear" c-gpgme-signers-clear) :void
```

```
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_signers_add" c-gpgme-signers-add)
 gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t))

(defcfun ("gpgme_signers_enum" c-gpgme-signers-enum) gpgme-key-t
 (ctx gpgme-ctx-t)
 (seq :int))

;;;

(defcfun ("gpgme_sig_notation_clear" c-gpgme-sig-notation-clear) :void
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_sig_notation_add" c-gpgme-sig-notation-add) gpgme-error-t
 (ctx gpgme-ctx-t)
 (name :string)
 (value string-or-nil-t)
 (flags gpgme-sig-notation-flags-t))

(defcfun ("gpgme_sig_notation_get" c-gpgme-sig-notation-get)
   gpgme-sig-notation-t
 (ctx gpgme-ctx-t))

;;; Run Control.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-io-cb-t :pointer)

(defctype gpgme-register-io-cb-t :pointer)

(defctype gpgme-remove-io-cb-t :pointer)

(defcenum gpgme-event-io-t
 "The possible events on I/O event callbacks."
 (:start 0)
 (:done 1)
 (:next-key 2)
 (:next-trustitem 3))

(defctype gpgme-event-io-cb-t :pointer)

(defcstruct
```

```
 gpgme-io-cbs
 "I/O callbacks."
 (add gpgme-register-io-cb-t)
 (add-priv :pointer)
 (remove gpgme-remove-io-cb-t)
 (event gpgme-event-io-cb-t)
 (event-priv :pointer))

(defctype gpgme-io-cbs-t :pointer)

(defcfun ("gpgme_set_io_cbs" c-gpgme-set-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_get_io_cbs" c-gpgme-get-io-cbs) :void
 (ctx gpgme-ctx-t)
 (io-cbs gpgme-io-cbs-t))

(defcfun ("gpgme_wait" c-gpgme-wait) gpgme-ctx-t
 (ctx gpgme-ctx-t)
 (status-p :pointer)
 (hang :int))

;;; Functions to handle data objects.

;;; There is no support in CFFI to define callback C types and have
;;; automatic type checking with the callback definition.

(defctype gpgme-data-read-cb-t :pointer)
(defctype gpgme-data-write-cb-t :pointer)
(defctype gpgme-data-seek-cb-t :pointer)
(defctype gpgme-data-release-cb-t :pointer)

(defcstruct gpgme-data-cbs
 "Data callbacks."
 (read gpgme-data-read-cb-t)
 (write gpgme-data-write-cb-t)
 (seek gpgme-data-seek-cb-t)
  (release gpgme-data-release-cb-t))

(defctype gpgme-data-cbs-t :pointer
 "Data callbacks pointer.")

(defcfun ("gpgme_data_read" c-gpgme-data-read) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))
```

```
(defcfun ("gpgme_data_write" c-gpgme-data-write) ssize-t
 (dh gpgme-data-t)
 (buffer :pointer)
 (size size-t))

(defcfun ("gpgme_data_seek" c-gpgme-data-seek) off-t
 (dh gpgme-data-t)
 (offset off-t)
 (whence :int))

(defcfun ("gpgme_data_new" c-gpgme-data-new) gpgme-error-t
 (dh-p :pointer))

(defcfun ("gpgme_data_release" c-gpgme-data-release) :void
 (dh gpgme-data-t))

(defcfun ("gpgme_data_new_from_mem" c-gpgme-data-new-from-mem) gpgme-error-t
 (dh-p :pointer)
 (buffer :pointer)
 (size size-t)
 (copy :int))

(defcfun ("gpgme_data_release_and_get_mem" c-gpgme-data-release-and-get-mem)
   :pointer
 (dh gpgme-data-t)
 (len-p :pointer))

(defcfun ("gpgme_data_new_from_cbs" c-gpgme-data-new-from-cbs) gpgme-error-t
 (dh-p :pointer)
 (cbs gpgme-data-cbs-t)
  (handle :pointer))

(defcfun ("gpgme_data_new_from_fd" c-gpgme-data-new-from-fd) gpgme-error-t
 (dh-p :pointer)
 (fd :int))

(defcfun ("gpgme_data_new_from_stream" c-gpgme-data-new-from-stream)
   gpgme-error-t
 (dh-p :pointer)
 (stream :pointer))

(defcfun ("gpgme_data_get_encoding" c-gpgme-data-get-encoding)
   gpgme-data-encoding-t
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_encoding" c-gpgme-data-set-encoding)
   gpgme-error-t
 (dh gpgme-data-t)
```

```
 (enc gpgme-data-encoding-t))

(defcfun ("gpgme_data_get_file_name" c-gpgme-data-get-file-name) :string
 (dh gpgme-data-t))

(defcfun ("gpgme_data_set_file_name" c-gpgme-data-set-file-name) gpgme-error-t
 (dh gpgme-data-t)
 (file-name string-or-nil-t))

(defcfun ("gpgme_data_new_from_file" c-gpgme-data-new-from-file) gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (copy :int))

(defcfun ("gpgme_data_new_from_filepart" c-gpgme-data-new-from-filepart)
   gpgme-error-t
 (dh-p :pointer)
 (fname :string)
 (fp
 :pointer)
 (offset off-t)
 (length size-t))

;;; Key and trust functions.

(defcfun ("gpgme_get_key" c-gpgme-get-key) gpgme-error-t
 (ctx gpgme-ctx-t)
 (fpr :string)
 (key-p :pointer)
 (secret :boolean))

(defcfun ("gpgme_key_ref" c-gpgme-key-ref) :void
 (key gpgme-key-t))

(defcfun ("gpgme_key_unref" c-gpgme-key-unref) :void
 (key gpgme-key-t))

;;; Crypto operations.

(defcfun ("gpgme_cancel" c-gpgme-cancel) gpgme-error-t
 (ctx gpgme-ctx-t))

;;;

(defctype gpgme-invalid-key-t
   (:wrapper :pointer
    :from-c translate-gpgme-invalid-key-t-from-foreign)
 "An invalid key structure.")
```

```
(defcstruct gpgme-invalid-key
 "An invalid key structure."
 (next gpgme-invalid-key-t)
 (fpr :string)
 (reason gpgme-error-no-signal-t))

;;; Encryption.

(defcstruct gpgme-op-encrypt-result
 "Encryption result structure."
 (invalid-recipients gpgme-invalid-key-t))

(defctype gpgme-op-encrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-encrypt-result-t-from-foreign)
  "An encryption result structure.")

(defcfun ("gpgme_op_encrypt_result" c-gpgme-op-encrypt-result)
   gpgme-op-encrypt-result-t
 (ctx gpgme-ctx-t))

(defbitfield gpgme-encrypt-flags-t
 (:always-trust 1)
 (:no-encrypt-to 2)
 (:prepare 4)
 (:expect-sign 8)
 (:no-compress 16)
 (:symmetric 32)
 (:throw-keyids 64)
 (:wrap 128)
 (:want-address 256))

(defcfun ("gpgme_op_encrypt_start" c-gpgme-op-encrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt" c-gpgme-op-encrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign_start" c-gpgme-op-encrypt-sign-start)
```

```
  gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

(defcfun ("gpgme_op_encrypt_sign"
 c-gpgme-op-encrypt-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (recp :pointer) ; Key array.
 (flags gpgme-encrypt-flags-t)
 (plain gpgme-data-t)
 (cipher gpgme-data-t))

;;; Decryption.

(defctype gpgme-recipient-t
   (:wrapper :pointer
    :from-c translate-gpgme-recipient-t-from-foreign)
 "A recipient structure.")

(defcstruct gpgme-recipient
 "Recipient structure."
 (next gpgme-recipient-t)
 (keyid :string)
 (-keyid :char :count 17)
 (pubkey-algo gpgme-pubkey-algo-t)
 (status gpgme-error-no-signal-t))

(defbitfield gpgme-op-decrypt-result-bitfield
 "Decryption result structure bitfield."
 (:wrong-key-usage 1)
 (:is-de-vs 2)
 (:is-mine 4))

(defcstruct gpgme-op-decrypt-result
 "Decryption result structure."
 (unsupported-algorithm :string)
 (bitfield gpgme-op-decrypt-result-bitfield)
 (recipients gpgme-recipient-t)
 (file-name :string))

(defctype gpgme-op-decrypt-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-decrypt-result-t-from-foreign)
  "A decryption result structure.")
```

```
(defcfun ("gpgme_op_decrypt_result" c-gpgme-op-decrypt-result)
  gpgme-op-decrypt-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_decrypt_start" c-gpgme-op-decrypt-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt" c-gpgme-op-decrypt) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify_start" c-gpgme-op-decrypt-verify-start)
  gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

(defcfun ("gpgme_op_decrypt_verify" c-gpgme-op-decrypt-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (cipher gpgme-data-t)
 (plain gpgme-data-t))

;;; Signing.

(defctype gpgme-new-signature-t
  (:wrapper :pointer
   :from-c translate-gpgme-new-signature-t-from-foreign)
 "A new signature structure.")

(defcstruct gpgme-new-signature
 "New signature structure."
 (next gpgme-new-signature-t)
  (type gpgme-sig-mode-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t)
 (-obsolete-class :unsigned-long)
 (timestamp :long)
 (fpr :string)
 (-obsolete-class-2 :unsigned-int)
 (sig-class :unsigned-int))

(defcstruct gpgme-op-sign-result
 "Signing result structure."
 (invalid-signers gpgme-invalid-key-t)
 (signatures gpgme-new-signature-t))
```

```
(defctype gpgme-op-sign-result-t
  (:wrapper :pointer
   :from-c translate-gpgme-op-sign-result-t-from-foreign)
 "A signing result structure.")

(defcfun ("gpgme_op_sign_result" c-gpgme-op-sign-result)
  gpgme-op-sign-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_sign_start" c-gpgme-op-sign-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

(defcfun ("gpgme_op_sign" c-gpgme-op-sign) gpgme-error-t
 (ctx gpgme-ctx-t)
 (plain gpgme-data-t)
 (sig gpgme-data-t)
 (mode gpgme-sig-mode-t))

;;; Verify.

(defbitfield (gpgme-sigsum-t :unsigned-int)
 "Flags
 used for the summary field in a gpgme-signature-t."
 (:valid #x0001)
 (:green #x0002)
 (:red #x0004)
 (:key-revoked #x0010)
 (:key-expired #x0020)
 (:sig-expired #x0040)
 (:key-missing #x0080)
 (:crl-missing #x0100)
 (:crl-too-old #x0200)
 (:bad-policy #x0400)
 (:sys-error #x0800)
 (:tofu-conflict #x1000))

(defctype gpgme-signature-t
  (:wrapper :pointer
   :from-c translate-gpgme-signature-t-from-foreign)
 "A signature structure.")

;; FIXME: Doesn't this depend on endianness?
(defbitfield (gpgme-signature-bitfield :unsigned-int)
 "The signature bitfield."
```

```
 (:wrong-key-usage 1)
 (:pka-trust 2)
 (:chain-model 4)
 (:is-de-vs 8))

(defcstruct gpgme-signature
 "Signature structure."
 (next gpgme-signature-t)
 (summary gpgme-sigsum-t)
 (fpr :string)
 (status gpgme-error-no-signal-t)
 (notations gpgme-sig-notation-t)
 (timestamp :unsigned-long)
 (exp-timestamp :unsigned-long)
 (bitfield gpgme-signature-bitfield)
 (validity gpgme-validity-t)
 (validity-reason
 gpgme-error-no-signal-t)
 (pubkey-algo gpgme-pubkey-algo-t)
 (hash-algo gpgme-hash-algo-t))

(defcstruct gpgme-op-verify-result
 "Verify result structure."
 (signatures gpgme-signature-t)
 (file-name :string))

(defctype gpgme-op-verify-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-verify-result-t-from-foreign)
 "A verify result structure.")

(defcfun ("gpgme_op_verify_result" c-gpgme-op-verify-result)
   gpgme-op-verify-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_verify_start" c-gpgme-op-verify-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

(defcfun ("gpgme_op_verify" c-gpgme-op-verify) gpgme-error-t
 (ctx gpgme-ctx-t)
 (sig gpgme-data-t)
 (signed-text gpgme-data-t)
 (plaintext gpgme-data-t))

;;; Import.
```

```
(defbitfield (gpgme-import-flags-t :unsigned-int)
 "Flags used for the import status field."
 (:new #x0001)
 (:uid #x0002)
 (:sig #x0004)
 (:subkey #x0008)
 (:secret
 #x0010))

(defctype gpgme-import-status-t
   (:wrapper :pointer
    :from-c translate-gpgme-import-status-t-from-foreign)
 "An import status structure.")

(defcstruct gpgme-import-status
 "New import status structure."
 (next gpgme-import-status-t)
 (fpr :string)
 (result gpgme-error-no-signal-t)
 (status :unsigned-int))

(defcstruct gpgme-op-import-result
 "Import result structure."
 (considered :int)
 (no-user-id :int)
 (imported :int)
 (imported-rsa :int)
 (unchanged :int)
 (new-user-ids :int)
 (new-sub-keys :int)
 (new-signatures :int)
 (new-revocations :int)
 (secret-read :int)
 (secret-imported :int)
 (secret-unchanged :int)
 (skipped-new-keys :int)
 (not-imported :int)
 (imports gpgme-import-status-t))

(defctype gpgme-op-import-result-t
   (:wrapper :pointer
    :from-c translate-gpgme-op-import-result-t-from-foreign)
 "An import status result structure.")

(defcfun ("gpgme_op_import_result" c-gpgme-op-import-result)
   gpgme-op-import-result-t
```

```
  (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_import_start" c-gpgme-op-import-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_import" c-gpgme-op-import) gpgme-error-t
 (ctx gpgme-ctx-t)
 (keydata gpgme-data-t))

;;; Export.

(defcfun ("gpgme_op_export_start" c-gpgme-op-export-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

(defcfun ("gpgme_op_export" c-gpgme-op-export) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (reserved :unsigned-int)
 (keydata gpgme-data-t))

;;; FIXME: Extended export interfaces require array handling.

;;; Key generation.

(defbitfield (gpgme-genkey-flags-t :unsigned-int)
 "Flags used for the key generation result bitfield."
 (:primary #x0001)
 (:sub #x0002)
 (:uid #x0004))

(defcstruct gpgme-op-genkey-result
 "Key generation result structure."
 (bitfield gpgme-genkey-flags-t)
 (fpr :string))

(defctype gpgme-op-genkey-result-t :pointer
 "A
 key generation result structure.")

(defcfun ("gpgme_op_genkey_result" c-gpgme-op-genkey-result)
   gpgme-op-genkey-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_genkey_start" c-gpgme-op-genkey-start) gpgme-error-t
```

```
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

(defcfun ("gpgme_op_genkey" c-gpgme-op-genkey) gpgme-error-t
 (ctx gpgme-ctx-t)
 (parms :string)
 (pubkey gpgme-data-t)
 (seckey gpgme-data-t))

;;; Key deletion.

(defcfun ("gpgme_op_delete_start" c-gpgme-op-delete-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

(defcfun ("gpgme_op_delete" c-gpgme-op-delete) gpgme-error-t
 (ctx gpgme-ctx-t)
 (key gpgme-key-t)
 (allow-secret :int))

;;; FIXME: Add edit interfaces.

;;; Keylist interface.

(defbitfield (gpgme-keylist-flags-t :unsigned-int)
 "Flags used for the key listing result bitfield."
 (:truncated #x0001))

(defcstruct gpgme-op-keylist-result
 "Key listing result structure."
 (bitfield
 gpgme-keylist-flags-t))

(defctype gpgme-op-keylist-result-t :pointer
 "A key listing result structure.")

(defcfun ("gpgme_op_keylist_result" c-gpgme-op-keylist-result)
   gpgme-op-keylist-result-t
 (ctx gpgme-ctx-t))

(defcfun ("gpgme_op_keylist_start" c-gpgme-op-keylist-start) gpgme-error-t
 (ctx gpgme-ctx-t)
 (pattern :string)
 (secret_only :boolean))
```

```
;;; FIXME: Extended keylisting requires array handling.

(defcfun ("gpgme_op_keylist_next" c-gpgme-op-keylist-next) gpgme-error-t
 (ctx gpgme-ctx-t)
 (r-key :pointer))

(defcfun ("gpgme_op_keylist_end" c-gpgme-op-keylist-end) gpgme-error-t
 (ctx gpgme-ctx-t))

;;; Various functions.

(defcfun ("gpgme_check_version" c-gpgme-check-version) :string
 (req-version string-or-nil-t))

(defcfun ("gpgme_get_engine_info" c-gpgme-get-engine-info) gpgme-error-t
 (engine-info-p :pointer))

(defcfun ("gpgme_set_engine_info" c-gpgme-set-engine-info) gpgme-error-t
 (proto gpgme-protocol-t)
 (file-name string-or-nil-t)
 (home-dir
 string-or-nil-t))

(defcfun ("gpgme_engine_check_version" c-gpgme-engine-check-verson)
   gpgme-error-t
 (proto gpgme-protocol-t))

;;;
;;; L I S P   I N T E R F A C E
;;;

;;;
;;; Lisp type translators.
;;;

;;; Both directions.

;;; cert-int-t is a helper type that takes care of representing the
;;; default number of certs as NIL.

(defun translate-cert-int-t-from-foreign (value)
 (cond
   ((eql value +include-certs-default+) nil)
   (t value)))

(defun translate-cert-int-t-to-foreign (value)
 (cond
   (value value)
```

```
  (t +include-certs-default+)))

;;; string-or-nil-t translates a null pointer to NIL and vice versa.
;;; Translation from foreign null pointer already works as expected.

(defun translate-string-or-nil-t-to-foreign (value)
 (cond
  (value value)
  (t (null-pointer))))

;;; Output only.

;;; These type translators only convert from foreign type, because we
;;; never use these types in the other direction.

;;; Convert gpgme-engine-info-t linked lists into a
 list of property
;;; lists.  Note that this converter will automatically be invoked
;;; recursively.
;;;
;;; FIXME: Should we use a hash table (or struct, or clos) instead of
;;; property list, as recommended by the Lisp FAQ?

(defun translate-gpgme-engine-info-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next protocol file-name version req-version home-dir)
    value (:struct gpgme-engine-info))
  (append (list protocol (list
       :file-name file-name
       :version version
       :req-version req-version
       :home-dir home-dir))
  next)))))

(defun translate-gpgme-invalid-key-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next fpr reason)
    value (:struct gpgme-invalid-key))
  (append (list (list :fpr fpr
       :reason reason))
  next)))))

(defun translate-gpgme-op-encrypt-result-t-from-foreign (value)
 (cond
```

```
  ((null-pointer-p value) nil)
  (t (with-foreign-slots

  ((invalid-recipients)
    value (:struct gpgme-op-encrypt-result))
 (list :encrypt
       (list :invalid-recipients invalid-recipients))))))

(defun translate-gpgme-recipient-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next keyid pubkey-algo status)
    value (:struct gpgme-recipient))
  (append (list (list :keyid keyid
       :pubkey-algo pubkey-algo
       :status status))
  next)))))

(defun translate-gpgme-op-decrypt-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((unsupported-algorithm bitfield recipients file-name)
    value (:struct gpgme-op-decrypt-result))
  (list :decrypt (list :unsupported-algorithm unsupported-algorithm
        :bitfield bitfield
        :recipients recipients
        :file-name file-name))))))

(defun translate-gpgme-new-signature-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next
 type pubkey-algo hash-algo timestamp fpr sig-class)
    value (:struct gpgme-new-signature))
  (append (list (list :type type
       :pubkey-algo pubkey-algo
       :hash-algo hash-algo
       :timestamp timestamp
       :fpr fpr
       :sig-class sig-class))
  next)))))

(defun translate-gpgme-op-sign-result-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
```

```
   (t (with-foreign-slots
    ((invalid-signers signatures)
     value (:struct gpgme-op-sign-result))
   (list :sign (list :invalid-signers invalid-signers
      :signatures signatures))))))

(defun translate-gpgme-signature-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next summary fpr status notations timestamp
    exp-timestamp bitfield validity validity-reason
    pubkey-algo hash-algo)
     value (:struct gpgme-signature))
   (append (list (list :summary summary
        :fpr fpr
        :status status
        :notations notations
        :timestamp timestamp

     :exp-timestamp exp-timestamp
        :bitfield bitfield
        :validity validity
        :validity-reason validity-reason
        :pubkey-algo pubkey-algo))
   next)))))

(defun translate-gpgme-op-verify-result-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((signatures file-name)
     value (:struct gpgme-op-verify-result))
   (list :verify (list :signatures signatures
        :file-name file-name))))))

(defun translate-gpgme-import-status-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next fpr result status)
     value (:struct gpgme-import-status))
   (append (list (list :fpr fpr
        :result result
        :status status))
   next)))))

(defun translate-gpgme-op-import-result-t-from-foreign (value)
```

```
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((considered no-user-id imported imported-rsa unchanged
   new-user-ids new-sub-keys new-signatures
   new-revocations
 secret-read secret-imported
   secret-unchanged skipped-new-keys not-imported
   imports)
     value (:struct gpgme-op-import-result))
  (list :verify (list :considered considered
        :no-user-id no-user-id
        :imported imported
        :imported-rsa imported-rsa
        :unchanged unchanged
        :new-user-ids new-user-ids
        :new-sub-keys new-sub-keys
        :new-signatures new-signatures
        :new-revocations new-revocations
        :secret-read secret-read
        :secret-imported secret-imported
        :secret-unchanged secret-unchanged
        :skipped-new-keys skipped-new-keys
        :not-imported not-imported
        :imports imports))))))

;;; Error handling.

;;; Use gpgme-error-no-signal-t to suppress automatic error handling
;;; at translation time.
;;;
;;; FIXME: Part of this probably should be in gpg-error!

(define-condition gpgme-error (error)
 ((value :initarg :gpgme-error :reader gpgme-error-value))
 (:report (lambda (c stream)

     (format stream "GPGME returned error: ~A (~A)"
       (gpgme-strerror (gpgme-error-value c))
       (gpgme-strsource (gpgme-error-value c)))))
 (:documentation "Signalled when a GPGME function returns an error."))

(defun translate-gpgme-error-t-from-foreign (value)
 "Raise a GPGME-ERROR if VALUE is non-zero."
 (when (not (eql (gpgme-err-code value) :gpg-err-no-error))
   (error 'gpgme-error :gpgme-error value))
 (gpg-err-canonicalize value))
```

```
(defun translate-gpgme-error-t-to-foreign (value)
 "Canonicalize the error value."
 (if (eql (gpgme-err-code value) :gpg-err-no-error)
     0
     (gpg-err-as-value value)))

(defun translate-gpgme-error-no-signal-t-from-foreign (value)
 "Canonicalize the error value."
 (gpg-err-canonicalize value))


;;; *INTERNAL* Lispy Function Interface that is still close to the C
;;; interface.

;;; Passphrase callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar
 *passphrase-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  passphrase callback object as value.")

(defcallback passphrase-cb gpgme-error-t ((handle :pointer)
       (uid-hint :string)
       (passphrase-info :string)
       (prev-was-bad :boolean)
       (fd :int))
 (handler-case
     (let* ((passphrase-cb
       (gethash (pointer-address handle) *passphrase-handles*))
      (passphrase
       (cond
  ((functionp passphrase-cb)
   (concatenate 'string
         (funcall passphrase-cb uid-hint passphrase-info
           prev-was-bad)
         '(#\Newline)))
  (t (concatenate 'string passphrase-cb '(#\Newline)))))
     (passphrase-len (length passphrase))
     ;; FIXME: Could be more robust.
     (res (system-write fd passphrase passphrase-len)))
 (cond
   ((< res passphrase-len) ; FIXME: Blech.  A weak attempt to be robust.
    (gpgme-error :gpg-err-inval))
   (t (gpgme-error :gpg-err-no-error))))
   (gpgme-error (err)
```

```
 (gpgme-error-value err))
   (system-error (err) (gpgme-error-from-errno (system-error-errno err)))
   ;; FIXME: The original error gets lost here.
   (condition (err) (progn
        (when *debug*
    (format t "DEBUG: passphrase-cb: Unexpressable: ~A~%"
     err))
        (gpgme-error :gpg-err-general)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-passphrase-cb (ctx cb)
 "Set the passphrase callback for CTX."
 (let ((handle (pointer-address ctx)))
   (cond
     (cb (setf (gethash handle *passphrase-handles*) cb)
   (c-gpgme-set-passphrase-cb ctx (callback passphrase-cb) ctx))
     (t (c-gpgme-set-passphrase-cb ctx (null-pointer) (null-pointer))
  (remhash handle *passphrase-handles*)))))

;;; Progress callback management.

;;; Maybe: Instead, use subclassing, and provide a customizable
;;; default implementation for ease-of-use.

(defvar *progress-handles* (make-hash-table)
 "Hash table with GPGME context address as key and the corresponding
  progress callback
 object as value.")

(defcallback progress-cb :void ((handle :pointer)
    (what :string)
    (type :int)
    (current :int)
    (total :int))
 (handler-case
     (let* ((progress-cb
       (gethash (pointer-address handle) *progress-handles*)))
 (funcall progress-cb what type current total))
   ;; FIXME: The original error gets lost here.
   (condition (err) (when *debug*
        (format t "DEBUG: progress-cb: Unexpressable: ~A~%"
         err)))))

;;; CTX is a C-pointer to the context.
(defun gpgme-set-progress-cb (ctx cb)
 "Set the progress callback for CTX."
 (let ((handle (pointer-address ctx)))
   (cond
```

```
    (cb (setf (gethash handle *progress-handles*) cb)
  (c-gpgme-set-progress-cb ctx (callback progress-cb) ctx))
    (t (c-gpgme-set-progress-cb ctx (null-pointer) (null-pointer))
 (remhash handle *progress-handles*)))))

;;; Context management.

(defun gpgme-new (&key (protocol :openpgp) armor textmode include-certs
   keylist-mode passphrase progress file-name
 home-dir)
 "Allocate a new GPGME context."
 (with-foreign-object (ctx-p 'gpgme-ctx-t)
  (c-gpgme-new ctx-p)
  (let ((ctx (mem-ref ctx-p 'gpgme-ctx-t)))
    ;;; Set locale?
    (gpgme-set-protocol ctx protocol)
    (gpgme-set-armor ctx armor)
    (gpgme-set-textmode ctx textmode)
    (when include-certs (gpgme-set-include-certs ctx include-certs))
    (when keylist-mode (gpgme-set-keylist-mode ctx keylist-mode))
    (gpgme-set-passphrase-cb ctx passphrase)
    (gpgme-set-progress-cb ctx progress)
    (gpgme-set-engine-info ctx protocol
      :file-name file-name :home-dir home-dir)
    (when *debug* (format t "DEBUG: gpgme-new: ~A~%" ctx))
    ctx)))

(defun gpgme-release (ctx)
 "Release a GPGME context."
 (when *debug* (format t "DEBUG: gpgme-release: ~A~%" ctx))
 (c-gpgme-release ctx))

(defun gpgme-set-protocol (ctx proto)
 "Set the protocol to be used by CTX to PROTO."
 (c-gpgme-set-protocol ctx proto))

(defun gpgme-get-protocol (ctx)
 "Get
 the protocol used with CTX."
 (c-gpgme-get-protocol ctx))

;;; FIXME: How to do pretty printing?
;;;
;;; gpgme-get-protocol-name

(defun gpgme-set-armor (ctx armor)
 "If ARMOR is true, enable armor mode in CTX, disable it otherwise."
(c-gpgme-set-armor ctx armor))
```

```
(defun gpgme-armor-p (ctx)
 "Return true if armor mode is set for CTX."
 (c-gpgme-get-armor ctx))

(defun gpgme-set-textmode (ctx textmode)
 "If TEXTMODE is true, enable text mode mode in CTX, disable it otherwise."
(c-gpgme-set-textmode ctx textmode))

(defun gpgme-textmode-p (ctx)
 "Return true if text mode mode is set for CTX."
 (c-gpgme-get-textmode ctx))

(defun gpgme-set-include-certs (ctx &optional certs)
 "Include up to CERTS certificates in an S/MIME message."
 (c-gpgme-set-include-certs ctx certs))

(defun gpgme-get-include-certs (ctx)
 "Return the number of certs to include in an S/MIME message,
  or NIL if the default is used."
 (c-gpgme-get-include-certs ctx))

(defun gpgme-get-keylist-mode (ctx)
  "Get the keylist mode in CTX."
 (c-gpgme-get-keylist-mode ctx))

(defun gpgme-set-keylist-mode (ctx mode)
 "Set the keylist mode in CTX."
 (c-gpgme-set-keylist-mode ctx mode))


;;; FIXME: How to handle locale?  cffi-grovel?

(defun gpgme-get-engine-info (&optional ctx)
 "Retrieve the engine info for CTX, or the default if CTX is omitted."
 (cond
   (ctx (c-gpgme-ctx-get-engine-info ctx))
   (t (with-foreign-object (info-p 'gpgme-engine-info-t)
  (c-gpgme-get-engine-info info-p)
  (mem-ref info-p 'gpgme-engine-info-t)))))

(defun gpgme-set-engine-info (ctx proto &key file-name home-dir)
 "Set the engine info for CTX, or the default if CTX is NIL."
 (cond
   (ctx (c-gpgme-ctx-set-engine-info ctx proto file-name home-dir))
   (t (c-gpgme-set-engine-info proto file-name home-dir))))

;;; FIXME: How to do pretty printing?
```

```
;;;
;;; gpgme_pubkey_algo_name, gpgme_hash_algo_name

(defun gpgme-set-signers (ctx keys)
 "Set the signers for the context CTX."
 (c-gpgme-signers-clear ctx)
  (dolist (key keys) (c-gpgme-signers-add ctx key)))

;;;

(defun gpgme-set-sig-notation (ctx notations)
 "Set the sig notation for the context CTX."
 (c-gpgme-sig-notation-clear ctx)
 (dolist (notation notations)
   (c-gpgme-sig-notation-add
    ctx (first notation) (second notation) (third notation))))

(defun gpgme-get-sig-notation (ctx)
 "Get the signature notation data for the context CTX."
 (c-gpgme-sig-notation-get ctx))

;;; FIXME: Add I/O callback interface, for integration with clg.

;;; FIXME: Add gpgme_wait?

;;; Streams
;;; -------
;;;
;;; GPGME uses standard streams.  You can define your own streams, or
;;; use the existing file or string streams.
;;;
;;; A stream-spec is either a stream, or a list with a stream as its
;;; first argument followed by keyword parameters: encoding,
;;; file-name.
;;;
;;; FIXME: Eventually, we should provide a class that can be mixed
;;; into stream classes and which provides accessors for encoding and
;;; file-names.  This interface
 should be provided in addition to the
;;; above sleazy interface, because the sleazy interface is easier to
;;; use (less typing), and is quite sufficient in a number of cases.
;;;
;;; For best results, streams with element type (unsigned-byte 8)
;;; should be used.  Character streams may work if armor mode is used.

;;; Do we need to provide access to GPGME data objects through streams
;;; as well?  It seems to me that specific optimizations, like
;;; directly writing to file descriptors, is better done by extending
```

```
;;; the sleazy syntax (stream-spec) instead of customized streams.
;;; Customized streams do buffering, and this may mess up things.  Mmh.

(defvar *data-handles* (make-hash-table)
 "Hash table with GPGME data user callback handle address as key
  and the corresponding stream as value.")

;;; The release callback removes the stream from the *data-handles*
;;; hash and releases the CBS structure that is used as the key in
;;; that hash.  It is implicitly invoked (through
 GPGME) by
;;; gpgme-data-release.
(defcallback data-release-cb :void ((handle :pointer))
 (unwind-protect (remhash (pointer-address handle) *data-handles*)
   (when (not (null-pointer-p handle)) (foreign-free handle))))

(defcallback data-read-cb ssize-t ((handle :pointer) (buffer :pointer)
                                   (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-read-cb: want ~A~%" size))
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type))
             (read (read-sequence seq stream)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char i)
                   (aref (the byte-array seq) i))))
          ((eql stream-type 'character)
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char
i)
                   (char-code (aref (the character-array seq) i)))))
          (t
           (dotimes (i read)
             (setf (mem-aref buffer :unsigned-char i)
                   (coerce (aref seq i) '(unsigned-byte 8))))))
        (when *debug* (format t "DEBUG: gpgme-data-read-cb: read ~A~%" read))
        read))
     (t
      (set-errno +ebadf+)
      -1))))

(defcallback data-write-cb ssize-t ((handle :pointer) (buffer :pointer)
                                    (size size-t))
 (when *debug* (format t "DEBUG: gpgme-data-write-cb: want ~A~%" size))
```

```
 (let ((stream (gethash (pointer-address handle) *data-handles*)))
   (cond
     (stream
      (let* ((stream-type (stream-element-type stream))
             (seq (make-array size :element-type stream-type)))
        (cond
          ((equal stream-type '(unsigned-byte 8))
           (dotimes (i size)
             (setf (aref (the byte-array seq) i)
                   (mem-aref buffer :unsigned-char i))))
          ((eql stream-type 'character)
           (dotimes (i size)
             (setf (aref (the character-array seq) i)
                   (code-char (mem-aref buffer :unsigned-char i)))))
          (t
           (dotimes (i size)
             (setf (aref seq i)
                   (coerce (mem-aref buffer :unsigned-char i) stream-type)))))
        (write-sequence seq stream)
        size))
     (t
      (set-errno +ebadf+)
      -1))))

;;; This little helper macro allows us to swallow the cbs structure by
;;; simply setting it to a null pointer, but still protect against
;;; conditions.
(defmacro with-cbs-swallowed ((cbs) &body body)
  `(let ((,cbs (foreign-alloc '(:struct gpgme-data-cbs))))
     (unwind-protect (progn ,@body)
       (when (not (null-pointer-p ,cbs)) (foreign-free ,cbs)))))

(defun gpgme-data-new (stream &key encoding file-name)
  "Allocate a new GPGME data object for STREAM."
  (with-foreign-object (dh-p 'gpgme-data-t)
    ;;; We allocate one CBS structure
  for each stream we wrap in a
    ;;; data object.  Although we could also share all these
    ;;; structures, as they contain the very same callbacks, we need a
    ;;; unique C pointer as handle anyway to look up the stream in the
    ;;; callback.  This is a convenient one to use.
    (with-cbs-swallowed (cbs)
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'read)
            (callback data-read-cb))
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'write)
            (callback data-write-cb))
      (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'seek)
            (null-pointer))
```

```
    (setf (foreign-slot-value cbs '(:struct gpgme-data-cbs) 'release)
          (callback data-release-cb))
    (c-gpgme-data-new-from-cbs dh-p cbs cbs)
    (let ((dh (mem-ref dh-p 'gpgme-data-t)))
 (when encoding (gpgme-data-set-encoding dh encoding))
 (when file-name (gpgme-data-set-file-name dh file-name))
 ;;; Install the stream into the hash table and
 swallow the cbs
       ;;; structure while protecting against any errors.
 (unwind-protect
     (progn
      (setf (gethash (pointer-address cbs) *data-handles*) stream)
      (setf cbs (null-pointer)))
  (when (not (null-pointer-p cbs)) (c-gpgme-data-release dh)))
 (when *debug* (format t "DEBUG: gpgme-data-new: ~A~%" dh))
 dh))))

;;; This function releases a GPGME data object.  It implicitly
;;; invokes the data-release-cb function to clean up associated junk.
(defun gpgme-data-release (dh)
 "Release a GPGME data object."
 (when *debug* (format t "DEBUG: gpgme-data-release: ~A~%" dh))
 (c-gpgme-data-release dh))

(defclass data ()
 (c-data)  ; The C data object pointer
 (:documentation "The GPGME data type."))

(defmethod initialize-instance :after ((data data) &key streamspec
                                       &allow-other-keys)
 (let ((c-data (if (listp streamspec)
                   (apply #'gpgme-data-new streamspec)
                   (gpgme-data-new streamspec)))
       (cleanup t))
  (unwind-protect
       (progn
        (setf (slot-value data 'c-data) c-data)
        (finalize data (lambda () (gpgme-data-release c-data)))
        (setf cleanup nil))
    (if cleanup (gpgme-data-release c-data)))))

(defun translate-gpgme-data-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (cond
  ((null value) (null-pointer))
  ((pointerp value) value)
  (t (slot-value value 'c-data))))
```

```
(defmacro with-gpgme-data ((dh streamspec) &body body)
 `(let ((,dh (make-instance 'data :streamspec ,streamspec)))
    ,@body))

(defun gpgme-data-get-encoding (dh)
 "Get the encoding associated with the data object DH."
 (c-gpgme-data-get-encoding dh))

(defun gpgme-data-set-encoding (dh encoding)
 "Set the encoding associated with the data object DH to ENCODING."
 (c-gpgme-data-set-encoding dh encoding))

(defun gpgme-data-get-file-name (dh)
 "Get the file name associated with the data object
 DH."
 (c-gpgme-data-get-file-name dh))

(defun gpgme-data-set-file-name (dh file-name)
 "Set the file name associated with the data object DH to FILE-NAME."
 (c-gpgme-data-set-file-name dh file-name))

;;; FIXME: Add key accessor interfaces.

(defun gpgme-get-key (ctx fpr &optional secret)
 "Get the key with the fingerprint FPR from the context CTX."
 (with-foreign-object (key-p 'gpgme-key-t)
   (c-gpgme-get-key ctx fpr key-p secret)
   (mem-ref key-p 'gpgme-key-t)))

(defun gpgme-key-ref (key)
 "Acquire an additional reference to the key KEY."
 (when *debug* (format t "DEBUG: gpgme-key-ref: ~A~%" key))
 (c-gpgme-key-ref key))

(defun gpgme-key-unref (key)
 "Release a reference to the key KEY."
 (when *debug* (format t "DEBUG: gpgme-key-unref: ~A~%" key))
 (c-gpgme-key-unref key))

;;; FIXME: We REALLY need pretty printing for keys and all the other
;;; big structs.

;;; Various interfaces.

(defun gpgme-check-version (&optional req-version)
 (c-gpgme-check-version req-version))

;;;
```

```
;;;
 The *EXPORTED* CLOS interface.
;;;

;;; The context type.

;;; We wrap the C context pointer into a class object to be able to
;;; stick a finalizer on it.

(defclass context ()
 (c-ctx  ; The C context object pointer.
  signers ; The list of signers.
  sig-notation) ; The list of signers.
 (:documentation "The GPGME context type."))

(defmethod initialize-instance :after ((ctx context) &rest rest
         &key &allow-other-keys)
 (let ((c-ctx (apply #'gpgme-new rest))
 (cleanup t))
   (unwind-protect
  (progn (setf (slot-value ctx 'c-ctx) c-ctx)
  (finalize ctx (lambda () (gpgme-release c-ctx)))
  (setf cleanup nil))
     (if cleanup (gpgme-release c-ctx)))))

(defun translate-gpgme-ctx-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-ctx)))

(defmacro context (&rest rest)
 "Create a new GPGME context."
 `(make-instance 'context ,@rest))

;;; The context type: Accessor
 functions.

;;; The context type: Accessor functions: Protocol.

(defgeneric protocol (ctx)
 (:documentation "Get the protocol of CONTEXT."))

(defmethod protocol ((ctx context))
 (gpgme-get-protocol ctx))

(defgeneric (setf protocol) (protocol ctx)
 (:documentation "Set the protocol of CONTEXT to PROTOCOL."))

;;; FIXME: Adjust translator to reject invalid protocols.  Currently,
```

```
;;; specifying an invalid protocol throws a "NIL is not 32 signed int"
;;; error.  This is suboptimal.
(defmethod (setf protocol) (protocol (ctx context))
 (gpgme-set-protocol ctx protocol))

;;; The context type: Accessor functions: Armor.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric armorp (ctx)
 (:documentation "Get the armor flag of CONTEXT."))

(defmethod armorp ((ctx context))
 (gpgme-armor-p ctx))

(defgeneric (setf armorp) (armor ctx)
 (:documentation "Set the armor flag of CONTEXT to ARMOR."))

(defmethod (setf armorp) (armor (ctx
 context))
 (gpgme-set-armor ctx armor))

;;; The context type: Accessor functions: Textmode.
;;; FIXME: Is it good style to make foop setf-able?  Or should it be
;;; foo/foop for set/get?

(defgeneric textmodep (ctx)
 (:documentation "Get the text mode flag of CONTEXT."))

(defmethod textmodep ((ctx context))
 (gpgme-textmode-p ctx))

(defgeneric (setf textmodep) (textmode ctx)
 (:documentation "Set the text mode flag of CONTEXT to TEXTMODE."))

(defmethod (setf textmodep) (textmode (ctx context))
 (gpgme-set-textmode ctx textmode))

;;; The context type: Accessor functions: Include Certs.

(defgeneric include-certs (ctx)
 (:documentation "Get the number of included certificates in an
                  S/MIME message, or NIL if the default is used."))

(defmethod include-certs ((ctx context))
 (gpgme-get-include-certs ctx))

(defgeneric (setf include-certs) (certs ctx)
```

```
 (:documentation "Return the number of certificates to include in an
                  S/MIME message, or
 NIL if the default is used."))

(defmethod (setf include-certs) (certs (ctx context))
 (gpgme-set-include-certs ctx certs))

;;; The context type: Accessor functions: Engine info.

(defgeneric engine-info (ctx)
 (:documentation "Retrieve the engine info for CTX."))

(defmethod engine-info ((ctx context))
 (gpgme-get-engine-info ctx))

(defgeneric (setf engine-info) (info ctx)
 (:documentation "Set the engine info for CTX."))

(defmethod (setf engine-info) (info (ctx context))
 (dolist (proto '(:openpgp :cms))
  (let ((pinfo (getf info proto)))
    (when pinfo
 (gpgme-set-engine-info ctx proto :file-name (getf pinfo :file-name)
        :home-dir (getf pinfo :home-dir))))))

;;; The context type: Accessor functions: Keylist mode.

(defgeneric keylist-mode (ctx)
 (:documentation "Get the keylist mode of CTX."))

(defmethod keylist-mode ((ctx context))
 (gpgme-get-keylist-mode ctx))

(defgeneric (setf keylist-mode) (mode ctx)
 (:documentation "Set the keylist mode of CTX to MODE."))

(defmethod
 (setf keylist-mode) (mode (ctx context))
 (gpgme-set-keylist-mode ctx mode))

;;; The context type: Accessor functions: Signers.

(defgeneric signers (ctx)
 (:documentation "Get the signers of CTX."))

(defmethod signers ((ctx context))
 (slot-value ctx 'signers))
```

```
(defgeneric (setf signers) (signers ctx)
 (:documentation "Set the signers of CTX to SIGNERS."))

(defmethod (setf keylist-mode) (signers (ctx context))
 (gpgme-set-signers ctx signers)
 (setf (slot-value ctx 'signers) signers))

;;; The context type: Accessor functions: Sig notations.

(defgeneric sig-notations (ctx)
 (:documentation "Get the signature notations of CTX."))

(defmethod sig-notations ((ctx context))
 (slot-value ctx 'signers))

(defgeneric (setf sig-notations) (notations ctx)
 (:documentation "Set the signatire notations of CTX to NOTATIONS."))

(defmethod (setf sig-notations) (notations (ctx context))
 (gpgme-set-signers ctx notations)
 (setf (slot-value ctx 'notations) notations))

;;;
 The context type: Support macros.

(defmacro with-context ((ctx &rest rest) &body body)
 `(let ((,ctx (make-instance 'context ,@rest)))
   ,@body))

;;; The key type.

(defclass key ()
 (c-key)  ; The C key object pointer.
 (:documentation "The GPGME key type."))

;;; In the initializer, we swallow the c-key argument.
(defmethod initialize-instance :after ((key key) &key c-key
         &allow-other-keys)
 (setf (slot-value key 'c-key) c-key)
 (finalize key (lambda () (gpgme-key-unref c-key))))

(defun translate-gpgme-key-t-from-foreign (value)
 (when *debug* (format t "DEBUG: import key: ~A~%" value))
 (make-instance 'key :c-key value))

(defun translate-gpgme-key-t-to-foreign (value)
 ;; Allow a pointer to be passed directly for the finalizer to work.
 (if (pointerp value) value (slot-value value 'c-key)))
```

```
(defmethod print-object ((key key) stream)
 (print-unreadable-object (key stream :type t :identity t)
   (format stream "~s" (fpr key))))

;;; The key type:
 Accessor functions.

;;; FIXME: The bitfield and flags contain redundant information at
;;; this point.  FIXME: Deal nicer with zero-length name (policy url)
;;; and zero length value (omit?) and human-readable (convert to string).
;;; FIXME: Turn binary data into sequence or vector or what it should be.
;;; FIXME: Turn the whole thing into a hash?
(defun translate-gpgme-sig-notation-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next name value name-len value-len flags bitfield)
     value (:struct gpgme-sig-notation))
  (append (list (list
   :name name
   :value value
   :name-len name-len
   :value-len value-len
   :flags flags
   :bitfield bitfield))
   next)))))

;;; FIXME: Deal nicer with timestamps.  bitfield field name?
(defun translate-gpgme-subkey-t-from-foreign (value)
 (cond
   ((null-pointer-p value) nil)
   (t (with-foreign-slots
    ((next bitfield pubkey-algo length keyid fpr timestamp expires)
     value (:struct gpgme-subkey))

 (append (list (list
   :bitfield bitfield
   :pubkey-algo pubkey-algo
   :length length
   :keyid keyid
   :fpr fpr
   :timestamp timestamp
   :expires expires))
   next)))))

(defun translate-gpgme-key-sig-t-from-foreign (value)
 (cond
```

```
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield pubkey-algo keyid timestamp expires status
   uid name email comment sig-class)
    value (:struct gpgme-key-sig))
  (append (list (list
  :bitfield bitfield
  :pubkey-algo pubkey-algo
  :keyid keyid
  :timestamp timestamp
  :expires expires
  :status status
  :uid uid
  :name name
  :email email
  :comment comment
  :sig-class sig-class))
  next)))))

(defun translate-gpgme-user-id-t-from-foreign (value)
 (cond
  ((null-pointer-p value) nil)
  (t (with-foreign-slots
   ((next bitfield validity uid name email comment signatures)
    value (:struct gpgme-user-id))
  (append (list (list
  :bitfield bitfield
  :validity validity
  :uid uid
  :name
 name
  :email email
  :comment comment
  :signatures signatures))
  next)))))

(defun key-data (key)
 (with-slots (c-key) key
  (with-foreign-slots
 ((bitfield protocol issuer-serial issuer-name chain-id
    owner-trust subkeys uids keylist-mode)
  c-key (:struct gpgme-key))
    (list
     :bitfield bitfield
     :protocol protocol
     :issuer-serial issuer-serial
     :issuer-name issuer-name
     :chain-id chain-id
```

```
      :owner-trust owner-trust
      :subkeys subkeys
      :uids uids
      :keylist-mode keylist-mode))
   ))


(defgeneric fpr (key)
 (:documentation "Get the primary fingerprint of the key."))

(defmethod fpr ((key key))
 (getf (car (getf (key-data key) :subkeys)) :fpr))


;;; The context type: Crypto-Operations.

(defgeneric get-key (ctx fpr &optional secret)
 (:documentation "Get the (secret) key FPR from CTX."))

(defmethod get-key ((ctx context) fpr &optional secret)
 (gpgme-get-key ctx fpr secret))

;;; Encrypt.

(defgeneric
 op-encrypt (ctx recp plain cipher &key always-trust sign)
 (:documentation "Encrypt."))

(defmethod op-encrypt ((ctx context) recp plain cipher
        &key always-trust sign)
 (with-foreign-object (c-recp :pointer (+ 1 (length recp)))
   (dotimes (i (length recp))
     (setf (mem-aref c-recp 'gpgme-key-t i) (elt recp i)))
   (setf (mem-aref c-recp :pointer (length recp)) (null-pointer))
   (with-gpgme-data (in plain)
     (with-gpgme-data (out cipher)
 (let ((flags))
   (if always-trust (push :always-trust flags))
   (cond
     (sign
      (c-gpgme-op-encrypt-sign ctx c-recp flags in out)
      (append (c-gpgme-op-encrypt-result ctx)
       (c-gpgme-op-sign-result ctx)))
     (t
      (c-gpgme-op-encrypt ctx c-recp flags in out)
      (c-gpgme-op-encrypt-result ctx))))))))

;;; Decrypt.
```

```
(defgeneric op-decrypt (ctx cipher plain &key verify)
 (:documentation "Decrypt."))

(defmethod op-decrypt ((ctx context) cipher plain &key verify)
 (with-gpgme-data (in cipher)
   (with-gpgme-data
 (out plain)
     (cond
 (verify
  (c-gpgme-op-decrypt-verify ctx in out)
  (append (c-gpgme-op-decrypt-result ctx)
   (c-gpgme-op-verify-result ctx)))
 (t
  (c-gpgme-op-decrypt ctx in out)
  (c-gpgme-op-decrypt-result ctx))))))

;;; Signing.

(defgeneric op-sign (ctx plain sig &optional mode)
 (:documentation "Sign."))

(defmethod op-sign ((ctx context) plain sig &optional (mode :none))
 (with-gpgme-data (in plain)
   (with-gpgme-data (out sig)
     (c-gpgme-op-sign ctx in out mode)
     (c-gpgme-op-sign-result ctx))))

;;; Verify.

(defgeneric op-verify (ctx sig text &key detached)
 (:documentation "Verify."))

(defmethod op-verify ((ctx context) sig text &key detached)
 (with-gpgme-data (in sig)
   (with-gpgme-data (on text)
     (c-gpgme-op-verify ctx in (if detached on nil)
    (if detached nil on))
     (c-gpgme-op-verify-result ctx))))

;;; Import.

(defgeneric op-import (ctx keydata)
 (:documentation "Import."))

(defmethod op-import ((ctx context) keydata)
  (with-gpgme-data (in keydata)
   (c-gpgme-op-import ctx in)
```

```
  (c-gpgme-op-import-result ctx)))

;;; Export.

(defgeneric op-export (ctx pattern keydata)
 (:documentation "Export public key data matching PATTERN to the
                  stream KEYDATA."))

(defmethod op-export ((ctx context) pattern keydata)
 (with-gpgme-data (dh keydata)
  (c-gpgme-op-export ctx pattern 0 dh)))

;;; Key generation.



;;;
;;; Initialization
;;;

(defun check-version (&optional req-version)
 "Check that the GPGME version requirement is satisfied."
 (gpgme-check-version req-version))

(defparameter *version* (check-version)
 "The version number of GPGME used.")
{
  "op": "import",
  "data": "-----BEGIN PGP PUBLIC KEY BLOCK-----
\n\nmQGiBDbjs5oRBACjAxqGzA6j190iiN/1vJvS5jYLQ1H3xxhzXdZ6ZxjPJkslX1ox\nFqBINhjzBJnV9/7b1FFe5
089NiCcGUVZa2xD3Vu+niLTAGNTQeNy6Y0E6wEfvplQ\nLJbpVGOmuVeZyShHNCKjrsZFtS1mr7o19SUb5Q
WS3gZHabFTbmhibcFBXwCg36qG\nVAnGcZzvnUTGpRy3xjp+zuED/2qTJNpnPhicKSksVwb6EJFXH7mQSZly
blAnOAVF\nMx19GUijW4MWP5FUdcTd5KzIDgkenRLBrpCLIFVkQ4/baP/hOiCLOmCoRu3xnFyo\nRPM/Jn94
Qy3Jo2wigwkhQU+zyOU5C85QBD9ctkbYp/0mu9bpxmYTchHwD1v3dXUX\nEVajA/9lnEz1GiI0bwKpm8VKXp
0YYP5hea8Jh5fNVb1QW2QqGd+XNHnRGSqX5smG\nyrs+xoYxD8+jv1FhmGaSv+6+n+JBVK4TuWrQpZ0cgZ
L5jZnX27TOYXeY4d5YKgE+\n7ZO57TwCIfF/P6puflGm+t5GcFwj4kkfohMEaeNhm1S+xf29q7QrVmljdG9yIFR
l\nc3QgKGRlbW8ga2V5KSA8dmljdG9yQGV4YW1wbGUub3JnPohVBBMRAgAVBQI247Oa\nAwsKAwMVAw
IDFgIBAheAAAoJEEevS2lh8EeEzEkAoMA+KfY9bA8EdfvWwa8zUM1S\nMs5rAKDS+6X3HVuCaLtVxzXOob
+DKbB7b7kBDQQ247O+EAQAh5FAgdvaTJL3jBGc\njYiiJosxeTWf3L/dUY99fZN8R39DSVoUKf9Rt/EsS5Dyw
XVnKAeJiUTYw8lbMRVF\n70VhSDHpMC9KtbB0lk3CcAqULPiyirT5g9ywN24W7k0naWIJisttUh+Hqbm6gc5P
\nz9Nfd5ll8x4Ehi3lKE6Nze3gUNMAAwUD/AtUN1hqwWTTphVZctHq3JaUEb9agmu/\nOcsf24/bq9i8R8FaMwB
F4fI5qIimcqAM+2BZ6dvZEdqrVaZR9aHjzchcHmaiI7Zm\nW4gmk+LHFFWf9y7mG8YDKFBXkaBuJpxFb1FIfJp
maLzJmRa76dLqI3A7H2E8dFQa\n/MGsYCa4NmILiEUEGBECAAYFAjbjs74ACgkQR69LaWHwR4RT3QCgn
MlRAiGtvL5l\nD4Gdo5F0KEP5zZEAlA6Ri9WmZ9Xiqw5R3Bsg+As8sJ4=\n=FRd4\n-----END
 PGP PUBLIC KEY BLOCK-----\n"
}
# -*- mode: org -*-
#+TITLE: A Short History of the GPGME bindings for Python
#+LATEX_COMPILER: xelatex
```

#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}

* Overview
 :PROPERTIES:
 :CUSTOM_ID: overview
 :END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

The GPGME Python bindings passed through many hands and numerous
phases before, after a fifteen year journey, coming full circle to
return to the source. This is a short explanation of that journey.

** In the beginning
  :PROPERTIES:
  :CUSTOM_ID: in-the-begining
   :END:

  In 2002 John Goerzen released PyME; Python bindings for the GPGME
  module which utilised the current release of Python of the time and
  SWIG.[fn:1] Shortly after creating it and ensuring it worked he stopped
  supporting it, though he left his work available on his Gopher
  site.

** Keeping the flame alive
  :PROPERTIES:
  :CUSTOM_ID: keeping-the-flame-alive
  :END:

  A couple of years later the project was picked up by Igor Belyi and
  actively developed and maintained by him from 2004 to 2008. Igor's
  whereabouts at the time of this document's creation are unknown,
  but the current authors do hope he is well. We're assuming (or
  hoping) that life did what life does and made continuing untenable.

** Passing the torch
  :PROPERTIES:

:CUSTOM_ID: passing-the-torch
:END:

In 2014 Martin Albrecht wanted to patch a bug in the PyME code and discovered the absence of Igor. Following a discussion on the PyME mailing list he became the new maintainer for PyME, releasing version 0.9.0 in May of that year. He remains the maintainer of the original PyME release in Python 2.6 and 2.7 (available via PyPI).

** Coming full circle
:PROPERTIES:
:CUSTOM_ID: ouroboros
:END:

In 2015 Ben McGinnes approached Martin about a Python 3 version, while investigating how complex a task this would be the task ended up being completed. A subsequent discussion with Werner Koch led to the decision to fold the Python 3 port back into the original GPGME release in the languages subdirectory for non-C bindings under the module name of =pyme3=.

In 2016 this PyME module was integrated back into the GPGME project by Justus Winter. During the course of this work Justus adjusted the port to restore limited support for Python 2, but not as many minor point releases as the original PyME package supports. During the course of this integration the package was renamed to more accurately reflect its status as a component of GPGME. The =pyme3= module was renamed to =gpg= and adopted by the upstream GnuPG team.

In 2017 Justus departed G10code and the GnuPG team. Following this Ben returned to maintain of gpgme Python bindings and continue building them from that point.

* Relics of the past
:PROPERTIES:
:CUSTOM_ID: relics-past
:END:

There are a few things, in addition to code specific factors, such as SWIG itself, which are worth noting here.

** The Annoyances of Git
:PROPERTIES:

:CUSTOM_ID: the-annoyances-of-git
:END:

As anyone who has ever worked with git knows, submodules are horrible way to deal with pretty much anything. In the interests of avoiding migraines, that was skipped with addition of the PyME code to GPGME.

Instead the files were added to a subdirectory of the =lang/= directory, along with a copy of the entire git log up to that point as a separate file within the =lang/python/docs/= directory.[fn:2] As the log for PyME is nearly 100KB and the log for GPGME is approximately 1MB, this would cause considerable bloat, as well as some confusion, should the two be merged.

Hence the unfortunate, but necessary, step to simply move the files. A regular repository version has been maintained should it be possible to implement this better in the future.

** The Perils of PyPI
:PROPERTIES:
:CUSTOM_ID: the-perils-of-pypi
:END:

The early port of the Python 2 =pyme= module as =pyme3= was never added to PyPI while the focus remained on development and testing during 2015 and early 2016. Later in 2016, however, when Justus completed his major integration work and subsequently renamed the module from =pyme3= to =gpg=, some prior releases were also provided through PyPI.

Since these bindings require a matching release of the GPGME libraries in order to function, it was determined that there was little benefit in also providing a copy
through PyPI since anyone
obtaining the GPGME source code would obtain the Python bindings source code at the same time. Whereas there was the potential to sew confusion amongst Python users installing the module from PyPI, only to discover that without the relevant C files, header files or SWIG compiled binaries, the Python module did them little good.

There are only two files on PyPI which might turn up in a search for this module or a sample of its content:

1. gpg (1.8.0) - Python bindings for GPGME GnuPG cryptography library
2. pyme (0.9.0) - Python support for GPGME GnuPG cryptography library

*** GPG 180 - Python bindings for GPGME GnuPG cryptography library
:PROPERTIES:
:CUSTOM_ID: pypi-gpgme-180
:END:

This is the most recent version to reach PyPI and is the version of the official Pyhon bindings which shipped with GPGME 1.8.0. If you have GPGME 1.8.0 installed and /only/ 1.8.0 installed, then it is probably safe to use
this copy from PyPI.

As there have been a lot of changes since the release of GPGME 1.8.0, the GnuPG Project recommends not using this version of the module and instead installing the current version of GPGME along with the Python bindings included with that package.

*** PyME 090 - Python support for GPGME GnuPG cryptography library
:PROPERTIES:
:CUSTOM_ID: pypi-gpgme-90
:END:

This is the last release of the PyME bindings maintained by Martin Albrecht and is only compatible with Python 2, it will not work with Python 3. This is the version of the software from which the port from Python 2 to Python 3 code was made in 2015.

Users of the more recent Python bindings will recognise numerous points of similarity, but also significant differences. It is likely that the more recent official bindings will feel "more pythonic."

For those using Python 2, there is essentially no harm in using this module, but it may lack
a number of more recent features
added to GPGME.

* Footnotes

[fn:1] In all likelihood this would have been Python 2.2 or possibly Python 2.3.

[fn:2] The entire PyME git log and other preceding VCS logs are located in the =gpgme/lang/python/docs/old-commits.log= file.

{
"op": "verify",
"data": "-----BEGIN PGP MESSAGE-----

\n\nowGbwMvMwCSoW1RzPCOz3ITxtFASQ/SbgPceiTk5+Qo+qaUlqVwd51kYBJkY+sUU\nWRb8d52wO1Hp7
fs8mxCYHlYmkAaDKQ0MQKDAwF5QlJqWWlSUmqKbmpuYmaObmpec\nn5KZl+5QkF6gl5yfC6RyM3NTlU
XAGrgZ+HMSS9MzQApyU71Ki0sUggtLU1OrUhV8\nU2WkMkpKCoqt9PXLy8v10vNK9fKL0vUL8nMykyv1G
bg4BWBuYP7OMN9VdOep8HTD\nKQLOd+7+Cshs6jVTfsMwT3sje7Pmui779IU/657Lb575u9z/LgA=\n=iqJ/\n--
---END PGP MESSAGE-----\n\n"
}
{
"manifest_version": 2,

"name": "gpgme-json with native Messaging",
"description": "A simple demo application",
"version": "0.1",
"content_security_policy": "default-src 'self' filesystem:",
"browser_action": {
  "default_icon": "testicon.png",
  "default_title": "gpgme.js",
  "default_popup": "popup.html"
},
"permissions": ["nativeMessaging", "activeTab"]
}
HACKING   -*- org -*-
#+TITLE: Hacking notes for GPGME
#+STARTUP: showall

* How to contribute
** No more ChangeLog files

Do not modify any of the ChangeLog files in GPGME. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist" time. As such, there are strict requirements on the
form of the commit log messages. The old ChangeLog files have all
be renamed to ChangeLog-2011

** Commit log requirements

Your commit log should always start with a one-line summary, the
second line should be blank, and the remaining lines are usually
ChangeLog-style entries for all affected files. However, it's fine
-- even recommended -- to write a few lines of prose describing the
change, when the summary and ChangeLog entries don't give enough of
the big picture. Omit the leading TABs that you're used to seeing
in a "real" ChangeLog
file, but keep the maximum line length at 72
or smaller, so that the generated ChangeLog lines, each with its
leading TAB, will not exceed 80 columns. If you want to add text
which shall not be copied to the ChangeLog, separate it by a line

consisting of two dashes at the begin of a line.

Note that ./autogen.sh installs a git hook to do some basic syntax
checking on the commit log message.

Typo fixes and documentation updates don't need a ChangeLog entry;
thus you would use a commit message like

#+begin_example
Fix typo in a comment

--
#+end_example

The marker line here is important; without it the first line would
appear in the ChangeLog.

If you exceptionally need to have longer lines in a commit log you may
do this after this scissor line:
#+begin_example
------------------------ >8 ------------------------
#+end_example
(hash, blank, 24 dashes, blank, scissor, blank, 24 dashes).
Note that such a comment will be removed if the
git commit option
=--cleanup-scissor= is used.

** License policy

GPGME is currently licensed under the LGPLv2.1+ with tools and the
manual being under the GPLv3+. We may eventually update to a newer
version of the licenses or a combination of them. It is thus
important, that all contributed code allows for an update of the
license; for example we can't accept code under the LGPLv2(only).

If you want to contribute code or documentation to GPGME you are
asked to assert that the contribution is in accordance to the "GPGME
Developer's Certificate of Origin" as found in the file "DCO".
Except for a slight wording change, this DCO is identical to the one
used by the Linux kernel. Please take these simple steps:

- Decide which mail address you want to use. Please have your real
  name in the address and not a pseudonym. Anonymous contributions
  can only be done if you find a proxy who certifies for you.

- If your employer or school might claim ownership
of code written
  by you; you need to talk to them to make sure that you have the

right to contribute under the DCO.

- Send an OpenPGP signed mail to the gnupg-devel@gnupg.org public
  mailing list from your mail address. Include a copy of the DCO as
  found in the official master branch. Insert your name and email
  address into the DCO in the same way you want to use it later.
  Example:

    Signed-off-by: Joe R. Hacker <joe@example.org>

  If you need it, you may perform simple transformations on the mail
  address: Replacing "@" by " at " or "." by " dot ".)

- That's it. From now on you only need to add a "Signed-off-by:"
  line with your name and mail address to the GIT commit message.
  It is recommended to send the patches using a PGP/MIME signed
  mail.

** Coding standards

Please follow the GNU coding standards. If you are in doubt consult
the existing code as an example. Do no re-indent code without a
need. If you really need to
do it, use a separate commit for such a
change.

- C99 syntax should not be used; stick to C90.
- Please do not use C++ =//= style comments.
- Try to fit lines into 80 columns.
- Ignore signed/unsigned pointer mismatches
- No arithmetic on void pointers; cast to char* first.

** Commit log keywords

- GnuPG-bug-id :: Values are comma or space delimited bug numbers
      from bug.gnupg.org pertaining to this commit.
- Debian-bug-id :: Same as above but from the Debian bug tracker.
- CVE-id :: CVE id number pertaining to this commit.
- Regression-due-to :: Commit id of the regression fixed by this commit.
- Fixes-commit :: Commit id this commit fixes.
- Reported-by :: Value is a name or mail address of a bug reporte.
- Suggested-by :: Value is a name or mail address of someone how
      suggested this change.
- Co-authored-by :: Name or mail address of a co-author
- Some-comments-by :: Name or mail address of the author of

      additional comments (commit log or code).
- Proofread-by :: Sometimes used by translation commits.

- Signed-off-by :: Name or mail address of the developer

* Debug hints

- Use gpgme-tool for manual tests.
- The envvar GPGME_DEBUG enables debugging; see debug.[ch] for
  details.

```
{
  "info": [{
              "protocol":     "OpenPGP"
        }, {
              "protocol":     "spawn",
              "fname":        "/nonexistent",
              "version":      "1.0.0",
              "req_version":  "1.0.0"
        }]
}
```

Configuration files may go here. Note that config.h.in is
auto-generated so that this file is not in git.

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-04-06 Werner Koch <wk@g10code.com>

* gpg-error.m4: Update from current libgpg-error repo.

2010-05-07 Werner Koch <wk@g10code.com>

* libassuan.m4: Update from libassuan svn.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* libassuan.m4: Fix LIBASSUAN_VERSION.

2006-06-08 Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Add --all to pth-config invocation.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Fix code generation (required for Max OS X).
Submitted by Emanuele Giaquinta <exg@gentoo.org>.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* glib-2.0.m4: New file.

2004-12-28 Werner Koch <wk@g10code.com>

* pth.m4: Changed quoting for use with automake 1.9.

2004-09-14
Marcus Brinkmann <marcus@g10code.de>

* pth.m4: Disable _ac_pth_line, and don't fail if Pth is not
found.

* glibc21.m4: New file.
* gpg-error.m4: New file.
* pth.m4: New file.

Copyright (C) 2004, 2005, 2009, 2010, 2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
GPGME Developer's Certificate of Origin. Version 1.0
==========

By making a contribution to the GPGME project, I certify that:

(a) The contribution was created in whole or in part by me and I
  have the right to submit it under the free software license
  indicated in the file; or

(b) The contribution is based upon previous work that, to the
  best of my knowledge, is covered under an appropriate free
  software license and I have the right under that license to
  submit that work with modifications, whether created in whole
  or in part by me, under the same free software license
  (unless I am permitted to submit under a different license),
  as indicated in the file; or

(c) The contribution was provided directly to me by some other
  person who certified (a), (b) or (c) and I have not modified
  it.

(d) I understand and agree that this project and the contribution
are public and that a record of the contribution
(including
all personal information I submit with it, including my
sign-off) is maintained indefinitely and may be redistributed
consistent with this project or the free software license(s)
involved.

Signed-off-by: [Your name and mail address]
1.15.1
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2008-11-08 Moritz <moritz@gnu.org>

* gpgme.lisp (size-t): Wrong call to defctype: function accepts
optional, not keyword argument.
(ssize-t): Likewise.
(off-t): Likewise.
(gpgme-data-t, gpgme-ctx-t): Likewise.
(gpgme-error-t): Likewise.
(gpgme-error-no-signal-t): Likewise.
(gpgme-err-code-t): Likewise.
(gpgme-err-source-t): Likewise.
(gpgme-sig-notation-t, gpgme-engine-info-t): Likewise.
(gpgme-subkey-t): Likewise.
(gpgme-key-sig-t): Likewise.
(gpgme-user-id-t): Likewise.
(gpgme-key-t): Likewise.
(gpgme-data-cbs-t): Likewise.
(gpgme-invalid-key-t): Likewise.
(gpgme-op-encrypt-result-t): Likewise.
(gpgme-recipient-t): Likewise.
(gpgme-op-decrypt-result-t): Likewise.
(gpgme-new-signature-t):
Likewise.
(gpgme-op-sign-result-t): Likewise.
(gpgme-signature-t): Likewise.
(gpgme-op-verify-result-t): Likewise.
(gpgme-import-status-t): Likewise.
(gpgme-op-import-result-t): Likewise.
(gpgme-op-genkey-result-t): Likewise.
(gpgme-op-keylist-result-t): Likewise.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

 * Initial release.

Copyright (C) 2006, 2008 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
{
  "op": "keylist",
  "keys": ["zulu@example.net"],
  "with-secret": false
}
{
  "op": "keylist",
  "keys": ["alpha@example.net", "bravo@example.net"],
  "chunksize": 64
}
000
 *H
010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0
981029180310Z
011231180310Z010 UDE1!0U
Deutsches Forschungsnetz10UDFN-PCA1.0,U%DFN Top Level Certification Authority1!0 *H
 certify@pca.dfn.de0"0
 *H
0
nskvS2r#iA4H|*/
:Sd;v
tD}L+~IWWD|eP&qH)
!1\p%,1.tIsmnQ,g-W)@\(t<kvm5j(d)9M_KGQJ0:qTE 00 `HB0) `HBhttps://mystic.pca.dfn.de/0A
`HB42http://www.pca.dfn.de/dfnpca/policy/wwwpolicy.html08 `HB
+)The DFN Top Level Certification Authority0! `HBcgi/check-rev.cgi?0 `HB
dfnpca.crl0U00U0
 *H
`^[:8\e7*%QC?:/JVgwPUB
OgGqjGVxl50%<`Pb18 z;t~r0U<A%3#l'8b"<iX"V!k"*Q8&hAPI"3 00KUb&Qq'46_{D[JZ!i<=T
/OF
{
  "type": "keys",
  "base64": false,

```
  "data": "-----BEGIN PGP PUBLIC KEY BLOCK-----
\n\nmQGiBDbjs5oRBACjAxqGzA6j190iiN/1vJvS5jYLQ1H3xxhzXdZ6ZxjPJkslX1ox\nFqBINhjzBJnV9/7b1FFe5
089NiCcGUVZa2xD3Vu+niLTAGNTQeNy6Y0E6wEfvplQ\nLJbpVGOmuVeZyShHNCKjrsZFtS1mr7o19SUb5Q
WS3gZHabFTbmhibcFBXwCg36qG\nVAnGcZzvnUTGpRy3xjp+zuED/2qTJNpnPhicKSksVwb6EJFXH7mQSZly
blAnOAVF\nMx19GUijW4MWP5FUdcTd5KzIDgkenRLBrpCLIFVkQ4/baP/hOiCLOmCoRu3xnFyo\nRPM/Jn94
Qy3Jo2wigwkhQU+zyOU5C85QBD9ctkbYp/0mu9bpxmYTchHwD1v3dXUX\nEVajA/9lnEz1GiI0bwKpm8VKXp
0YYP5hea8Jh5fNVb1QW2QqGd+XNHnRGSqX5smG\nyrs+xoYxD8+jv1FhmGaSv+6+n+JBVK4TuWrQpZ0cgZ
L5jZnX27TOYXeY4d5YKgE+\n7ZO57TwCIfF/P6puflGm+t5GcFwj4kkfohMEaeNhm1S+xf29q7QrVmljdG9yIFR
l\nc3QgKGRlbW8ga2V5KSA8dmljdG9yQGV4YW1wbGUub3JnPohVBBMRAgAVBQI247Oa\nAwsKAwMVAw
IDFgIBAheAAAoJEEevS2lh8EeEzEkAoMA+KfY9bA8EdfvWwa8zUM1S\nMs5rAKDS+6X3HVuCaLtVxzXOob
+DKbB7b7kBDQQ247O+EAQAh5FAgdvaTJL3jBGc\njYiiJosxeTWf3L/dUY99fZN8R39DSVoUKf9Rt/EsS5Dyw
XVnKAeJiUTYw8lbMRVF\n70VhSDHpMC9KtbB0lk3CcAqULPiyirT5g9ywN24W7k0naWIJisttUh+Hqbm6gc5P
\nz9Nfd5ll8x4Ehi3lKE6Nze3gUNMAAwUD/AtUN1hqwWTTphVZctHq3JaUEb9agmu/\nOcsf24/bq9i8R8FaMwB
F4fI5qIimcqAM+2BZ6dvZEdqrVaZR9aHjzchcHmaiI7Zm\nW4gmk+LHFFWf9y7mG8YDKFBXkaBuJpxFb1FIfJp
maLzJmRa76dLqI3A7H2E8dFQa\n/MGsYCa4NmILiEUEGBECAAYFAjbjs74ACgkQR69LaWHwR4RT3QCgn
MlRAiGtvL5l\nD4Gdo5F0KEP5zZEAlA6Ri9WmZ9Xiqw5R3Bsg+As8sJ4=\n=FRd4\n-----END
 PGP PUBLIC KEY BLOCK-----\n"
}
{
  "op": "encrypt",
  "keys": ["alpha@example.net", "victor@example.org"],
  "signing_keys": ["A0FF4590BB6122EDEF6E3C542D727CC768697734"],
  "data": "Hello world",
  "armor": true,
  "always-trust": true
}
{
 "option":      {
       "name": "default-key",
       "argname":      "NAME"
 }
}
# -*- mode: org -*-
#+TITLE: What Was New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* What Was New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:
```

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

The following are all the past /What's New/ sections for the Python Bindings HOWTO and other documentation.

** What Was New in GPGME 1120
:PROPERTIES:

:CUSTOM_ID: gpgme-1-12-0
:END:

The most obviously new point for those reading this guide is this section on other new things, but thats hardly important. Not given all the other things which spurred the need for adding this section and its subsections.

*** New in GPGME 1120
:PROPERTIES:
:CUSTOM_ID: new-stuff-1-12-0
:END:

There have been quite a number of additions to GPGME and the Python bindings to it since the last release of GPGME with versions 1.11.0 and 1.11.1 in April, 2018.

The bullet points of new additiions are:

- an expanded section on [[file:gpgme-python-howto#installation][installing]] and [[file:gpgme-python-howto#snafu][troubleshooting]] the Python bindings.
- The release of Python 3.7.0; which appears to be working just fine with our bindings, in spite of intermittent reports of problems for many other Python projects with that new release.
- Python 3.7 has been moved to the head of the specified python versions list in the build process.
- In order to fix some other issues, there are certain underlying functions which are more exposed through the [[file:gpgme-python-howto#howto-get-context][gpg.Context()]], but ongoing documentation ought to clarify that or otherwise provide the best means of using the bindings. Some additions to =gpg.core= and

the =Context()=, however, were intended (see below).
- Continuing work in identifying and confirming the cause of
oft-reported [[file:gpgme-python-howto#snafu-runtime-not-funtime][problems installing the Python bindings on Windows]].
- GSOC: Google's Surreptitiously Ordered Conscription ... erm ... oh,
right; Google's Summer of Code. Though there were two hopeful
candidates this year; only one ended up involved with the GnuPG
Project directly, the other concentrated on an unrelated third party
project with closer ties to one of the GNU/Linux distributions than
to the GnuPG Project. Thus the Python bindings benefited from GSOC
participant Jacob Adams, who added
the key_import function; building
on prior work by Tobias Mueller.
- Several new methods functions were added to the gpg.Context(),
including: [[file:gpgme-python-howto#howto-import-key][key_import]], [[file:gpgme-python-howto#howto-export-key][key_export]], [[file:gpgme-python-howto#howto-export-public-key][key_export_minimal]] and
[[file:gpgme-python-howto#howto-export-secret-key][key_export_secret]].
- Importing and exporting examples include versions integrated with
Marcel Fest's recently released [[https://github.com/Selfnet/hkp4py][HKP for Python]] module. Some
[[file:gpgme-python-howto#hkp4py][additional notes on this module]] are included at the end of the HOWTO.
- Instructions for dealing with semi-walled garden implementations
like ProtonMail are also included. This is intended to make things
a little easier when communicating with users of ProtonMail's
services and should not be construed as an endorsement of said
service. The GnuPG Project neither favours,
nor disfavours
ProtonMail and the majority of this deals with interacting with the
ProtonMail keyserver.
- Semi-formalised the location where [[file:gpgme-python-howto#draft-editions][draft versions]] of this HOWTO may
periodically be accessible. This is both for the reference of
others and testing the publishing of the document itself. Renamed
this file at around the same time.
- The Texinfo documentation build configuration has been replicated
from the parent project in order to make to maintain consistency
with that project (and actually ship with each release).
- a reStructuredText (=.rst=) version is also generated for Python
developers more used to and comfortable with that format as it is
the standard Python documentation format and Python developers may
wish to use it with Sphinx. Please note that there has been no
testing of the reStructuredText version with Sphinx at all. The
reST file was generated by the simple expedient of using [[https://pandoc.org/][Pandoc]].
-
Added a new section for [[file:gpgme-python-howto#advanced-use][advanced or experimental use]].
- Began the advanced use cases with [[file:gpgme-python-howto#cython][a section]] on using the module with
[[https://cython.org/][Cython]].
- Added a number of new scripts to the =example/howto/= directory;
some of which may be in advance of their planned sections of the

HOWTO (and some are just there because it seemed like a good idea at
the time).
- Cleaned up a lot of things under the hood.
This is gpgme.info, produced by makeinfo version 6.5 from gpgme.texi.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.
INFO-DIR-SECTION GNU Libraries
START-INFO-DIR-ENTRY
* GPGME: (gpgme).   Adding support for cryptography to your program.
END-INFO-DIR-ENTRY

This file documents the GPGME library.

This is Edition 1.14.1-beta35, last updated 13 December 2019, of The
GnuPG Made Easy Reference Manual, for Version
1.14.1-beta35.

Copyright 20022008, 2010, 20122018 g10 Code GmbH.

Permission is granted to copy, distribute and/or modify this
document under the terms of the GNU General Public License as
published by the Free Software Foundation; either version 3 of the
License, or (at your option) any later version. The text of the
license can be found in the section entitled Copying.

This document is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General
Public License for more details.

File: gpgme.info, Node: UI Server Decrypt, Next: UI Server Verify, Prev: UI Server Sign, Up: UI Server Protocol

A.3 UI Server: Decrypt a Message
==========

Decryption may include the verification of OpenPGP messages. This is

due to the often used combined signing/encryption modus of OpenPGP. The client may pass an option
to the server to inhibit the signature
verification. The following two commands are required to set the input and output file descriptors:

-- Command: INPUT FD=N
Set the file descriptor for the message to be decrypted to N. The message send to the server is either binary encoded or in the case of OpenPGP ASCII armored. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is binary encoded. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

The decryption is started with the command:

-- Command: DECRYPT --protocol=NAME [--no-verify]
[--export-session-key]
NAME is the encryption protocol used for the message. For a description of the allowed protocols see the ENCRYPT command. This argument is mandatory. If the option --no-verify is given, the server
should not try to verify a signature, in case the input data is an OpenPGP combined message. If the option --export-session-key is given and the underlying engine knows how to export the session key, it will appear on a status line

File: gpgme.info, Node: UI Server Verify, Next: UI Server Set Input Files, Prev: UI Server Decrypt, Up: UI Server Protocol

A.4 UI Server: Verify a Message
==========

The server needs to support the verification of opaque signatures as well as detached signatures. The kind of input sources controls what kind message is to be verified.

-- Command: MESSAGE FD=N
This command is used with detached signatures to set the file descriptor for the signed data to N. The data is binary encoded (used verbatim). For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: INPUT FD=N
Set the file descriptor for the opaque message or the signature part
of a detached signature to N. The message send to the server is either binary encoded or in the case of OpenPGP ASCII armored. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

-- Command: OUTPUT FD=N
Set the file descriptor to be used for the output. The output is binary encoded and only used for opaque signatures. For details on the file descriptor, see the description of INPUT in the ENCRYPT section.

The verification is then started using:

-- Command: VERIFY --protocol=NAME [--silent]
NAME is the signing protocol used for the message. For a description of the allowed protocols see the ENCRYPT command. This argument is mandatory. Depending on the combination of MESSAGE INPUT and OUTPUT commands, the server needs to select the appropriate verification mode:

MESSAGE and INPUT
This indicates a detached signature. Output data is not applicable.

INPUT
This indicates an opaque signature. As no output command has been given, the server is only required to check the signature.

INPUT and OUTPUT
This indicates an opaque signature. The server shall write the signed data to the file descriptor set by the output command. This data shall even be written if the signatures cant be verified.

With --silent the server shall not display any dialog; this is for example used by the client to get the content of opaque signed messages. The client expects the server to send at least this status information before the final OK response:

-- Status line: SIGSTATUS FLAG DISPLAYSTRING
Returns the status for the signature and a short string explaining the status. Valid values for FLAG are:

none
The message has a signature but it could not not be verified

due to a missing key.

green
The signature is fully valid.

yellow
The signature is valid but additional information was shown
regarding the validity of the key.

red
The signature is not valid.

DISPLAYSTRING is a percent-and-plus-encoded string with a short
human readable description of the status. For example

S SIGSTATUS green Good+signature+from+Keith+Moon+<keith@example.net>

Note that this string needs to fit into an Assuan line and should
be short enough to be displayed as short one-liner on the clients
window. As usual the encoding of this string is UTF-8 and it
should be send in its translated form.

The server shall send one status line for every signature found on
the message.

File: gpgme.info, Node: UI Server Set Input Files, Next: UI Server Sign/Encrypt Files, Prev: UI Server Verify, Up: UI Server Protocol

A.5 UI Server: Specifying the input files to operate on.
==========

All file related UI
server commands operate on a number of input files
or directories, specified by one or more FILE commands:

-- Command: FILE [--clear] NAME
Add the file or directory NAME to the list of pathnames to be
processed by the server. The parameter NAME must be an absolute
path name (including the drive letter) and is percent espaced (in
particular, the characters %, = and white space characters are
always escaped). If the option --clear is given, the list of
files is cleared before adding NAME.

Historical note: The original spec did not define --clear but the
keyword --continued after the file name to indicate that more
files are to be expected. However, this has never been used and
thus removed from the specs.

File: gpgme.info, Node: UI Server Sign/Encrypt Files, Next: UI Server Verify/Decrypt Files, Prev: UI Server Set Input Files, Up: UI Server Protocol

A.6 UI Server: Encrypting and signing files.
==========

First,
the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: ENCRYPT_FILES --nohup
-- Command: SIGN_FILES --nohup
-- Command: ENCRYPT_SIGN_FILES --nohup
Request that the files specified by FILE are encrypted and/or signed. The command selects the default action. The UI server may allow the user to change this default afterwards interactively, and even abort the operation or complete it only on some of the selected files and directories.

What it means to encrypt or sign a file or directory is specific to the preferences of the user, the functionality the UI server provides, and the selected protocol. Typically, for each input file a new file is created under the original filename plus a protocol specific extension (like .gpg or .sig), which contain the encrypted/signed file or a detached signature. For directories, the server may offer
multiple options to the user (for
example ignore or process recursively).

The ENCRYPT_SIGN_FILES command requests a combined sign and encrypt operation. It may not be available for all protocols (for example, it is available for OpenPGP but not for CMS).

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: UI Server Verify/Decrypt Files, Next: UI Server Import/Export Keys, Prev: UI Server Sign/Encrypt Files, Up: UI Server Protocol

A.7 UI Server: Decrypting and verifying files.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: DECRYPT_FILES --nohup
-- Command: VERIFY_FILES --nohup
-- Command: DECRYPT_VERIFY_FILES
--nohup
Request that the files specified by FILE are decrypted and/or verified. The command selects the default action. The UI server may allow the user to change this default afterwards interactively, and even abort the operation or complete it only on some of the selected files and directories.

What it means to decrypt or verify a file or directory is specific to the preferences of the user, the functionality the UI server provides, and the selected protocol. Typically, for decryption, a new file is created for each input file under the original filename minus a protocol specific extension (like .gpg) which contains the original plaintext. For verification a status is displayed for each signed input file, indicating if it is signed, and if yes, if the signature is valid. For files that are signed and encrypted, the VERIFY command transiently decrypts the file to verify the enclosed signature. For directories,
the server may offer multiple
options to the user (for example ignore or process recursively).

The option --nohup is mandatory. It is currently unspecified what should happen if --nohup is not present. Because --nohup is present, the server always returns OK promptly, and completes the operation asynchronously.

File: gpgme.info, Node: UI Server Import/Export Keys, Next: UI Server Checksum Files, Prev: UI Server Verify/Decrypt Files, Up: UI Server Protocol

A.8 UI Server: Managing certificates.
==========

First, the input files need to be specified by one or more FILE commands. Afterwards, the actual operation is requested:

-- Command: IMPORT_FILES --nohup
Request that the certificates contained in the files specified by FILE are imported into the local certificate databases.

For directories, the server may offer multiple options to the user (for example ignore or process recursively).

The
option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup

is present, the server always returns OK promptly, and completes
the operation asynchronously.

FIXME: It may be nice to support an EXPORT command as well, which
is enabled by the context menu of the background of a directory.

File: gpgme.info, Node: UI Server Checksum Files, Next: Miscellaneous UI Server Commands, Prev: UI Server Import/Export Keys, Up: UI Server Protocol

A.9 UI Server: Create and verify checksums for files.
==========

First, the input files need to be specified by one or more FILE
commands. Afterwards, the actual operation is requested:

-- Command: CHECKSUM_CREATE_FILES --nohup
Request that checksums are created for the files specified by
FILE. The choice of checksum algorithm and the destination
storage and format for the created checksums depend on the

preferences of the user and the functionality provided by the UI
server. For directories, the server may offer multiple options to
the user (for example ignore or process recursively).

The option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup
is present, the server always returns OK promptly, and completes
the operation asynchronously.

-- Command: CHECKSUM_VERIFY_FILES --nohup
Request that checksums are created for the files specified by
FILE and verified against previously created and stored
checksums. The choice of checksum algorithm and the source storage
and format for previously created checksums depend on the
preferences of the user and the functionality provided by the UI
server. For directories, the server may offer multiple options to
the user (for example ignore or process recursively).

If the source storage of previously created checksums
is available
to the user through the Windows shell, this command may also accept
such checksum files as FILE arguments. In this case, the UI
server should instead verify the checksum of the referenced files
as if they were given as INPUT files.

The option --nohup is mandatory. It is currently unspecified
what should happen if --nohup is not present. Because --nohup

is present, the server always returns OK promptly, and completes
the operation asynchronously.

File: gpgme.info, Node: Miscellaneous UI Server Commands, Prev: UI Server Checksum Files, Up: UI Server Protocol

A.10 Miscellaneous UI Server Commands
==========

The server needs to implement the following commands which are not
related to a specific command:

-- Command: GETINFO WHAT
This is a multi purpose command, commonly used to return a variety
of information. The required subcommands as described by the WHAT
parameter are:

pid
Return the process id of the server in decimal notation using
an Assuan data line.

To allow the server to pop up the windows in the correct relation to the
client, the client is advised to tell the server by sending the option:

-- Command option: window-id NUMBER
The NUMBER represents the native window ID of the clients current
window. On Windows systems this is a windows handle (HWND) and
on X11 systems it is the X Window ID. The number needs to be
given as a hexadecimal value so that it is easier to convey pointer
values (e.g. HWND).

A client may want to fire up the certificate manager of the server. To
do this it uses the Assuan command:

-- Command: START_KEYMANAGER
The server shall pop up the main window of the key manager (aka
certificate manager). The client expects that the key manager is
brought into the foregound and that this command immediately
returns (does not wait until the key manager has
been fully brought
up).

A client may want to fire up the configuration dialog of the server. To
do this it uses the Assuan command:

-- Command: START_CONFDIALOG
The server shall pop up its configuration dialog. The client

expects that this dialog is brought into the foregound and that this command immediately returns (i.e. it does not wait until the dialog has been fully brought up).

When doing an operation on a mail, it is useful to let the server know the address of the sender:

-- Command: SENDER [--info] [--protocol=NAME] EMAIL
EMAIL is the plain ASCII encoded address ("addr-spec" as per RFC-2822) enclosed in angle brackets. The address set with this command is valid until a successful completion of the operation or until a RESET command. A second command overrides the effect of the first one; if EMAIL is not given and --info is not used, the server shall use the default signing key.

If option --info is not given, the server shall also suggest a protocol to use for signing. The client may use this suggested protocol on its own discretion. The same status line as with PREP_ENCRYPT is used for this.

The option --protocol may be used to give the server a hint on which signing protocol should be preferred.

To allow the UI-server to visually identify a running operation or to associate operations the server MAY support the command:

-- Command: SESSION NUMBER [STRING]
The NUMBER is an arbitrary value, a server may use to associate simultaneous running sessions. It is a 32 bit unsigned integer with 0 as a special value indicating that no session association shall be done.

If STRING is given, the server may use this as the title of a window or, in the case of an email operation, to extract the senders address. The string may contain spaces; thus no plus-escaping is used.

This command may be used at any time and overrides the effect of the last command. A RESET undoes the effect of this command.

File: gpgme.info, Node: Debugging, Next: Deprecated Functions, Prev: UI Server Protocol, Up: Top

Appendix B How to solve problems
****

Everyone knows that software often does not do what it should do and thus there is a need to track down problems. This is in particular true for applications using a complex library like GPGME and of course also for the library itself. Here we give a few hints on how to solve such problems.

First of all you should make sure that the keys you want to use are installed in the GnuPG engine and are usable. Thus the first test is to run the desired operation using gpg or gpgsm on the command line. If you cant figure out why things dont work, you may use GPGMEs built in trace feature. This feature is either enabled using the environment variable GPGME_DEBUG or, if this is not possible, by calling the function gpgme_set_global_flag. The value is the trace level and an optional file name. If no file name is given the trace output is printed to stderr.

For example

```
GPGME_DEBUG=9:/home/user/mygpgme.log
```

(Note that under Windows you use a semicolon in place of the colon to separate the fields.)

A trace level of 9 is pretty verbose and thus you may want to start off with a lower level. The exact definition of the trace levels and the output format may change with any release; you need to check the source code for details. In any case the trace log should be helpful to understand what is going going on. Warning: The trace log may reveal sensitive details like passphrases or other data you use in your application. If you are asked to send a log file, make sure that you run your tests only with play data.

File: gpgme.info, Node: Deprecated Functions, Next: Library Copying, Prev: Debugging, Up: Top

Appendix C Deprecated Functions

For backward compatibility GPGME has a number of functions, data types and constants which are deprecated and should not be used anymore. We document here those which are really old to help understanding old code and to allow migration to their modern counterparts.

Warning: These interfaces will be removed in a future version of GPGME.

-- Function: void gpgme_key_release (gpgme_key_t KEY)
The function gpgme_key_release is equivalent to

gpgme_key_unref.

-- Function: gpgme_error_t gpgme_op_import_ext (gpgme_ctx_t CTX,
gpgme_data_t KEYDATA, int *NR)
SINCE: 0.3.9

The function gpgme_op_import_ext is equivalent to:

```
gpgme_error_t err = gpgme_op_import (ctx, keydata);
if (!err)
  {
    gpgme_import_result_t result = gpgme_op_import_result (ctx);
    *nr = result->considered;
  }
```

-- Data type: gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE,
gpgme_status_code_t STATUS, const char *ARGS, int FD)
The gpgme_edit_cb_t
type is the type of functions which GPGME
calls if it a key edit operation is on-going. The status code
STATUS and the argument line ARGS are passed through by GPGME from
the crypto engine. The file descriptor FD is -1 for normal status
messages. If STATUS indicates a command rather than a status
message, the response to the command should be written to FD. The
HANDLE is provided by the user at start of operation.

The function should return GPG_ERR_FALSE if it did not handle the
status code, 0 for success, or any other error value.

-- Function: gpgme_error_t gpgme_op_edit (gpgme_ctx_t CTX,
gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE,
gpgme_data_t OUT)
SINCE: 0.3.9

Note: This function is deprecated, please use gpgme_op_interact
instead.

The function gpgme_op_edit processes the key KEY interactively,
using the edit callback function FNC with the handle HANDLE. The
callback is
invoked for every status and command request from the
crypto engine. The output of the crypto engine is written to the
data object OUT.

Note that the protocol between the callback function and the crypto
engine is specific to the crypto engine and no further support in
implementing this protocol correctly is provided by GPGME.

The function returns the error code GPG_ERR_NO_ERROR if the edit operation completes successfully, GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer, and any error returned by the crypto engine or the edit callback handler.

-- Function: gpgme_error_t gpgme_op_edit_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

SINCE: 0.3.9

Note: This function is deprecated, please use gpgme_op_interact_start instead.

The function gpgme_op_edit_start initiates a gpgme_op_edit operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_op_card_edit (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

Note: This function is deprecated, please use gpgme_op_interact with the flag GPGME_INTERACT_CARD instead.

The function gpgme_op_card_edit is analogous to gpgme_op_edit, but should be used to process the smart card corresponding to the key KEY.

-- Function: gpgme_error_t gpgme_op_card_edit_start (gpgme_ctx_t CTX, gpgme_key_t KEY, gpgme_edit_cb_t FNC, void *HANDLE, gpgme_data_t OUT)

Note: This function is deprecated, please use gpgme_op_interact_start with the flag GPGME_INTERACT_CARD instead.

The function gpgme_op_card_edit_start initiates a

gpgme_op_card_edit operation. It can be completed by calling gpgme_wait on the context. *Note Waiting For Completion::.

The function returns the error code GPG_ERR_NO_ERROR if the operation was started successfully, and GPG_ERR_INV_VALUE if CTX or KEY is not a valid pointer.

-- Function: gpgme_error_t gpgme_data_new_with_read_cb
(gpgme_data_t *DH, int (*READFUNC) (void *HOOK, char *BUFFER,
size_t COUNT, size_t *NREAD), void *HOOK_VALUE)
The function gpgme_data_new_with_read_cb creates a new
gpgme_data_t object and uses the callback function READFUNC to
retrieve the data on demand. As the callback function can supply
the data in any way it wants, this is the most flexible data type
GPGME provides. However, it can not be used to write data.

The callback function receives HOOK_VALUE as its first argument
whenever it is invoked. It should return up to COUNT bytes in
BUFFER, and return the number of bytes
actually read in NREAD. It
may return 0 in NREAD if no data is currently available. To
indicate EOF the function should return with an error code of
-1 and set NREAD to 0. The callback function may support to
reset its internal read pointer if it is invoked with BUFFER and
NREAD being NULL and COUNT being 0.

The function returns the error code GPG_ERR_NO_ERROR if the data
object was successfully created, GPG_ERR_INV_VALUE if DH or
READFUNC is not a valid pointer, and GPG_ERR_ENOMEM if not enough
memory is available.

-- Function: gpgme_error_t gpgme_data_rewind (gpgme_data_t DH)
The function gpgme_data_rewind is equivalent to:

```
return (gpgme_data_seek (dh, 0, SEEK_SET) == -1)
  ? gpgme_error_from_errno (errno) : 0;
```

-- Data type: gpgme_attr_t
The gpgme_attr_t type is used to specify a key or trust item
attribute. The following attributes are defined:

GPGME_ATTR_KEYID
This is the
key ID of a sub key. It is representable as a
string.

GPGME_ATTR_FPR
This is the fingerprint of a sub key. It is representable as
a string.

GPGME_ATTR_ALGO
This is the crypto algorithm for which the sub key can be
used. It is representable as a string and as a number. The
numbers correspond to the enum gcry_pk_algos values in the

gcrypt library.

GPGME_ATTR_LEN
This is the key length of a sub key. It is representable as a number.

GPGME_ATTR_CREATED
This is the timestamp at creation time of a sub key. It is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time of a sub key. It is representable as a number.

GPGME_ATTR_USERID
This is a user ID. There can be more than one user IDs in a GPGME_KEY_T object. The first one (with index 0) is the primary user ID. The user ID
is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

GPGME_ATTR_VALIDITY
This is the validity belonging to a user ID. It is representable as a string and as a number. See below for a list of available validities.

GPGME_ATTR_UID_REVOKED
This specifies if a user ID is revoked. It is representable as a number, and is 1 if the user ID is revoked, and 0 otherwise.

GPGME_ATTR_UID_INVALID
This specifies if a user ID is invalid. It is representable as a number, and is 1 if the user ID is invalid, and 0 otherwise.

GPGME_ATTR_TYPE

This
returns information about the type of key. For the
string function this will eother be "PGP" or "X.509". The
integer function returns 0 for PGP and 1 for X.509.

GPGME_ATTR_IS_SECRET
This specifies if the key is a secret key. It is
representable as a number, and is 1 if the key is revoked,
and 0 otherwise.

GPGME_ATTR_KEY_REVOKED
This specifies if a sub key is revoked. It is representable
as a number, and is 1 if the key is revoked, and 0
otherwise.

GPGME_ATTR_KEY_INVALID
This specifies if a sub key is invalid. It is representable
as a number, and is 1 if the key is invalid, and 0
otherwise.

GPGME_ATTR_KEY_EXPIRED
This specifies if a sub key is expired. It is representable
as a number, and is 1 if the key is expired, and 0
otherwise.

GPGME_ATTR_KEY_DISABLED
This specifies if a sub key is disabled. It is
representable
as a number, and is 1 if the key is disabled, and 0
otherwise.

GPGME_ATTR_KEY_CAPS
This is a description of the capabilities of a sub key. It is
representable as a string. The string contains the letter e
if the key can be used for encryption, s if the key can be
used for signatures, and c if the key can be used for
certifications.

GPGME_ATTR_CAN_ENCRYPT
This specifies if a sub key can be used for encryption. It is
representable as a number, and is 1 if the sub key can be
used for encryption, and 0 otherwise.

GPGME_ATTR_CAN_SIGN
This specifies if a sub key can be used to create data
signatures. It is representable as a number, and is 1 if
the sub key can be used for signatures, and 0 otherwise.

GPGME_ATTR_CAN_CERTIFY
This specifies if a sub key can be used to create key
certificates. It is representable
as a number, and is 1 if
the sub key can be used for certifications, and 0 otherwise.

GPGME_ATTR_SERIAL
The X.509 issuer serial attribute of the key. It is
representable as a string.

GPGME_ATTR_ISSUE
The X.509 issuer name attribute of the key. It is
representable as a string.

GPGME_ATTR_CHAINID
The X.509 chain ID can be used to build the certification
chain. It is representable as a string.

-- Function: const char * gpgme_key_get_string_attr (gpgme_key_t KEY,
gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_string_attr returns the value of the
string-representable attribute WHAT of key KEY. If the attribute
is an attribute of a sub key or an user ID, IDX specifies the sub
key or user ID of which the attribute value is returned. The
argument RESERVED is reserved for later use and should be NULL.

The string returned is
only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a
string, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

-- Function: unsigned long gpgme_key_get_ulong_attr (gpgme_key_t KEY,
gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_get_ulong_attr returns the value of the
number-representable attribute WHAT of key KEY. If the attribute
is an attribute of a sub key or an user ID, IDX specifies the sub
key or user ID of which the attribute value is returned. The
argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if the attribute cant be returned as a
number, KEY is not a valid pointer, IDX out of range, or RESERVED
not NULL.

The signatures on a key are only available if the key was retrieved
via a listing operation with the GPGME_KEYLIST_MODE_SIGS mode enabled,
because it is expensive to retrieve

all signatures of a key.

So, before using the below interfaces to retrieve the signatures on a key, you have to make sure that the key was listed with signatures enabled. One convenient, but blocking, way to do this is to use the function gpgme_get_key.

-- Data type: gpgme_attr_t
The gpgme_attr_t type is used to specify a key signature attribute. The following attributes are defined:

GPGME_ATTR_KEYID
This is the key ID of the key which was used for the signature. It is representable as a string.

GPGME_ATTR_ALGO
This is the crypto algorithm used to create the signature. It is representable as a string and as a number. The numbers correspond to the enum gcry_pk_algos values in the gcrypt library.

GPGME_ATTR_CREATED
This is the timestamp at creation time of the signature. It is representable as a number.

GPGME_ATTR_EXPIRE
This is the expiration time
of the signature. It is
representable as a number.

GPGME_ATTR_USERID
This is the user ID associated with the signing key. The user ID is representable as a number.

GPGME_ATTR_NAME
This is the name belonging to a user ID. It is representable as a string.

GPGME_ATTR_EMAIL
This is the email address belonging to a user ID. It is representable as a string.

GPGME_ATTR_COMMENT
This is the comment belonging to a user ID. It is representable as a string.

GPGME_ATTR_KEY_REVOKED
This specifies if a key signature is a revocation signature.

It is representable as a number, and is 1 if the key is revoked, and 0 otherwise.

GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_CLASS
This specifies the signature class of a key signature. It is representable as a number. The meaning is specific to the crypto engine.

GPGME_ATTR_SIG_STATUS
This is the same value as returned by gpgme_get_sig_status.

-- Function: const char * gpgme_key_sig_get_string_attr (gpgme_key_t KEY, int UID_IDX, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_sig_get_string_attr returns the value of the string-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The string returned is only valid as long as the key is valid.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Function: unsigned long gpgme_key_sig_get_ulong_attr (gpgme_key_t KEY, int UID_IDX, gpgme_attr_t WHAT, const void *RESERVED, int IDX)
The function gpgme_key_sig_get_ulong_attr returns the value of the number-representable attribute WHAT of the signature IDX on the user ID UID_IDX in the key KEY. The argument RESERVED is reserved for later use and should be NULL.

The function returns 0 if an attribute cant be returned as a string, KEY is not a valid pointer, UID_IDX or IDX out of range, or RESERVED not NULL.

-- Data type: enum gpgme_sig_stat_t
The gpgme_sig_stat_t type holds the result of a signature check, or the combined result of all signatures. The following results are possible:

GPGME_SIG_STAT_NONE
This status should not occur in normal operation.

GPGME_SIG_STAT_GOOD
This status indicates that the signature is valid. For the combined result this status means that all signatures are valid.

GPGME_SIG_STAT_GOOD_EXP
This status indicates that
the signature is valid but expired.
For the combined result this status means that all signatures are valid and expired.

GPGME_SIG_STAT_GOOD_EXPKEY
This status indicates that the signature is valid but the key used to verify the signature has expired. For the combined result this status means that all signatures are valid and all keys are expired.

GPGME_SIG_STAT_BAD
This status indicates that the signature is invalid. For the combined result this status means that all signatures are invalid.

GPGME_SIG_STAT_NOKEY
This status indicates that the signature could not be verified due to a missing key. For the combined result this status means that all signatures could not be checked due to missing keys.

GPGME_SIG_STAT_NOSIG
This status indicates that the signature data provided was not a real signature.

GPGME_SIG_STAT_ERROR
This status indicates that there was some other error which prevented the signature verification.

GPGME_SIG_STAT_DIFF
For the combined result this status means that at least two signatures have a different status. You can get each keys status with gpgme_get_sig_status.

-- Function: const char * gpgme_get_sig_status (gpgme_ctx_t CTX, int IDX, gpgme_sig_stat_t *R_STAT, time_t *R_CREATED)
The function gpgme_get_sig_status is equivalent to:

```
 gpgme_verify_result_t result;
 gpgme_signature_t sig;

 result = gpgme_op_verify_result (ctx);
 sig = result->signatures;

 while (sig && idx)
   {
     sig = sig->next;
     idx--;
   }
 if (!sig || idx)
   return NULL;

 if (r_stat)
   {
     switch (gpg_err_code (sig->status))
{
case GPG_ERR_NO_ERROR:
   *r_stat = GPGME_SIG_STAT_GOOD;
  break;

case GPG_ERR_BAD_SIGNATURE:
  *r_stat = GPGME_SIG_STAT_BAD;
  break;

case GPG_ERR_NO_PUBKEY:
  *r_stat = GPGME_SIG_STAT_NOKEY;
  break;

case GPG_ERR_NO_DATA:
  *r_stat = GPGME_SIG_STAT_NOSIG;
  break;

case GPG_ERR_SIG_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXP;
  break;

case GPG_ERR_KEY_EXPIRED:
  *r_stat = GPGME_SIG_STAT_GOOD_EXPKEY;
  break;

default:
  *r_stat = GPGME_SIG_STAT_ERROR;
  break;
}
   }
```

```
          if (r_created)
            *r_created = sig->timestamp;
          return sig->fpr;
```

-- Function: const char * gpgme_get_sig_string_attr (gpgme_ctx_t CTX,
int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_string_attr is equivalent to:

```
          gpgme_verify_result_t result;
          gpgme_signature_t sig;

          result = gpgme_op_verify_result (ctx);
          sig = result->signatures;

          while (sig && idx)
            {
              sig = sig->next;
              idx--;
            }
          if (!sig || idx)
            return NULL;

          switch (what)
            {
            case GPGME_ATTR_FPR:
              return sig->fpr;

            case GPGME_ATTR_ERRTOK:
              if (whatidx == 1)
                return sig->wrong_key_usage ? "Wrong_Key_Usage" : "";
              else
            return "";
              default:
                break;
            }

          return NULL;
```

-- Function: const char * gpgme_get_sig_ulong_attr (gpgme_ctx_t CTX,
int IDX, gpgme_attr_t WHAT, int WHATIDX)

The function gpgme_get_sig_ulong_attr is equivalent to:

```
          gpgme_verify_result_t result;
          gpgme_signature_t sig;
```

```
result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return 0;

        switch (what)
          {
          case GPGME_ATTR_CREATED:
            return sig->timestamp;

          case GPGME_ATTR_EXPIRE:
            return sig->exp_timestamp;

          case GPGME_ATTR_VALIDITY:
            return (unsigned long) sig->validity;

          case GPGME_ATTR_SIG_STATUS:
            switch (sig->status)
        {
        case GPG_ERR_NO_ERROR:
          return GPGME_SIG_STAT_GOOD;

        case GPG_ERR_BAD_SIGNATURE:
          return GPGME_SIG_STAT_BAD;

        case GPG_ERR_NO_PUBKEY:
          return GPGME_SIG_STAT_NOKEY;

        case GPG_ERR_NO_DATA:
          return GPGME_SIG_STAT_NOSIG;

        case GPG_ERR_SIG_EXPIRED:

      return GPGME_SIG_STAT_GOOD_EXP;

        case GPG_ERR_KEY_EXPIRED:
          return GPGME_SIG_STAT_GOOD_EXPKEY;

        default:
          return GPGME_SIG_STAT_ERROR;
        }
```

```
          case GPGME_ATTR_SIG_SUMMARY:
            return sig->summary;

          default:
            break;
          }
        return 0;
```

-- Function: const char * gpgme_get_sig_key (gpgme_ctx_t CTX, int IDX,
gpgme_key_t *R_KEY)

The function gpgme_get_sig_key is equivalent to:

```
        gpgme_verify_result_t result;
        gpgme_signature_t sig;

        result = gpgme_op_verify_result (ctx);
        sig = result->signatures;

        while (sig && idx)
          {
            sig = sig->next;
            idx--;
          }
        if (!sig || idx)
          return gpg_error (GPG_ERR_EOF);

        return gpgme_get_key (ctx, sig->fpr, r_key, 0);
```

File: gpgme.info, Node: Library Copying, Next: Copying,
Prev: Deprecated Functions, Up: Top

GNU Lesser General Public License
****

Version 2.1, February 1999

Copyright 1991, 1999 Free Software Foundation, Inc.
59 Temple Place Suite 330, Boston, MA 02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]

Preamble

========

The licenses for most software are designed to take away your freedom to
share and change it. By contrast, the GNU General Public Licenses are
intended to guarantee your freedom to share and change free softwareto
make sure the software is free for all its users.

  This license, the Lesser General Public License, applies to some
specially designated softwaretypically librariesof the
 Free Software
Foundation and other authors who decide to use it. You can use it too,
but we suggest you first think carefully about whether this license or
the ordinary General Public License is the better strategy to use in any
particular case, based on the explanations below.

  When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of it
in new free programs; and that you are informed that you can do these
things.

  To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

  For example,
 if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

  We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

  To protect each distributor, we want to make it very clear that there
is no warranty for the free library. Also, if the library is modified
by someone else and passed on, the recipients should know that what they
have is not the original version, so that the original authors
reputation will not be affected by problems that
 might be introduced by
others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the Lesser General Public License because it does _Less_ to protect the users freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the

users freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a work based on the library and a work that uses the library. The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called this License). Each licensee is addressed as you.

A library means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The Library, below, refers to any such software library or work which has been distributed under these terms. A work based on the Library means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term modification.)

Source code for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Librarys
complete source code as you receive it, in any medium, provided
that you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep
intact all the notices that refer to this License and to the
absence of any warranty; and distribute a copy of this License
along with the Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange
for a fee.

2. You may modify your copy or copies of the Library or any portion of
it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a. The modified work must itself be a software library.

b. You
must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c. You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d. If a facility in the modified Library refers to a function or
a table of data to be supplied by an application program that
uses the facility, other than as an argument passed when the
facility is invoked, then you must make a good faith effort to
ensure that, in the event an application does not supply such
function or table, the facility still operates, and performs
whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots
has a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied
function or table used by this function
must be optional: if the application does not supply it, the
square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the
Library, and can be reasonably considered independent and separate
works in themselves, then this License, and its terms, do not apply
to those sections when you distribute them as separate works. But

when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is
to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so
the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a work that uses the Library. Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a work that uses the Library with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a work that uses the library. The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a work that uses the Library uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the
Library, or if the work is itself a
library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a work that uses the Library with the Library to produce a work containing portions of the Library,
and distribute that work under
terms of your choice, provided that the terms permit modification of the work for the customers own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable work that uses the Library, as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the users computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the work that uses the Library must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally

accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed
under the terms of the
Sections above.

b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or
other property right claims or to contest validity of
any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only
in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and any later version, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries
==========

If
you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of
the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file to most
effectively convey the exclusion of warranty; and each file should have
at least the copyright line and a pointer to where the full notice is
found.

ONE LINE TO GIVE THE LIBRARY'S NAME AND AN IDEA OF WHAT IT DOES.
Copyright (C) YEAR NAME OF AUTHOR

This library is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library
is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307,
USA.

Also add information on how to contact you by electronic and paper
mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a copyright disclaimer for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

SIGNATURE OF TY COON, 1 April 1990
Ty Coon, President of Vice

Thats all there is to it!

File:
gpgme.info, Node: Copying, Next: Concept Index, Prev: Library Copying, Up: Top

GNU General Public License
****

Version 3, 29 June 2007

Copyright 2007 Free Software Foundation, Inc. <https://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

Preamble
========

The GNU General Public License is a free, copyleft license for software
and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a programto make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can
apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know

their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers and authors protection, the GPL clearly explains that there is no warranty for this free software. For both users and authors sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

This License refers to version 3 of the GNU General Public License.

Copyright also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

The Program refers to any copyrightable work licensed under this License. Each licensee is addressed as you. Licensees and recipients may be individuals or organizations.

To modify a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a modified version of the earlier work or a work based on the earlier work.

A covered work means either the unmodified Program or a work based on the Program.

To propagate a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To convey a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays Appropriate Legal Notices to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The source code for a work means the preferred form of the work for making modifications to it. Object code means any non-source form of a work.

A Standard Interface means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The System Libraries of an executable work include anything, other than the work as a whole, that (a) is included in the normal

form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A Major Component, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The Corresponding Source for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the works System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you,

or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the works users, your or third parties legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Programs source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the

terms of section 4, provided that you also meet all of these conditions:

a. The work must carry prominent notices stating that you modified it, and giving a relevant date.

b. The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to keep intact all notices.

c. You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d. If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an aggregate if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilations users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b. Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A User Product is either (1) a consumer product, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for

incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, normally used refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

Installation Information for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

Additional
permissions are terms that supplement the terms of
this License by making exceptions from one or more of its
conditions. Additional permissions that are applicable to the
entire Program shall be treated as though they were included in
this License, to the extent that they are valid under applicable
law. If additional permissions apply only to part of the Program,
that part may be used separately under those permissions, but the
entire Program remains governed by this License without regard to
the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part
of it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material
you add to a covered work, you may (if authorized by the copyright
holders of that material) supplement the terms of this License with
terms:

a. Disclaiming warranty or limiting liability differently from
the terms of sections 15 and 16 of this License; or

b. Requiring preservation of specified reasonable legal notices
or author attributions in that material or in the Appropriate
Legal Notices displayed by works containing it; or

c. Prohibiting misrepresentation of the origin of that material,
or requiring that modified versions of such material be marked
in reasonable ways as different from the original version; or

d. Limiting the use for publicity purposes of names of licensors
or authors of the material; or

e. Declining to grant rights under trademark law for use of some
trade names,
trademarks, or service marks; or

f. Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified
versions of it) with contractual assumptions of liability to
the recipient, for any liability that these contractual
assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered further restrictions within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to
accept this License in order to receive or
run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An entity transaction is a transaction transferring control of an organization, or substantially
all assets of one, or subdividing an
organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the partys predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering
for sale, or importing the Program or any portion
of it.

11. Patents.

A contributor is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based.

The work thus licensed is called the contributors contributor version.

A contributors essential patent claims are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, control includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributors essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a patent license is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To grant such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. Knowingly relying means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipients use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the

patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is discriminatory if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March
2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU

General Public License or any later version applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxys public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM AS IS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA

BEING RENDERED INACCURATE OR LOSSES
SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF
THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely
approximates an absolute waiver of all civil liability in
connection with the Program, unless a warranty or assumption of
liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs
==========

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under
these
terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least the
copyright line and a pointer to where the full notice is found.

ONE LINE TO GIVE THE PROGRAM'S NAME AND A BRIEF IDEA OF WHAT IT DOES.
Copyright (C) YEAR NAME OF AUTHOR

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or (at
your option) any later version.

This program is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received a copy of the GNU General Public License

along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
PROGRAM Copyright (C) YEAR NAME OF AUTHOR
This program comes with ABSOLUTELY NO WARRANTY; for details
type show w.  This is free software, and you are
welcome to redistribute it under certain conditions;
type show c for details.
```

The hypothetical commands show w and show c should show the appropriate parts of the General Public License. Of course, your programs commands might be different; for a GUI interface, you would use an about box.

You should also get your employer (if you work as a programmer) or school, if any, to sign a copyright disclaimer for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License. But first, please read <https://www.gnu.org/philosophy/why-not-lgpl.html>.

Concept Index

[index]

* Menu:

* aborting operations: Cancellation. (line 6)
* algorithms: Algorithms. (line 6)
* algorithms, hash: Hash Algorithms. (line 6)
* algorithms, message digest: Hash Algorithms. (line 6)
* algorithms, public key: Public Key Algorithms. (line 6)
* armor mode: ASCII Armor. (line 6)
*
ASCII armor: ASCII Armor. (line 6)
* ASSUAN: Assuan. (line 6)
* attributes, of a key: Information About Keys.
(line 6)

* auditlog: Additional Logs. (line 6)
* auditlog, of the engine: Additional Logs. (line 6)
* autoconf: Using Automake. (line 6)
* automake: Using Automake. (line 6)
* backend: Protocols and Engines. (line 6)
* callback, passphrase: Passphrase Callback. (line 6)
* callback, progress meter: Progress Meter Callback.
(line 6)
* callback, status message: Status Message Callback.
(line 6)
*
cancelling operations: Cancellation. (line 6)
* canonical text mode: Text Mode. (line 6)
* certificates, included: Included Certificates. (line 6)
* CMS: Cryptographic Message Syntax.
(line 6)
* compiler flags: Building the Source. (line 6)
* compiler options: Building the Source. (line 6)
* configuration of crypto backend: Engine Configuration. (line 6)
* context: Contexts. (line 6)
* context, armor mode: ASCII Armor. (line 6)
* context, attributes: Context Attributes. (line 6)
* context, configuring engine: Crypto Engine. (line 6)
* context, creation: Creating Contexts. (line 6)
* context, destruction: Destroying Contexts.
(line 6)
* context, offline mode: Offline Mode. (line 6)
* context, pinentry mode: Pinentry Mode. (line 6)
* context, result of operation: Result Management. (line 6)
* context, selecting protocol: Protocol Selection. (line 6)
* context, sender: Setting the Sender. (line 6)
* context, text mode: Text Mode. (line 6)
* crypto backend: Protocols and Engines. (line 6)
* crypto engine: Protocols and Engines. (line 6)
* cryptographic message syntax: Cryptographic Message Syntax.
(line 6)
* cryptographic operation: Crypto Operations. (line 6)
* cryptographic operation, aborting: Cancellation. (line 6)
* cryptographic operation, cancelling: Cancellation. (line 6)
* cryptographic operation, decryption:
Decrypt. (line 6)
* cryptographic operation, decryption and verification: Decrypt and Verify.
(line 6)
* cryptographic operation, encryption: Encrypt. (line 6)
* cryptographic operation, running: Run Control. (line 6)
* cryptographic operation, signature check: Verify. (line 6)
* cryptographic operation, signing: Sign. (line 6)
* cryptographic operation, verification: Verify. (line 6)

* cryptographic operation, wait for: Waiting For Completion.
(line 6)
* data buffer, convenience: Data Buffer Convenience.
(line 6)
* data buffer, creation: Creating Data Buffers. (line 6)
* data buffer, destruction: Destroying Data Buffers.

(line 6)
* data buffer, encoding: Data Buffer Meta-Data. (line 6)
* data buffer, file name: Data Buffer Meta-Data. (line 6)
* data buffer, I/O operations: Data Buffer I/O Operations.
(line 6)
* data buffer, manipulation: Manipulating Data Buffers.
(line 6)
* data buffer, meta-data: Data Buffer Meta-Data. (line 6)
* data buffer, read: Data Buffer I/O Operations.
(line 6)
* data buffer, seek: Data Buffer I/O Operations.
(line 6)
* data buffer, write: Data Buffer I/O Operations.
(line 6)
* data, exchanging:
Exchanging Data. (line 6)
* debug: Debugging. (line 6)
* decryption: Decrypt. (line 6)
* decryption and verification: Decrypt and Verify. (line 6)
* deprecated: Deprecated Functions. (line 6)
* encryption: Encrypt. (line 6)
* engine: Protocols and Engines. (line 6)
* engine, ASSUAN: Assuan. (line 6)
* engine, configuration of: Engine Configuration. (line 6)
* engine, configuration per context: Crypto Engine. (line 6)
* engine, GnuPG: OpenPGP. (line 6)
* engine, GpgSM: Cryptographic Message Syntax.
(line 6)
* engine, information about: Engine Information. (line 6)
* error codes:
Error Values. (line 6)
* error codes, list of: Error Sources. (line 6)
* error codes, list of <1>: Error Codes. (line 6)
* error codes, printing of: Error Strings. (line 6)
* error handling: Error Handling. (line 6)
* error sources: Error Values. (line 6)
* error sources, printing of: Error Strings. (line 6)
* error strings: Error Strings. (line 6)
* error values: Error Values. (line 6)
* error values, printing of: Error Strings. (line 6)
* event loop, external: Using External Event Loops.

(line 6)
* flags, of a context: Context Flags. (line 6)
* From:: Setting the Sender.
(line 6)
* GDK, using GPGME with: I/O Callback Example GDK.
(line 6)
* GnuPG: OpenPGP. (line 6)
* GPGME_DEBUG: Debugging. (line 6)
* GpgSM: Cryptographic Message Syntax.
(line 6)
* GTK+, using GPGME with: I/O Callback Example GTK+.
(line 6)
* hash algorithms: Hash Algorithms. (line 6)
* header file: Header. (line 6)
* identify: Data Buffer Convenience.
(line 6)
* include file: Header. (line 6)
* key listing: Listing Keys.
(line 6)
* key listing mode: Key Listing Mode. (line 6)
* key listing, mode of: Key Listing Mode. (line 6)
* key listing, start: Listing Keys. (line 6)
* key management: Key Management. (line 6)
* key ring, add: Generating Keys. (line 6)
* key ring, delete from: Deleting Keys. (line 6)
* key ring, export from: Exporting Keys. (line 6)
* key ring, import to: Importing Keys. (line 6)
* key ring, list: Listing Keys. (line 6)
* key ring, search: Listing Keys. (line 6)
* key, attributes: Information About Keys.
(line 6)
* key, creation: Generating Keys. (line 6)
* key, delete: Deleting
Keys. (line 6)
* key, edit: Advanced Key Editing. (line 6)
* key, export: Exporting Keys. (line 6)
* key, import: Importing Keys. (line 6)
* key, information about: Information About Keys.
(line 6)
* key, manipulation: Manipulating Keys. (line 6)
* key, signing: Signing Keys. (line 6)
* largefile support: Largefile Support (LFS).
(line 6)
* LFS: Largefile Support (LFS).
(line 6)
* LGPL, GNU Lesser General Public License: Library Copying. (line 6)
* libtool: Using Libtool. (line 6)
* listing keys: Listing

Keys. (line 6)
* locale, default: Locale. (line 6)
* locale, of a context: Locale. (line 6)
* message digest algorithms: Hash Algorithms. (line 6)
* multi-threading: Multi-Threading. (line 6)
* notation data: Verify. (line 6)
* notation data <1>: Signature Notation Data.
(line 6)
* offline mode: Offline Mode. (line 6)
* OpenPGP: OpenPGP. (line 6)
* passphrase callback: Passphrase Callback. (line 6)
* passphrase, change: Changing Passphrases. (line 6)
* pinentry mode: Pinentry Mode. (line 6)
* policy URL: Signature Notation Data.
(line 6)
* progress meter callback: Progress Meter Callback.
(line 6)
* protocol: Protocols and Engines. (line 6)
* protocol, ASSUAN: Assuan. (line 6)
* protocol, CMS: Cryptographic Message Syntax.
(line 6)
* protocol, GnuPG: OpenPGP. (line 6)
* protocol, S/MIME: Cryptographic Message Syntax.
(line 6)
* protocol, selecting: Protocol Selection. (line 6)
* public key algorithms: Public Key Algorithms. (line 6)
* Qt, using GPGME with: I/O Callback Example Qt.
(line 6)
* run control:
Run Control. (line 6)
* S/MIME: Cryptographic Message Syntax.
(line 6)
* sender: Setting the Sender. (line 6)
* sign: Sign. (line 6)
* signal handling: Signal Handling. (line 6)
* signals: Signal Handling. (line 6)
* signature check: Decrypt and Verify. (line 6)
* signature notation data: Verify. (line 6)
* signature notation data <1>: Signature Notation Data.
(line 6)
* signature, creation: Sign. (line 6)
* signature, selecting signers: Selecting Signers. (line 6)
* signature, verification: Verify. (line 6)
* signers, selecting:
Selecting Signers. (line 6)
* status message callback: Status Message Callback.
(line 6)

* text mode: Text Mode. (line 6)
* thread-safeness: Multi-Threading. (line 6)
* type of data: Data Buffer Convenience.
(line 6)
* UI server: UI Server Protocol. (line 6)
* user interface server: UI Server Protocol. (line 6)
* validity, TOFU: Changing TOFU Data. (line 6)
* verification: Verify. (line 6)
* verification and decryption: Decrypt and Verify. (line 6)
* version check, of the engines: Engine Version Check. (line 6)
* version check, of the library: Library Version Check. (line 6)
* wait for completion:
Waiting For Completion.
(line 6)

File: gpgme.info, Node: Function and Data Index, Prev: Concept Index, Up: Top

Function and Data Index
****

[index]
* Menu:

* AM_PATH_GPGME: Using Automake. (line 11)
* AM_PATH_GPGME_PTH: Using Automake. (line 13)
* AM_PATH_GPGME_PTHREAD: Using Automake. (line 15)
* CHECKSUM_CREATE_FILES: UI Server Checksum Files.
(line 9)
* CHECKSUM_VERIFY_FILES: UI Server Checksum Files.
(line 22)
* DECRYPT: UI Server Decrypt. (line 26)
* DECRYPT_FILES: UI Server Verify/Decrypt Files.
(line 9)
* DECRYPT_VERIFY_FILES:
UI Server Verify/Decrypt Files.
(line 11)
* ENCRYPT: UI Server Encrypt. (line 47)
* ENCRYPT_FILES: UI Server Sign/Encrypt Files.
(line 9)
* ENCRYPT_SIGN_FILES: UI Server Sign/Encrypt Files.
(line 11)
* enum gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 31)
* enum gpgme_data_type_t: Data Buffer Convenience.
(line 6)
* enum gpgme_event_io_t: I/O Callback Interface.
(line 58)

* enum gpgme_hash_algo_t: Hash Algorithms. (line 9)
* enum gpgme_pinentry_mode_t:
Pinentry Mode. (line 25)
* enum gpgme_protocol_t: Protocols and Engines.
(line 16)
* enum gpgme_pubkey_algo_t: Public Key Algorithms.
(line 9)
* enum gpgme_sig_mode_t: Creating a Signature.
(line 6)
* enum gpgme_sig_stat_t: Deprecated Functions.
(line 387)
* enum gpgme_tofu_policy_t: Changing TOFU Data. (line 10)
* FILE: UI Server Set Input Files.
(line 9)
* GETINFO: Miscellaneous UI Server Commands.
(line 9)
* gpgme_addrspec_from_uid:
Decrypt and Verify. (line 48)
* gpgme_attr_t: Deprecated Functions.
(line 140)
* gpgme_attr_t <1>: Deprecated Functions.
(line 301)
* gpgme_cancel: Cancellation. (line 16)
* gpgme_cancel_async: Cancellation. (line 38)
* gpgme_check_version: Library Version Check.
(line 6)
* gpgme_ctx_get_engine_info: Crypto Engine. (line 12)
* gpgme_ctx_set_engine_info: Crypto Engine. (line 26)
* gpgme_ctx_t: Contexts. (line 11)
* gpgme_data_encoding_t: Data Buffer Meta-Data.
(line 32)
* gpgme_data_get_encoding: Data Buffer
Meta-Data.
(line 81)
* gpgme_data_get_file_name: Data Buffer Meta-Data.
(line 6)
* gpgme_data_identify: Data Buffer Convenience.
(line 46)
* gpgme_data_new: Memory Based Data Buffers.
(line 12)
* gpgme_data_new_from_cbs: Callback Based Data Buffers.
(line 80)
* gpgme_data_new_from_estream: File Based Data Buffers.
(line 49)
* gpgme_data_new_from_fd: File Based Data Buffers.
(line 10)
* gpgme_data_new_from_file: Memory Based Data Buffers.

(line 37)
* gpgme_data_new_from_filepart: Memory Based Data Buffers.
(line 54)
* gpgme_data_new_from_mem: Memory Based Data Buffers.
(line 22)
* gpgme_data_new_from_stream: File Based Data Buffers.
(line 29)
* gpgme_data_new_with_read_cb: Deprecated Functions.
(line 110)
* gpgme_data_read: Data Buffer I/O Operations.
(line 6)
* gpgme_data_read_cb_t: Callback Based Data Buffers.
(line 13)
* gpgme_data_release: Destroying Data Buffers.

(line 6)
* gpgme_data_release_and_get_mem: Destroying Data Buffers.
(line 11)
* gpgme_data_release_cb_t: Callback Based Data Buffers.
(line 55)
* gpgme_data_rewind: Deprecated Functions.
(line 134)
* gpgme_data_seek: Data Buffer I/O Operations.
(line 26)
* gpgme_data_seek_cb_t: Callback Based Data Buffers.
(line 46)
* gpgme_data_set_encoding: Data Buffer Meta-Data.
(line 87)
* gpgme_data_set_file_name: Data Buffer Meta-Data.

(line 18)
* gpgme_data_set_flag: Data Buffer Meta-Data.
(line 92)
* gpgme_data_t: Exchanging Data. (line 13)
* gpgme_data_type_t: Data Buffer Convenience.
(line 7)
* gpgme_data_write: Data Buffer I/O Operations.
(line 16)
* gpgme_data_write_cb_t: Callback Based Data Buffers.
(line 29)
* gpgme_decrypt_result_t: Decrypt. (line 101)
* gpgme_edit_cb_t: Deprecated Functions.
(line 33)
* gpgme_encrypt_result_t: Encrypting a Plaintext.
(line
241)
* gpgme_engine_check_version: Engine Version Check.
(line 67)

* gpgme_engine_info_t: Engine Information. (line 6)
* gpgme_error: Error Values. (line 65)
* gpgme_error_from_errno: Error Values. (line 89)
* gpgme_error_t: Error Values. (line 24)
* gpgme_error_t (*gpgme_assuan_data_cb_t) (void *OPAQUE, const void *DATA, size_t DATALEN): Using the Assuan protocol.
(line 15)
* gpgme_error_t (*gpgme_assuan_inquire_cb_t) (void *OPAQUE, const char *NAME, const char *ARGS, gpgme_data_t *R_DATA): Using the Assuan protocol.
(line 24)
* gpgme_error_t (*gpgme_assuan_status_cb_t) (void *OPAQUE, const char *STATUS, const char *ARGS): Using the Assuan protocol.

(line 38)
* gpgme_error_t (*gpgme_edit_cb_t) (void *HANDLE, gpgme_status_code_t STATUS, const char *ARGS, int FD): Deprecated Functions.
(line 31)
* gpgme_error_t (*gpgme_interact_cb_t) (void *HANDLE, const char *STATUS, const char *ARGS, int FD): Advanced Key Editing.
(line 6)
* gpgme_error_t (*gpgme_io_cb_t) (void *DATA, int FD): I/O Callback Interface.
(line 6)
* gpgme_error_t (*gpgme_passphrase_cb_t)(void *HOOK, const char *UID_HINT, const char *PASSPHRASE_INFO, int PREV_WAS_BAD, int FD): Passphrase Callback.
(line 6)
* gpgme_error_t (*gpgme_register_io_cb_t) (void *DATA, int FD, int DIR, gpgme_io_cb_t FNC, void *FNC_DATA, void **TAG): I/O Callback Interface.

(line 19)
* gpgme_error_t (*gpgme_status_cb_t)(void *HOOK, const char *KEYWORD, const char *ARGS): Status Message Callback.
(line 6)
* gpgme_err_code: Error Values. (line 42)
* gpgme_err_code_from_errno: Error Values. (line 98)
* gpgme_err_code_t: Error Values. (line 6)
* gpgme_err_code_to_errno: Error Values. (line 103)
* gpgme_err_make: Error Values. (line 57)
* gpgme_err_make_from_errno: Error Values. (line 83)
* gpgme_err_source: Error Values. (line 49)
* gpgme_err_source_t: Error Values. (line 13)
* gpgme_event_io_t: I/O Callback Interface.
(line 59)
* gpgme_event_io_t <1>: Registering I/O Callbacks.
(line 7)
* gpgme_free: Destroying Data Buffers.
(line 25)
* gpgme_genkey_result_t: Generating Keys. (line 381)
* gpgme_get_armor: ASCII Armor. (line 13)

* gpgme_get_ctx_flag: Context Flags. (line 135)
* gpgme_get_dirinfo: Engine Version Check.
(line 6)
* gpgme_get_engine_info: Engine Information. (line 46)
* gpgme_get_include_certs: Included Certificates.
(line 37)
* gpgme_get_io_cbs: Registering I/O Callbacks.
(line 44)
* gpgme_get_key: Listing Keys. (line 178)
*
gpgme_get_keylist_mode: Key Listing Mode. (line 103)
* gpgme_get_offline: Offline Mode. (line 31)
* gpgme_get_passphrase_cb: Passphrase Callback. (line 63)
* gpgme_get_pinentry_mode: Pinentry Mode. (line 18)
* gpgme_get_progress_cb: Progress Meter Callback.
(line 31)
* gpgme_get_protocol: Protocol Selection. (line 21)
* gpgme_get_protocol_name: Protocols and Engines.
(line 58)
* gpgme_get_sender: Setting the Sender. (line 29)
* gpgme_get_sig_key: Deprecated Functions.
(line 587)
* gpgme_get_sig_status: Deprecated Functions.
(line 435)
* gpgme_get_sig_string_attr:
Deprecated Functions.
(line 491)
* gpgme_get_sig_ulong_attr: Deprecated Functions.
(line 525)
* gpgme_get_status_cb: Status Message Callback.
(line 31)
* gpgme_get_textmode: Text Mode. (line 20)
* gpgme_hash_algo_name: Hash Algorithms. (line 30)
* gpgme_hash_algo_t: Hash Algorithms. (line 10)
* gpgme_import_result_t: Importing Keys. (line 118)
* gpgme_import_status_t: Importing Keys. (line 80)
* gpgme_interact_cb_t: Advanced Key Editing.
(line 11)
* gpgme_invalid_key_t: Crypto Operations. (line 10)
* gpgme_io_cb_t:
I/O Callback Interface.
(line 7)
* gpgme_keylist_result_t: Listing Keys. (line 155)
* gpgme_key_get_string_attr: Deprecated Functions.
(line 266)
* gpgme_key_get_ulong_attr: Deprecated Functions.
(line 280)
* gpgme_key_ref: Manipulating Keys. (line 6)

* gpgme_key_release: Deprecated Functions.
(line 14)
* gpgme_key_sig_get_string_attr: Deprecated Functions.
(line 357)
* gpgme_key_sig_get_ulong_attr: Deprecated Functions.
(line 373)
* gpgme_key_sig_t: Key objects. (line
346)
* gpgme_key_t: Key objects. (line 10)
* gpgme_key_unref: Manipulating Keys. (line 10)
* gpgme_new: Creating Contexts. (line 6)
* gpgme_new_signature_t: Creating a Signature.
(line 57)
* gpgme_off_t: Exchanging Data. (line 24)
* gpgme_op_adduid: Generating Keys. (line 189)
* gpgme_op_adduid_start: Generating Keys. (line 215)
* gpgme_op_assuan_transact_ext: Using the Assuan protocol.
(line 64)
* gpgme_op_assuan_transact_start: Using the Assuan protocol.
(line 47)
* gpgme_op_card_edit: Deprecated Functions.
(line 85)
*
gpgme_op_card_edit_start: Deprecated Functions.
(line 95)
* gpgme_op_createkey: Generating Keys. (line 14)
* gpgme_op_createkey_start: Generating Keys. (line 119)
* gpgme_op_createsubkey: Generating Keys. (line 132)
* gpgme_op_createsubkey_start: Generating Keys. (line 176)
* gpgme_op_decrypt: Decrypt. (line 6)
* gpgme_op_decrypt_ext: Decrypt. (line 30)
* gpgme_op_decrypt_ext_start: Decrypt. (line 60)
* gpgme_op_decrypt_result: Decrypt. (line 164)
* gpgme_op_decrypt_start: Decrypt. (line 20)
* gpgme_op_decrypt_verify: Decrypt and Verify. (line 6)
* gpgme_op_decrypt_verify_start: Decrypt and Verify. (line 30)
* gpgme_op_delete: Deleting Keys.
(line 47)
* gpgme_op_delete_ext: Deleting Keys. (line 6)
* gpgme_op_delete_ext_start: Deleting Keys. (line 33)
* gpgme_op_delete_start: Deleting Keys. (line 52)
* gpgme_op_edit: Deprecated Functions.
(line 44)
* gpgme_op_edit_start: Deprecated Functions.
(line 68)
* gpgme_op_encrypt: Encrypting a Plaintext.
(line 6)
* gpgme_op_encrypt_ext: Encrypting a Plaintext.

(line 131)
* gpgme_op_encrypt_ext_start: Encrypting a Plaintext.
(line 224)
* gpgme_op_encrypt_result: Encrypting a Plaintext.

(line 252)
* gpgme_op_encrypt_sign: Encrypting a Plaintext.
(line 263)
* gpgme_op_encrypt_sign_ext: Encrypting a Plaintext.
(line 288)
* gpgme_op_encrypt_sign_ext_start: Encrypting a Plaintext.
(line 304)
* gpgme_op_encrypt_sign_start: Encrypting a Plaintext.
(line 274)
* gpgme_op_encrypt_start: Encrypting a Plaintext.
(line 113)
* gpgme_op_export: Exporting Keys. (line 59)
* gpgme_op_export_ext: Exporting Keys. (line 92)
* gpgme_op_export_ext_start: Exporting Keys. (line 114)
* gpgme_op_export_keys:
Exporting Keys. (line 126)
* gpgme_op_export_keys_start: Exporting Keys. (line 153)
* gpgme_op_export_start: Exporting Keys. (line 80)
* gpgme_op_genkey: Generating Keys. (line 304)
* gpgme_op_genkey_result: Generating Keys. (line 418)
* gpgme_op_genkey_start: Generating Keys. (line 369)
* gpgme_op_getauditlog: Additional Logs. (line 9)
* gpgme_op_getauditlog_start: Additional Logs. (line 54)
* gpgme_op_import: Importing Keys. (line 9)
* gpgme_op_import_ext: Deprecated Functions.
(line 18)
* gpgme_op_import_keys: Importing Keys. (line 35)
* gpgme_op_import_keys_start: Importing Keys. (line 65)
* gpgme_op_import_result: Importing Keys. (line 174)
* gpgme_op_import_start:
Importing Keys. (line 24)
* gpgme_op_interact: Advanced Key Editing.
(line 23)
* gpgme_op_interact_start: Advanced Key Editing.
(line 53)
* gpgme_op_keylist_end: Listing Keys. (line 111)
* gpgme_op_keylist_ext_start: Listing Keys. (line 34)
* gpgme_op_keylist_from_data_start: Listing Keys. (line 67)
* gpgme_op_keylist_next: Listing Keys. (line 94)
* gpgme_op_keylist_result: Listing Keys. (line 166)
* gpgme_op_keylist_start: Listing Keys. (line 6)
* gpgme_op_keysign: Signing Keys. (line 12)
* gpgme_op_keysign_start: Signing Keys. (line 73)

* gpgme_op_passwd: Changing Passphrases.
(line 6)
* gpgme_op_passwd_start: Changing Passphrases.
(line 21)
* gpgme_op_query_swdb: Checking for updates.
(line 68)
* gpgme_op_query_swdb_result: Checking for updates.
(line 80)
* gpgme_op_revsig: Signing Keys. (line 84)
* gpgme_op_revsig_start: Signing Keys. (line 119)
* gpgme_op_revuid: Generating Keys. (line 224)
* gpgme_op_revuid_start: Manipulating Keys. (line 58)
* gpgme_op_revuid_start <1>: Generating Keys. (line 252)
* gpgme_op_setexpire: Manipulating Keys. (line 15)
* gpgme_op_setexpire_start: Manipulating Keys. (line 47)
* gpgme_op_set_uid_flag_start:
Generating Keys. (line 293)
* gpgme_op_set_ui_flag: Generating Keys. (line 261)
* gpgme_op_sign: Creating a Signature.
(line 21)
* gpgme_op_sign_result: Creating a Signature.
(line 99)
* gpgme_op_sign_start: Creating a Signature.
(line 47)
* gpgme_op_spawn: Running other Programs.
(line 13)
* gpgme_op_spawn_start: Running other Programs.
(line 45)
* gpgme_op_tofu_policy: Changing TOFU Data. (line 29)
* gpgme_op_tofu_policy_start: Changing TOFU Data. (line 43)
* gpgme_op_verify: Verify. (line
6)
* gpgme_op_verify_result: Verify. (line 298)
* gpgme_op_verify_start: Verify. (line 26)
* gpgme_passphrase_cb_t: Passphrase Callback. (line 10)
* gpgme_pinentry_mode_t: Pinentry Mode. (line 26)
* gpgme_progress_cb_t: Progress Meter Callback.
(line 8)
* gpgme_protocol_t: Protocols and Engines.
(line 17)
* gpgme_protocol_t <1>: Engine Information. (line 7)
* gpgme_pubkey_algo_name: Public Key Algorithms.
(line 58)
* gpgme_pubkey_algo_string: Public Key Algorithms.
(line 68)
* gpgme_pubkey_algo_t: Public Key Algorithms.

(line 10)
* gpgme_query_swdb_result_t: Checking for updates.
(line 11)
* gpgme_recipient_t: Decrypt. (line 75)
* gpgme_register_io_cb_t: I/O Callback Interface.
(line 23)
* gpgme_release: Destroying Contexts. (line 6)
* gpgme_result_ref: Result Management. (line 15)
* gpgme_result_unref: Result Management. (line 23)
* gpgme_set_armor: ASCII Armor. (line 6)
* gpgme_set_ctx_flag: Context Flags. (line 6)
* gpgme_set_engine_info: Engine Configuration.
(line 11)
* gpgme_set_global_flag: Library Version Check.

(line 44)
* gpgme_set_include_certs: Included Certificates.
(line 6)
* gpgme_set_io_cbs: Registering I/O Callbacks.
(line 35)
* gpgme_set_keylist_mode: Key Listing Mode. (line 6)
* gpgme_set_locale: Locale. (line 14)
* gpgme_set_offline: Offline Mode. (line 6)
* gpgme_set_passphrase_cb: Passphrase Callback. (line 40)
* gpgme_set_pinentry_mode: Pinentry Mode. (line 6)
* gpgme_set_progress_cb: Progress Meter Callback.
(line 16)
* gpgme_set_protocol: Protocol Selection. (line 6)
* gpgme_set_sender: Setting the Sender. (line 13)
* gpgme_set_status_cb:
Status Message Callback.
(line 17)
* gpgme_set_textmode: Text Mode. (line 6)
* gpgme_signature_t: Verify. (line 92)
* gpgme_signers_add: Selecting Signers. (line 18)
* gpgme_signers_clear: Selecting Signers. (line 11)
* gpgme_signers_count: Selecting Signers. (line 25)
* gpgme_signers_enum: Selecting Signers. (line 31)
* gpgme_sign_result_t: Creating a Signature.
(line 85)
* gpgme_sig_mode_t: Creating a Signature.
(line 7)
* gpgme_sig_notation_add: Signature Notation Data.
(line 19)
* gpgme_sig_notation_clear:
Signature Notation Data.
(line 10)
* gpgme_sig_notation_get: Signature Notation Data.

(line 45)
* gpgme_sig_notation_t: Verify. (line 38)
* gpgme_sig_stat_t: Deprecated Functions.
(line 388)
* gpgme_ssize_t: Exchanging Data. (line 32)
* gpgme_status_cb_t: Status Message Callback.
(line 8)
* gpgme_strerror: Error Strings. (line 6)
* gpgme_strerror_r: Error Strings. (line 15)
* gpgme_strsource: Error Strings. (line 26)
* gpgme_subkey_t: Key objects. (line 112)
* gpgme_tofu_info_t: Key objects.
(line 282)
* gpgme_tofu_policy_t: Changing TOFU Data. (line 13)
* gpgme_user_id_t: Key objects. (line 217)
* gpgme_validity_t: Information About Keys.
(line 9)
* gpgme_verify_result_t: Verify. (line 276)
* gpgme_wait: Waiting For Completion.
(line 6)
* IMPORT_FILES: UI Server Import/Export Keys.
(line 9)
* INPUT: UI Server Encrypt. (line 23)
* INPUT <1>: UI Server Sign. (line 12)
* INPUT <2>: UI Server Decrypt. (line 12)
* INPUT <3>: UI Server Verify. (line 16)
* MESSAGE: UI
Server Verify. (line 10)
* MICALG: UI Server Sign. (line 43)
* off_t (*gpgme_data_seek_cb_t) (void *HANDLE, off_t OFFSET, int WHENCE): Callback Based Data Buffers.
(line 43)
* OUTPUT: UI Server Encrypt. (line 36)
* OUTPUT <1>: UI Server Sign. (line 18)
* OUTPUT <2>: UI Server Decrypt. (line 19)
* OUTPUT <3>: UI Server Verify. (line 23)
* PREP_ENCRYPT: UI Server Encrypt. (line 72)
* PROTOCOL: UI Server Encrypt. (line 98)
* RECIPIENT: UI Server Encrypt. (line 9)
* SENDER: Miscellaneous UI Server Commands.
(line 50)
* SESSION: Miscellaneous UI Server
Commands.
(line 69)
* SIGN: UI Server Sign. (line 33)
* SIGN_FILES: UI Server Sign/Encrypt Files.
(line 10)
* SIGSTATUS: UI Server Verify. (line 56)
* ssize_t (*gpgme_data_read_cb_t) (void *HANDLE, void *BUFFER, size_t SIZE): Callback Based Data Buffers.

(line 10)
* ssize_t (*gpgme_data_write_cb_t) (void *HANDLE, const void *BUFFER, size_t SIZE): Callback Based Data Buffers.
(line 27)
* START_CONFDIALOG: Miscellaneous UI Server Commands.
(line 41)
* START_KEYMANAGER: Miscellaneous UI Server Commands.

(line 31)
* struct gpgme_data_cbs: Callback Based Data Buffers.
(line 59)
* struct gpgme_io_cbs: Registering I/O Callbacks.
(line 6)
* VERIFY: UI Server Verify. (line 31)
* VERIFY_FILES: UI Server Verify/Decrypt Files.
(line 10)
* void (*gpgme_data_release_cb_t) (void *HANDLE): Callback Based Data Buffers.
(line 54)
* void (*gpgme_event_io_cb_t) (void *DATA, gpgme_event_io_t TYPE, void *TYPE_DATA): I/O Callback Interface.
(line 83)
* void (*gpgme_progress_cb_t)(void *HOOK, const char *WHAT, int TYPE, int CURRENT, int TOTAL): Progress Meter Callback.

(line 6)
* void (*gpgme_remove_io_cb_t) (void *TAG): I/O Callback Interface.
(line 48)
* window-id: Miscellaneous UI Server Commands.
(line 21)

```
{
  "name": "gpgmejson",
  "description": "Integration with GnuPG",
  "path": "/usr/bin/gpgme-json",
  "type": "stdio",
  "allowed_extensions": [
    "jid1-AQqSMBYb0a8ADg@jetpack"
  ]
}
```

Wenn Sie dies lesen knnen, ist es wohl nicht
geheim genug.

```
{
  "info": {
    "is_mime":     false,
    "signatures":  [{
      "summary":     {
        "sigsum":      [],
        "valid":       false,
        "green":       false,
```

```
            "red":  false,
            "revoked":      false,
            "key-expired":  false,
            "sig-expired":  false,
            "key-missing":  false,
            "crl-missing":  false,
            "crl-too-old":  false,
            "bad-policy":   false,
            "sys-error":    false
          },
          "wrong_key_usage":      false,
          "chain_model":  false,
          "is_de_vs":     false,
          "status_string":        "Success",
          "fingerprint":  "A0FF4590BB6122EDEF6E3C542D727CC768697734",
          "validity_string":      "unknown",
          "pubkey_algo_name":     "DSA",
          "hash_algo_name":       "SHA1",
          "status_code":  0,
          "timestamp":    1542201053,
           "exp_timestamp":        0,
          "pka_trust":    0,
          "validity":     0,
          "validity_reason":      0
       }]
   }
}
hkp4py
requests
{
  "op": "decrypt",
  "base64": true,
  "data":
"hQEOA2rm1+5GqHH4EAP+NCYW3vVuCLDTUYhBaKHNgp4fMq9TNACH2NiZyVSaYLe0VE+2LLurHN/X
LwlP7xhl2XijBUe6Q7M+KyoPd9iNIgX9q914dPUN0Q3sJinSbujnFzsy0L2x6kgUJCK/XA7rp0VpmJGUWIQYAE
T8Xx6SaWd2XxIdIITUz2MqrTzWrgED/iOuRxuT4loNJ/DM2YrOZr0He25SxJskg0t1bik2nM+wHAbJrSa6BqPJY
U4scnG6AH0RRxFV177ADjOcBLeutXw7DE+6YOExWZD2Fb0oax/ppDulMudrJnj6Wg5/EHbBLDF96Xd6vQX
1rcHmrxImvaQNbavEKswlDZgoYwaV7PYPhQEOAwQHH7gHKHE0EAP/So0a3deCbXVSPkABRO3yZa6kHcV
uO5+lTsunfxav1TwaMkBOiK6usRz2zt3rjozNrh3vXn3o2WpFKebwhIUF0q2qPw3OKIGq9jFT63t+DPjpbSorAev
mVqXWdmaqDPJZ/QIY6NkBhprTdIGPSTFh66eggQLz+BBUVx2myM7AqgcD/3PnOGIiqINQzFkfa6lHiV/TZ8A
aMNfvyx4FFG4Zi45ZnDwLCJZ+J7ATXzECauEDLzhjk8M9OP0PwFT1WsnWefKDSLzbO5hEnf8NYdY6i8f2MJ
KYcnpeI4PZA3OK9ovmAoJl31K+/vBJRP4kiJ4Weu7fzMi6Zz87tfHDEpbRR7N80qoBTlT7I044LG5OJKgQukb7
HOv+c668i56UzZVgz+LCsFpjYEFTlrPVR5Me3PjSSb8M+tt9NUjenNnghJEcxeD902YJcqgRWPotouzx5fKDTay/
LofFqckEWGlP5pnkeNfYIBIaSSrG/KcdQ0rPOAxKrZzIifYVwnJm/ISxU6uMpNfDJGOJppf4xqXgTKBdIsCljg5Ll
gNvGhNMYaXQkGQInzXvLSUbxLerWw=="
}
```


Additional license notices for GPGME. -*- org -*-

This file contains the copying permission notices for various files in
the GPGME distribution which are not covered by the GNU Lesser
General Public License (LGPL) or the GNU General Public License (GPL).

These notices all require that a copy of the notice be included
in the accompanying documentation and be distributed with binary
distributions of the code, so be sure to include this file along
with any binary distributions derived from the GNU C Library.

* MIT License

For files:
- cJSON.c, cJSON.h

#+begin_quote
Copyright (c) 2009 Dave Gamble

Permission is hereby granted, free of charge, to any person obtaining
a opy of this software and associated documentation files (the
"Software"), to eal in the Software without restriction, including
without limitation the ights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the
Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING ROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
#+end_quote
-*- mode: org -*-
#+TITLE: Maintenance Mode
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Maintenance Mode from 2019
 :PROPERTIES:
 :CUSTOM_ID: maintenance-mode
 :END:

Version:	0.0.1
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
xml:lang:	en-AU, en-GB, en

From the beginning of 2019 the Python bindings to GPGME will enter
maintenance mode, meaning that new features will not be added and only
bug fixes and security fixes will be made.
  This also means that
documentation beyond that existing at the end of 2018 will not be
developed further except to correct errors.

Though use of these bindings appears to have been quite well received,
there has been no indication of what demand there is, if any for
either financial backing of the current Python bindings development or
support contracts with g10code GmbH citing the necessity of including
the bindings.

** Maintainer from 2019 onward
  :PROPERTIES:
  :CUSTOM_ID: maintenance-mode-bm
  :END:

How does this affect the position of GnuPG Python Bindings Maintainer?

Well, I will remain as maintainer of the bindings; but without funding
for that position, the amount of time I will be able to dedicate
solely to this task will be limited and reduced to volunteered time.
As with all volunteered time and effort in free software projects,
this will be subject to numerous external imperatives.

** Using the Python Bindings from 2019 and beyond
  :PROPERTIES:
  :CUSTOM_ID:
 maintenance-mode-blade-runner
  :END:

For most, if not all, Python developers using these bindings; they

will continue to just work the same as they always have. Expansions
of GPGME itself are usually handled by SWIG with the existing code and
thus bindings are generated properly when the bindings are installed
alongside GPGME and when the latter is built from source.

In the rare circumstances where that is not enough to address some new
addition to GPGME, then that is a bug and thus subject to the
maintenance mode provisions (i.e. it will be fixed following a bug
report being raised and your humble author will need to remember where
the timesheet template was filed, depending on how many years off such
an event is).

All the GPGME functionality will continue to be accessible via the
lower level, dynamically generated methods which match the GPGME C
documentation. While the more intuitively Pythonic higher level layer
already covers the vast majority of functionality people require
 with
key generation, signatures, certifications (key signing), encryption,
decryption, verification, validation, trust levels and so on.

Any wanted features lacking in the Python bindings are usually lacking
because they are missing from GPGME itself (e.g. revoking keys via the
API) and in such cases they are usually deliberately excluded. More
discussion of these issues can be found in the archives of the
[[https://lists.gnupg.org/mailman/listinfo/gnupg-devel][gnupg-devel mailing list]].

Any features existing in the dynamically generated layer for which
people want a specific, higher level function included to make it more
Pythonic (e.g. to avoid needing to learn or memorise cryptographic
mode values or GnuPG status code numbers), would be a feature request
and /not/ a bug.

It is still worthwhile requesting it, but the addition of such a
feature would not be guaranteed and provided on a purely volunteer
basis. Expediting such a request would require funding that request.

Those
 with a commercial interest in expediting such a feature request
already know how to [[https://gnupg.org/cgi-bin/procdonate.cgi?mode=preset][expedite it]] (use the message field to state what
feature is being requested).

** Documentation formats
  :PROPERTIES:
  :CUSTOM_ID: docs
  :END:

The documentation has been written in Org mode for GNU Emacs, with
both Texinfo and reStructuredText formats generated from that. The
Texinfo files are intended for use with the rest of the GnuPG
documentation; while the reStructuredText files are intended for use
with Docutils and Sphinx, as with other Python projects.

*** Cautionary Notes regarding Sphinx and EPUB
:PROPERTIES:
:CUSTOM_ID: sphinx-made-epubs-suck
:END:

Though Python's Docutils in conjunction with Sphinx is capable of
generating some very useful HTML sites, as proven by [[https://readthedocs.org/][Read the Docs]] and
the [[https://docs.python.org/][Python documentation]], there are a number of output formats it does
not
handle well. At the top of the list of things it manages to break
so atrociously as to be embarassing is the [[http://idpf.org/epub][EPUB 3]] format.

The automatically generated EPUB of the CPython documentation always
contains hundreds of validation errors and even the modest amount of
documentation here [[https://files.au.adversary.org.s3.amazonaws.com/crypto/gpgme-
python/rst/epub/GPGMEPythonBindings.epub][produced a file]] with approximately thirty
validation errors. As the volume of documentation content increases,
so does the induced errors. Whereas Texinfo doesn't produce EPUB
output at all, nor does Org-mode.

Should there ever be genuine demand for this format, lodge a
[[https://dev.gnupg.org/maniphest/task/edit/form/4/][feature
request]] case marked for [[https://dev.gnupg.org/p/BenM/][my]] attention. The means of generating such
files flawlessly is already available, but is not yet part of the
GnuPG build system. Nor is it integrated with a means of converting
Org
mode input files to the relevant base format automatically, as can
already be done when converting Org to reStructuredText or Org to
Texinfo. As a certain amount of work would be required to get it
done, there would need to be clear demand for that work to be done.
Just GNU it!
2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* m4/pth.m4: Removed.

* configure.ac: Remove check for pth and automake conditional
HAVE_PTH.

2011-06-16 Marcus Brinkmann <marcus@g10code.com>

Release 1.3.1

* configure.ac: Set LT version to C19/A8/R0.

2011-05-06 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am (SUBDIRS): Remove complus.

* configure.ac (AC_CONFIG_FILES): Remove complus/Makefile.
(BUILD_COMPLUS): Remove AM_CONDITIONAL.
* complus/: Remove very old and stale component.

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Remove.

2011-04-14 Werner Koch <wk@g10code.com>

* configure.ac: Require automake 1.11.

2011-04-06 Werner Koch <wk@g10code.com>

* autogen.sh (--build-w32):
Support option --build-w64.
* configure.ac (HAVE_W64_SYSTEM): Define.
(INSERT__TYPEDEFS_FOR_GPGME_H): New.
(GPGME_CONFIG_HOST): New.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* configure.ac (NEED_LIBASSUAN_VERSION): Bump to 2.0.2 for system hooks.

2010-12-30 Werner Koch <wk@g10code.com>

* configure.ac: Support a git revision.

2010-11-03 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys/types.h and
sys.stat.h.

2010-11-02 Werner Koch <wk@g10code.com>

* configure.ac (AC_CHECK_HEADERS): Check for sys.time.h.

2010-08-19 Werner Koch <wk@g10code.com>

 * configure.ac (AH_BOTTOM): Define GPG_ERR_ENABLE_ERRNO_MACROS.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Check for setlocale.

2010-05-07 Werner Koch <wk@g10code.com>

 * configure.ac: Change checks to always require libassuan.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

 * autogen.sh: Update the thing.

 * configure.ac: Check for locale.h.

2010-05-06
  Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Detect Windows CE.
(HAVE_W32CE_SYSTEM): New symbol and automake conditional.
* ltmain.sh, m4/libtool.m4: Patch so that it works for Windows CE.

 * configure.ac: Require libgpg-error 1.8.

2010-03-15 Werner Koch <wk@g10code.com>

 * configure.ac (emacs_local_vars_begin)
(emacs_local_vars_read_only, emacs_local_vars_end): New.

2010-01-22 Werner Koch <wk@g10code.com>

 * autogen.sh (--build-w32): Add --with-libassuan-prefix.

2010-01-11 Marcus Brinkmann <marcus@g10code.de>

 Release 1.3.0.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Do not use echo -n. Test for __thread.

2009-12-17 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Make largefile check more robust.

2009-12-10 Werner Koch <wk@g10code.com>

 * configure.ac: Check for getgid and getegid.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

 Update to libtool 2.2.6a.
 * configure.ac: Invoke AC_CONFIG_MACRO_DIR.
 (AC_LIBTOOL_WIN32_DLL,
 AC_LIBTOOL_RC): Replace by ...
 (LT_PREREQ, LT_INIT, LT_LANG): ... these.
 * config.guess, config.sub, install-sh, ltmain.sh, m4/libtool.m4:
 Updated to libtool 2.2.6a.
 * m4/ltoptions.m4, m4/ltsugar.m4, m4/ltversion.m4,
 m4/lt~obsolete.m4: New files from libtool 2.2.6a.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Activate UIServer if FD passing is enabled and
 Assuan is available.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Check for argp.h and error_t.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (NEED_GPG_VERSION_DEFAULT): Bump to 1.4.0 as 1.3.0
 was development versions only.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Add support for G13.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (AC_CONFIG_FILES): Remove assuan/Makefile.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Replace internal libassuan by external libassuan.
 * m4/libassuan.m4:
 New file.
 * Makefile.am (assuan): Remove variable.
 (SUBDIRS): Remove ${assuan}.
 * assuan/: Removed.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add AC_TYPE_UINTPTR_T.

* assuan/assuan.h [_ASSUAN_IN_GPGME_BUILD_ASSUAN]: Declare
_gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

Released GPGME 1.2.0.

* configure.ac (my_version): Set to 1.2.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump.
(LIBGPGME_LT_REVISION): Reset.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add infrastructure for compile time check of
_FILE_OFFSET_BITS.

2009-04-19 Moritz <moritz@gnu.org>

* Makefile.am (DISTCHECK_CONFIGURE_FLAGS): Specify --with-gpg.

2009-03-06 Marcus Brinkmann <marcus@g10code.de>

* assuan/: Update to libassuan SVN 2009-03-06.

2009-01-26 Werner Koch <wk@g10code.com>

* configure.ac (AC_CONFIG_FILES): Add tests/opassuan/Makefile.

2008-12-08 Marcus Brinkmann <marcus@g10code.de>

Release GPGME
1.1.8.

* configure.ac: Bump API revision.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

* configure.ac: Replace gpgme paths with src.
* gpgme: Move to ...
* src: ... this new directory.

2008-10-20 Werner Koch <wk@g10code.com>

* configure.ac (AC_CONFIG_FILES): Add gpgme.h.
(GNUPG_FIX_HDR_VERSION): Remove.

2008-10-17 Marcus Brinkmann <marcus@g10code.com>

Release GPGME 1.1.7.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2008-09-19 Moritz <moritz@gnu.org>

* configure.ac: Remove bogus "esac".

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

* configure.ac (_XOPEN_SOURCE) [apple-darwin]: Define it.

2008-07-04 Werner Koch <wk@g10code.com>

* config.guess, config.sub: Update to 2007-11-19. Also update
missing et al scripts.

2008-04-01 Werner Koch <wk@g10code.com>

* configure.ac (AC_INIT): Fix quoting.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump required version of automake up to 1.10.
* autogen.sh: Fix
aclocal check.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

Release GPGME 1.1.6.

* configure.ac: Support gpgconf.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* assuan-pipe-connect.c (pipe_connect_gpgme): Do not close process
handle here. Use this function also on Unix systems.

* assuan-pipe-connect.c (pipe_connect_gpgme): Fix last change.

* assuan-pipe-connect.c (pipe_connect_gpgme): New function, use it
if _ASSUAN_IN_GPGME_BUILD_ASSUAN.

2007-09-17 Werner Koch <wk@g10code.com>

* configure.ac: Use the svn version magic.

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for C++, Qt and support --enable-w32-qt.
* m4/pkg.m4: New file.

2007-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (--enable-w32-glib): Use --enableval, not
--withval.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-socket.c (_assuan_close): Always use close().
* assuan/assuan.h (_gpgme_io_close): New prototype.
(close): New
macro, define as _gpgme_io_close.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* assuan/assuan-io.c (_assuan_simple_read, _assuan_simple_write):
Always use read/write (which means _gpgme_io_read and
_gpgme_io_write).

2007-07-09 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.5.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGSM_DEFAULT) [*-mingw32*]: Initialize it.
(HAVE_ASSUAN_H): Set to 1 if we have it.
(funopen): Use AC_REPLACE_FUNCS.
(USE_DESCRIPTOR_PASSING): Define to 1 if we have it. Do not
define it at all if we don't.
(NETLIBS) [have_w32_system]: Add -lws2_32.
(DIRSEP_C, DIRSEP_S, EXPSEP_C, EXPSEP_S, PATHSEP_S)
[HAVE_DOSISH_SYSTEM]: Remove definitions.

* assuan/assuan.h (_assuan_funopen): Define to _gpgme_funopen.
* assuan/funopen.c: Move to ../gpgme/funopen.c.
* assuan/Makefile.am (libassuan_la_SOURCES): Remove funopen.c.

2007-07-04 Marcus Brinkmann <marcus@g10code.de>

*
assuan/Makefile.am (INCLUDES): Include $(top_srcdir)/gpgme.
* assuan/assuan.h: Include <ath.h> instead of trying to duplicate
the definitions.

* assuan/: Update files to 2007-07-04 version of assuan.

* autogen.sh: Use = not == in test.

2007-03-05 Werner Koch <wk@g10code.com>

Released 1.1.4.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

* autogen.sh: New option --force.

2007-01-29 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.3.

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2007-01-26 Werner Koch <wk@g10code.com>

* configure.ac: Changed gpg and gpgsm version checks to work with
arbitrary names of the gpg binary. New option --disable-gpg-test
and --disable-gpgsm-test.

2007-01-09 Werner Koch <wk@g10code.com>

* configure.ac (NEED_GPG_VERSION, NEED_GPGSM_VERSION): Must define
after it may have been changed by an option.

2007-01-08 Werner Koch <wk@g10code.com>

* configure.ac: Require gpg-error 1.4 due to the use of
gpg_error_from_syserror.
(HAVE_ASSUAN_H):
New.

2007-01-05 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add options --with-gpg-version and
--with-gpgsm-version to allow overriding the minimum version
requirements.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Fix two typos in last change.

2006-12-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Use descriptor passing only if --enable-fd-passing
is provided.

* configure.ac: Add check for use of descriptor passing.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump to 1.3.0.

2006-09-19 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Turn stpcpy into a replacement function.
Check for unistd.h and add setenv as replacement function.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for network libraries and set NETLIBS.

2006-07-06 Marcus Brinkmann <marcus@g10code.de>

* lang, lang/cl: New subdirectories.
*
lang/Makefile.am, lang/README: New files.
* configure.ac (AC_CONFIG_FILES): Add lang/Makefile,
lang/cl/Makefile and lang/cl/gpgme.asd.
* Makefile.am (SUBDIRS): Add lang.

2006-03-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump for release.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.1.1.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for
release.
(LIBGPGME_LT_REVISION): Reset to 0 for release.

2006-01-05 Werner Koch <wk@g10code.com>

* configure.ac: Test for inline feature.
(AH_BOTTOM): New to define the pure attribute.

2006-01-03 Werner Koch <wk@g10code.com>

 * configure.ac: Append SVN revision to the version.

2005-11-18 Werner Koch <wk@g10code.com>

 * configure.ac (BUILD_REVISION): New.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac: Add support for --enable-w32-glib (disabled by
 default). Invoke AM_PATH_GLIB_2_0.

2005-11-16 Werner Koch <wk@g10code.com>

 * configure.ac
 (CFLAGS) [W32]: Make sure that -mms-bitfields are used.

2005-11-15 Werner Koch <wk@g10code.com>

 * configure.ac: Create BUILD_FILEVERSION from SVN Revision.

 * autogen.sh [W32]: Build shared and static versions of the library.

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

 * w32-dll/ChangeLog, w32-dll/build-dll, w32-dll/gpgme.def: Remove
 files.

 * configure.ac: Instead checking for windres and dlltool, invoke
 AC_LIBTOOL_WIN32_DLL and AC_LIBTOOL_RC.
 * src/Makefile.am [HAVE_W32_SYSTEM]: Use libtool, which simplifies
 the rules.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

 Released 1.1.0.

 * configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump for
 release.
 (LIBGPGME_LT_REVISION): Reset to 0 for release.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

 * configure.ac (HAVE_PTH): Don't add $PTH_CFLAGS to $CFLAGS here.

2005-08-26 Werner Koch <wk@g10code.com>

* configure.ac (SEPCONSTANTS): New to define DIRSEP_C et al.

2005-08-19 Werner Koch <wk@g10code.com>

*
configure.ac [W32]: Create values for versioninfo.rc and list
substuture versioninfo.rc.
* configure.ac: Define ENABLE_GPGSM.

2005-08-08 Werner Koch <wk@g10code.com>

* configure.ac (stpcpy): Changed from replace to test.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AH_BOTTOM): Removed.

2005-03-09 Werner Koch <wk@g10code.com>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): Assume no when cross-compiling.

* Makefile.am (EXTRA_DIST): Include autogen.sh

* autogen.sh: Added the usual code to build for W32 (--build-w32).

* configure.ac: Fixed the mingw32 host string, removed OS/2 stuff.
(HAVE_DRIVE_LETTERS): Removed.
(HAVE_W32_SYSTEM): Added.
(AC_GNU_SOURCE): New to replace the identical AH_VERBATIM.
(AH_BOTTOM): Added.

2004-12-28 Werner Koch <wk@g10code.com>

Released 1.0.2.

* Makefile.am (AUTOMAKE_OPTIONS): Build bzip 2 version.
(ACLOCAL_AMFLAGS): Add -I m4.
* configure.ac: Require automake 1.9.3 and autoconf 2.59.
* acinclude.m4:
Changed quoting for automake 1.9.
* README: Use SHA1 instead of MD5.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Replace ttyname_r if it doesn't exist (and warn in
that case).

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* README: Refer to COPYING.LESSER and "each file" instead of
COPYING.
* COPYING.LESSER: New file.
* gpgme.spec.in (%doc): Add COPYING.LESSER.
* acinclude.m4, configure.ac, Makefile.am: Change license to LGPL
2.1 or later.
* TODO: Add copyright notice.
* README.CVS: Likewise.

* configure.ac (GPGSM_VERSION): Fix filter to get it.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.1.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 2.
(AC_INIT): Set version to 1.0.1.

* configure.ac: Set HAVE_GPGSM to true only if $GPGSM is not "no".

2004-09-30 Marcus Brinkmann <marcus@g10code.de>

Released 1.0.0.

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.
(AC_INIT): Set version to 1.0.0.

* Makefile.am
(EXTRA_DIST): Remove README-alpha.
* README-alpha: Remove file.

2004-09-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable AC_CONFIG_MACRO_DIR for now.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Improve diagnostics with version check.

* configure.ac: Print diagnostics about found thread libraries at
the end. Check for the versions of GPG and GPGSM and print the
found versions at the end.
(HAVE_GPGSM): Do not require GPGSM to exist and be readable.
(AC_CONFIG_MACRO_DIR): Invoke with argument m4.

* acinclude.m4: Add copyright notice.

(jm_GLIBC21, AM_PATH_GPG_ERROR, _AC_PTH_ERROR, _AC_PTH_VERBOSE,
AC_CHECK_PTH): Removed.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Check for <sys/uio.h>.

2004-06-08 Marcus Brinkmann <marcus@g10code.de>

Released 0.9.0.

* configure.ac (AC_INIT): Set version number to 0.9.0.
(LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by one.
(LIBGPGME_LT_REVISION): Reset to zero.

2004-05-21
Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPGME_CONFIG_API_VERSION): New variable,
substitute it.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.7.

* configure.ac (LIBGPGME_LT_REVISION): Bump it up.

2004-04-02 Thomas Schwinge <schwinge@nic-nac-project.de>

* autogen.sh: Added ACLOCAL_FLAGS.

2004-04-06 Werner Koch <wk@gnupg.org>

Released 0.4.6.

* config.guess, config.sub, ltmain.sh: Updated to those from
libtools 1.5.4.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.5.

* configure.ac (NEED_GPGSM_VERSION): Bump up to 1.9.6.

* Makefile.am (EXTRA_DIST): Remove autogen.sh and README.CVS.

2004-02-18 Werner Koch <wk@gnupg.org>

* configure.ac: Make the check for funopen fail with just a
warning.

2004-02-11 Werner Koch <wk@gnupg.org>

* autogen.sh (check_version): Removed bashism and simplified.

2004-02-10 Werner Koch <wk@gnupg.org>

* configure.ac: Fixed funopen test change.

2004-02-06 Moritz Schulte
<mo@g10code.com>

* configure.ac: Fix funopen replacement mechanism.

2004-01-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add invocation of AC_SYS_LARGEFILE, AC_TYPE_OFF_T
and AC_FUNC_FSEEKO.

2004-01-12 Werner Koch <wk@gnupg.org>

Released 0.4.4.

* configure.ac: Bumbed LT_Revision; now at C12/A1/R1.
(NEED_GPGSM_VERSION): Set to 1.9.3.
(min_automake_version): Added.
* README.CVS: New.
* Makefile.am (EXTRA_DIST): Added README.CVS.
* autogen.sh: Updated.

2003-11-19 Werner Koch <wk@gnupg.org>

* acinclude.m4: Add AM_PATH_GPG_ERROR.
* configure.ac: Check for timegm. Made warning messages more
prominent.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

Released 0.4.3.

* configure.ac (LIBGPGME_LT_CURRENT, LIBGPGME_LT_AGE): Bump up by 1.
(LIBGPGME_LT_REVISION): Set to 0.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Require libgpg-error 0.5.

* acinclude.m4: Remove libtool cruft, add jm_GLIBC21.
* configure.ac: Add check for
getenv_r, and call jm_GLIBC21.
Define HAVE_THREAD_SAFE_GETENV if appropriate.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Remove GPGME_CONFIG_LIBS and GPGME_CONFIG_CFLAGS.

2003-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Move invocation of AC_CANONICAL_HOST up to
suppress warning by autoconf.

2003-08-30 Robert Schiele <rschiele@uni-mannheim.de>

* gpgme.spec.in: %{_infodir}/dir is not packaged,
remove to prevent checking failure.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: If building Assuan, check for funopen and
fopencookie, and make isascii, putc_unlocked and memrchr
replacement functions.
(AM_PATH_GPG_ERROR): Require 0.3.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.3.

2003-07-30 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_REVISION): Bump up to 1.

Released 0.4.2.

2003-07-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac:
Complain if libgpg-error is not found.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version to 0.4.2.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Bump up to 11.

* configure.ac: Use AM_PATH_GPG_ERROR.

* configure.ac: Check for libgpg-error. Define
GPG_ERR_SOURCE_DEFAULT.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPG_VERSION): Bump up to 1.2.2.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

In all files, replace the Gpgme* type names with the new gpgme_*
type names.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* assuan/: Update files to 2002-11-10 version of assuan.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* bonobo/gpgme.c, bonobo/main.c, bonobo/main.h, bonobo/Makefile,
bonobo/Makefile.am, bonobo/Makefile.in: Dead files removed.
* configure.ac: Remove automake conditional BUILD_BONOBO
(AC_CONFIG_FILES): Remove bonobo/Makefile.
*
Makefile.am (bonobo): Remove variable.
(SUBDIRS): Remove ${bonobo}.

* configure.ac: Remove all uses of GNUPG_CHECK_TYPEDEF, for byte,
ushort, ulong, u16 and u32.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Remove macro.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: New conditional HAVE_LD_VERSION_SCRIPT.
Call AC_CANONICAL_HOST, use host instead target.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump up to 0.4.1.

Released 0.4.0.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (automake_vers): Require 1.7 (really 1.7.1) for the

conditional source distribution bug fix.

2002-12-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (LIBGPGME_LT_CURRENT): Increase by one.
(LIBGPGME_LT_AGE, LIBGPGME_LT_REVISION): Set to 0.

2002-11-28 Marcus Brinkmann <marcus@g10code.de>

* NEWS: Add note about moving "gpgmeplug" to the "cryptplug"
package.
* README: Remove instructions related to "gpgmeplug".
* configure.ac:
Remove enable option "gpgmeplug" and automake
conditional BUILD_GPGMEPLUG, as well as the status info about it.
(GPGMEPLUG): Remove variable.
* Makefile.am (gpgmeplug): Remove variable.
(SUBDIRS): Remove ${gpgmeplug}.
* cryptplug.h, gpgme-openpgp.c, gpgmeplug.dox, gpgme-smime.c,
Makefile.am, gpgmeplug.c, ChangeLog: Files removed.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Disable GPGSM for all dosish systems.

2002-10-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_GPGSM.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Bump version up to 0.4.0.
(NEED_GPG_VERSION): Bump up to 1.2.0.
(NEED_GPGSM_VERSION): Bump up to 0.9.0.
* README: Update version numbers.
* NEWS: Start entry for 0.4.0.

2002-09-20 Werner Koch <wk@gnupg.org>

Released 0.3.11.

* configure.ac: Bump up LIBGPGME_LT_REVISION.

* configure.ac (AC_CHECK_HEADERS): Check for sys/select.h.

2002-09-04 Marcus Brinkmann
<marcus@g10code.de>

* autogen.sh (autoconf_vers): Bump up to 2.53 to get the @&t@
quadrigraph. Always cutting the edge!

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Create and substitute LTLIBOBJS.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.10.

* NEWS: Update for 0.3.9 release.
* configure.ac: Bump up LIBGPGME_LT_REVISION.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.spec.in: Changed user name in Wojciech Polak's email
address from ghostface to polak per request by himself.

2002-08-28 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_CHECK_VA_COPY): New.
* configure.ac: Use it.

2002-08-23 Werner Koch <wk@gnupg.org>

* configure.ac (GPGME_CONFIG_CFLAGS): Renamed from GPGME_CFLAGS
and removed the libpath because it is set by the config script.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Bump version number to 0.3.10.

* NEWS: Add template for development version.

2002-08-21
Marcus Brinkmann <marcus@g10code.de>

Released 0.3.9.

* NEWS: Update for 0.3.9 release.
* Makefile.am (EXTRA_DIST): Add gpgme.spec.in.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* jnlib/argparse.c, jnlib/argparse.h, jnlib/ChangeLog,
jnlib/dotlock.c, jnlib/dotlock.h, jnlib/libjnlib-config.h,
jnlib/logging.c, jnlib/logging.h,jnlib/Makefile.am,

jnlib/mischelp.h, jnlib/README, jnlib/stringhelp.c,
jnlib/stringhelp.h, jnlib/strlist.c, jnlib/strlist.h,
jnlib/types.h, jnlib/xmalloc.c, jnlib/xmalloc.h: Remove files.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Remove jnlib.
* configure.ac: Don't check for unsigned short or unsigned long.
Don't check for memicmp, strlwr, strtoul, memmove, stricmp.
Make stpcpy a replaced function.
Don't define HAVE_JNLIB_LOGGING.
Don't generate jnlib/Makefile.

2002-07-02 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version number to 0.3.9; add a comment on
when to change it.

* gpgme.spec.in:
New. Contributed by Wojciech Polak.
* Makefile.am (dist-hook): New.

* AUTHORS: Added Wojciech and bug reporting addresses.

2002-06-25 Werner Koch <wk@gnupg.org>

Released 0.3.8.

* configure.ac: Bumbed LT version to 9/3/0.
(NEED_GPGSM_VERSION): Need 0.3.8 due to fixed export command.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

Released 0.3.7.

* configure.ac (AC_INIT): Set version to 0.3.7.
(LIBGPGME_LT_REVISION): Add one.

* README: Document version requirement correctly.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* acinclude.m4: Fix Pth check so that it doesn't error out if pth
is not found.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add checks for Pth and pthreads.

* acinclude.m4: Add slightly hacked check for pth (seems to be an autoconf version problem).

2002-05-21 Werner Koch <wk@gnupg.org>

* configure.ac (NEED_GPGSM_VERSION): We need gpgsm 0.3.7.

2002-05-03 Werner Koch <wk@gnupg.org>

Released 0.3.6.

2002-04-05
Marcus Brinkmann <marcus@g10code.de>

* acconfig.h: File removed.
* configure.ac (NEED_GPG_VERSION): Add description.
(NEED_GPGSM_VERSION): Likewise.
(HAVE_DOSISH_SYSTEM): Likewise.
(HAVE_DRIVE_LETTERS): Likewise.
(GPG_PATH): Likewise.
(GPGSM_PATH): Likewise.
* acinclude.m4 (GNUPG_CHECK_TYPEDEF): Likewise.

2002-04-01 Werner Koch <wk@gnupg.org>

Released 0.3.5.

2002-03-17 Marcus Brinkmann <marcus@g10code.de>

* configure.ac: Add automake conditional HAVE_DOSISH_SYSTEM.

2002-03-04 Werner Koch <wk@gnupg.org>

* configure.ac: Bumbed version to 0.3.4-cvs to continue development.

Released 0.3.4.

* configure.ac: Bumbed LT version numbers to (7,1,0), requires gpgsm 0.3.1.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT): Change version number to snapshot CVS version.

2002-02-13 Werner Koch <wk@gnupg.org>

* configure.ac (vasprintf,fopencookie): Add checks.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_INIT):
Bump version to 0.3.3.
* jnlib/Makefile.am: Rever to older version that includes xmalloc
but not dotlock and some other files. Reported by Stphane
Corthsy.

2002-02-10 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.2.

* configure.ac (AC_INIT): Bump version to 0.3.2.
* jnlib/libjnlibconfig.h: Revert to older version that doesn't
expect libgcrypt. Reported by Jose Carlos Garcia Sogo
<jsogo@debian.org>.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* Released 0.3.1.

* configure.ac (LIBGPGME_LT_CURRENT): Bump it up to 6!
(NEED_GPGSM_VERSION): Bump it up to 0.3.0!
(AC_INIT): Bump version to 0.3.1

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (HAVE_JNLIB_LOGGING): Define always for assuan.

2001-12-19 Werner Koch <wk@gnupg.org>

* configure.ac (VERSION,PACKAGE): Defined and subst. Used for
AM_INIT_AUTOMAKE and moved all version number more to the top.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh (libtool_vers):
Bump to 1.4.

* configure.ac (LIBGPGME_LT_CURRENT): Increment.
(LIBGPGME_LT_AGE): Reset.
Improve comment.
Fix wrong comment character.

2001-12-18 Werner Koch <wk@gnupg.org>

* acinclude.m4 (GNUPG_FIX_HDR_VERSION): Fixed for new automake.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (GPG): Substitute this variable.
(GPGSM): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (AC_CONFIG_FILES): Add tests/gpg/Makefile and
tests/gpgsm/Makefile.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgmeplug): New variable, set to gpgmeplug if
[BUILD_GPGMEPLUG].
* configure.ac (AC_CONFIG_FILES): Add gpgmeplug/Makefile.
Support --enable-gpgmeplug.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* autogen.sh: Tighten version dependencies.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (SUBDIRS): Support building the assuan library
(currently if GPGSM_PATH is set)..
* configure.ac: Support building
the assuan library.
* assuan: New directory, populated with the Assuan library
(copied from the newpg repository).

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* configure.ac (NEED_GPGSM_VERSION): New variable. Treat it
similarly to NEED_GPG_VERSION.
* acconfig.h: Likewise.

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* configure.in: Renamed to ...
* configure.ac: ... this. Update to autoconf 2.52. Lots of small
changes in the transition. Support --with-gpg=PATH and
--with-gpgsm=PATH options. Check if test suites can be run.
* acconfig.h: Add GPGSM_PATH.
* Makefile.am: New variable `tests', set to `tests' if
RUN_GPG_TESTS.
(SUBDIRS): Replace string `tests' with variable `tests'.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

 * autogen.sh: Invoke automake with `-a' (add missing files).
 Do not invoke configure.

2001-09-17 Werner Koch <wk@gnupg.org>

 Released 0.2.3.

 * configure.in (NEED_GPG_VERSION): Set to 1.0.6. Incremented LT
 current
 and age.

 * Makefile.am (SUBDIRS): Add doc

2001-06-12 Werner Koch <wk@gnupg.org>

 Released 0.2.2.

2001-04-05 Werner Koch <wk@gnupg.org>

 * configure.in (NEED_GPG_VERSION): Set to 1.0.4g

2001-04-02 Werner Koch <wk@gnupg.org>

 Released 0.2.1.

 Changed the copyright notices all over the place.

2001-02-28 Werner Koch <wk@gnupg.org>

 Released 0.2.0.

2001-01-18 Werner Koch <wk@gnupg.org>

 * autogen.sh: Added option --build-w32.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2010,
      2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-05-11 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.
(clean-local): New rule.
* gpg/Makefile.am (DISTCLEANFILES): Move to ...
(CLEANFILES): ... here.

2011-05-05 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am: Unset GPG_AGENT_INFO when setting up local
configuration.
(clean-local): Shut down local gpg-agent.

2011-05-04 Marcus Brinkmann <marcus@g10code.com>

* gpg/t-import.c (check_result): Complete secret key pair counting
and disable status check, as GPG 2.1 currently emits two IMPORT_OK
lines and we only look at the first.

2011-04-27 Marcus Brinkmann <marcus@g10code.com>

* gpg/Makefile.am (DISTCLEANFILES):
Add S.gpg-agent.
(mkdemodirs, ./Alpha/Secret.gpg): Remove targets.
(GNUPGHOME): Export as absolute build directory (for gpg-agent).
(./pubring.gpg): Remove --homedir option, import secdemo.asc.
(clean-local): Rewrite.
* gpg/secdemo.asc: New file.
* gpg/pubkey-1.asc, gpg/seckey-1.asc: Change passphrase to
"abc" (now needed as GnuPG 2.1 asks for secret key passphrase on
import).
* gpg/t-keylist.c (keys): Update key info for Joe Random Hacker.
(main): Disable check for can_encrypt, as this is now in a
different subkey.
* gpg/t-encrypt-sign.c (check_result): Allow RMD160 hash
algorithm.
* gpg/t-import.c (check_result): One secret key pair now counts as
two secret keys, allow that.

2009-11-03 Werner Koch <wk@g10code.com>

* run-support.h (fail_if_err): Include program name.

* run-sign.c (main): Add option --uiserver.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan/t-command.c: Update to new interface.

2009-10-15 Werner Koch <wk@g10code.com>

* run-verify.c:
New.

2009-08-06 Werner Koch <wk@g10code.com>

* run-sign.c: New.

2009-07-07 Werner Koch <wk@g10code.com>

* run-keylist.c (main): Add options --cms and --openpgp.

* gpg/pgp-keylist.c: Rename to ...
* run-keylist.c: ... this.
* gpg/pgp-import.c: Rename to ...
* run-import.c: ... this.
* gpg/pgp-export.c: Rename to ...
* run-export.c: ... this.
* run-support.h: New. Copied from gpg/t-support.h.
* gpg/Makefile.am (noinst_PROGRAMS): Remove them.
* Makefile.am (noinst_PROGRAMS): Add them.
(noinst_HEADERS): New.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-support.h (passphrase_cb): Implement write() according to
the book to silence compiler warning.
* gpgsm/t-support.h (passphrase_cb): Likewise.

2009-06-16 Werner Koch <wk@g10code.com>

* gpg/pgp-import.c: New.
* gpg/t-support.h (print_import_result, nonnull): Factored out
from other tools.

* gpg/pgp-export.c, gpg/pgp-keylist.c: New.

2009-06-09 Werner Koch <wk@g10code.com>

* gpg/Makefile.am
(./pubring.gpg): Ignore errors in case of
already imported keys. Add --no-permission-warning and remove
obsolete --allow-secret-key-import.
* gpg/mkdemodirs.in (GPG): Add --no-permission-warning.

* gpg/t-edit.c (edit_fnc): Use gpgme_io_write.

2009-04-19 Moritz <moritz@gnu.org>

* gpg/Makefile.am (EXTRA_DIST): Replaced mkdemodirs with mkdemodirs.in.
(mkdemodirs): New target.
(clean-local): Added command for removing mkdemodirs script.
(./Alpha/Secret.gpg): Added dependency on mkdemodirs.

* gpg/mkdemodirs: Renamed to ...
* gpg/mkdemodirs.in: ... here.
* gpg/mkdemodirs.in (GPG): Derive value from @GPG@ instead of
hard-coding "gpg".

2009-02-24 Werner Koch <wk@g10code.com>

* opassuan/t-command.c: Adjust for changed new op_assuan interface.

2009-02-03 Werner Koch <wk@g10code.com>

* gpg/t-keylist.c (main): Check that new fields is_cardkey and
card_number are not set.

2009-01-26 Werner Koch <wk@g10code.com>

* opassuan/: New.
* opassuan/Makefile.am:
New.
* opassuan/t-command.c: New.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Fix path to include file.
* gpg/Makefile.am (INCLUDES), gpgsm/Makefile.am (INCLUDES): Likewise.

2008-11-18 Werner Koch <wk@g10code.com>

* gpgsm/cms-decrypt.c: New.

2008-11-03 Marcus Brinkmann <marcus@g10code.com>

* gpgsm/Makefile.am (INCLUDES, LDADD): Replace gpgme path with src.
* gpg/Makefile.am (INCLUDES, LDADD, t_thread1_LDADD): Likewise.
* Makefile.am (LDADD): Likewise.

2008-10-30 Werner Koch <wk@g10code.com>

* gpgsm/cms-keylist.c: New.

2008-06-19 Werner Koch <wk@g10code.com>

* gpg/t-gpgconf.c (dump_arg): Add new types. Print strings in
quotes.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (DISTCLEANFILES): Add pubring.kbx~.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-gpgconf.c (main): Allow for dirmngr not to be available.

* gpg/Makefile.am (./gpg-agent.conf): Correct pinentry path.

* gpg/pinentry:
New file.
* gpg/Makefile.am (DISTCLEANFILES, all-local): Add gpg-agent.conf
(./gpg-agent.conf): New target.
(EXTRA_DIST): Add pinentry.

* gpg/t-gpgconf.c (main): Exit early if compiled without gpgconf.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Add pubring.kbx and dirmngr.conf.

* Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Use absolute path for
GNUPGHOME.
* gpg/Makefile.am (TESTS): Add t-gpgconf.
t-gpgconf.c: New file.

2007-11-23 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (show_auditlog): Check for GPG_ERR_ASS_UNKNOWN_CMD.

2007-11-23 Werner Koch <wk@g10code.com>

* gpgsm/t-verify.c (check_result): Don't exit on error but set a flag.
(main): Cosnult flag for return value.
(show_auditlog): New.
(main): Use it.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* t-engine-info.c
(check_engine_info): Fix debug output.
* gpg/Makefile.am (tests_unix): New variable.
(TESTS): Use it.
* gpg/t-support.h (passphrase_cb) [HAVE_W32_SYSTEM]: Use WriteFile instead of write.
* gpg/t-wait.c [HAVE_W32_SYSTEM]: Define sleep as _sleep.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (main): Release TEXT and SIG.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Change := into =.

2007-07-12 Werner Koch <wk@g10code.com>

* gpgsm/t-support.h (init_gpgme) [W32]: Do not init the locales as
the constants are not available.

2007-02-26 Werner Koch <wk@g10code.com>

* gpg/t-verify.c (double_plaintext_sig): New.
(main): Check it.

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Skip unknown keys. Newer versions of
GPGSM import more keys than older ones.

2005-12-06 Werner Koch <wk@g10code.com>

* gpg/t-keylist.c (main): Changed for that secondary keys now have
a fingerprint.
*
gpg/t-keylist-sig.c (main): Ditto.
* gpgsm/t-keylist.c (main): Ditto. The test used to be wrong.

2005-10-18 Werner Koch <wk@g10code.com>

* gpg/pubdemo.asc, gpg/secdemo.asc: Add 2 expired subkeys to Whisky.
* gpg/t-keylist.c: Reordered list to match new demo keyring. Add arg for number of subkeys and for extra checking function.
(main): Enhanced a few error outputs. Changed subkey counting. Call extra checking function.
(check_whisky): New.

2005-10-07 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (main): Allow for an email address as a second uid.

* gpg/t-sig-notation.c: Change critical notation to something GnuPG understands.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Remove gpg.conf.
(DISTCLEANFILES): Add gpg.conf.
(all-local): Add gpg.conf.
(./gpg.conf): New target.
* gpg/gpg.conf: Remove file.

* gpg/Makefile.am (EXTRA_DIST): Add gpg.conf.

* gpg/Makefile.am (TESTS): Add t-sig-notation.
* gpg/t-sig-notation.c
(check_result): New file.
* gpg/t-verify.c (check_result): Also check the length of the notation data.
* gpg/gpg.conf: New file.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Add t-filename.
* gpg/t-filename.c: New file.

2005-09-23 Werner Koch <wk@g10code.com>

* gpg/t-support.h (init_gpgme) [W32]: Don't use LC_MESSAGES.

* gpg/t-encrypt-large.c: New test.
* gpg/Makefile.am (TESTS): Add t-encrypt-large.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Add t-wait.
* gpg/t-wait.c (main): New test.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* gpg/mkdemodirs: Add copyright notice.

* gpgsm/Makefile.am, gpgsm/t-support.h, gpgsm/t-decrypt.c,
gpgsm/t-encrypt.c, gpgsm/t-export.c, gpgsm/t-genkey.c,
gpgsm/t-import.c, gpgsm/t-keylist.c, gpgsm/t-sign.c,
gpgsm/t-verify.c, gpg/Makefile.am, gpg/t-decrypt.c,
gpg/t-decrypt-verify.c, gpg/t-edit.c, gpg/t-encrypt.c,
gpg/t-encrypt-sign.c, gpg/t-encrypt-sym.c,
gpg/t-eventloop.c,
gpg/t-export.c, gpg/t-genkey.c, gpg/t-import.c, gpg/t-keylist.c,
gpg/t-keylist-sig.c, gpg/t-sign.c, gpg/t-signers.c,
gpg/t-support.h, gpg/t-thread1.c, gpg/t-trustlist.c,
gpg/t-verify.c, Makefile.am, t-data.c, t-engine-info.c,
t-version.c: Change license to LGPL.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (struct): Add new fields VALIDITY and
KEY_LENGTH.
(main): Use them.
* gpgsm/t-import.c (check_result): New argument total_stat.
(main): Pass this argument. Reduce number of total considered
keys to 1 for the second test.

2004-04-05 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am: Changed the faked system time to 20011213T12000.

2004-03-07 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c: Add chain IDs.

2004-03-03 Werner Koch <wk@gnupg.org>

* gpgsm/t-export.c (main): Also check exporting 2 certificates.

2004-02-17 Werner Koch <wk@gnupg.org>

* gpgsm/t-import.c (check_result): gpgsm does now
return info in
the result->imports; adjust for that.

* gpgsm/Makefile.am (TESTS_ENVIRONMENT): Reset the GPG_AGENT_INFO.

Include config.h at the top of each C source. This is required due to LFS support.

* gpg/t-keylist-sig.c (main): s/class/sig_class/.
* gpg/t-signers.c (check_result): Ditto.
* gpg/t-sign.c (check_result): Ditto.
* gpg/t-encrypt-sign.c (check_result): Ditto.
* gpgsm/t-sign.c (check_result): Ditto.

2004-01-12 Werner Koch <wk@gnupg.org>

* gpg/t-keylist-sig.c (main): Temporary disabled one test due top gpg 1.3.4 problems.
* gpg/t-import.c (check_result): Likewise.

2003-11-19 Werner Koch <wk@gnupg.org>

* gpg/t-support.h (DIM): Added.

* gpg/t-verify.c (check_result): Rewrote test for notations because the order of notaions is not guaranteed.

* gpgsm/t-support.h (fail_if_err): Also print the numeric values.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: Include <sys/types.h> for old systems.

* gpgsm/Makefile.am
(DISTCLEANFILES): Add random_seed.

* gpg/t-thread1.c (thread_one): Do not call initialize_gpgme.
Likewise.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-thread1.c (main): Call init_gpgme here.
(initialize_gpgme): Function removed.

* gpg/t-thread1.c: New file.
* gpg/Makefile.am (TESTS): Add t-thread1.c.
(t_thread1_LDADD): New variable.
(LDADD): Remove GPG Error lib.
* gpgsm/Makefile.am (LDADD): Likewise.

* gpg/t-import.c (main): Likewise.
* gpg/t-keylist-sig.c (main): Likewise.

* gpg/t-keylist.c (main): Likewise.
* gpg/t-sign.c (main): Likewise.
* gpg/t-signers.c (main): Likewise.
* gpg/t-trustlist.c (main): Likewise.
* gpgsm/t-support.h: Include <stdlib.h> and <locale.h>.
(init_gpgme): New function.
* gpg/t-support.h: Likewise.
* gpgsm/t-verify.c (main): Call init_gpgme.
* gpgsm/t-decrypt.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-genkey.c (main): Likewise.
* gpgsm/t-import.c (main):
Likewise.
* gpgsm/t-keylist.c (main): Likewise.
* gpgsm/t-sign.c (main): Likewise.
* gpg/t-verify.c (main): Call init_gpgme.
* gpg/t-decrypt-verify.c (main): Likewise.
* gpg/t-decrypt.c (main): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt-sym.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpg/t-genkey.c (main): Likewise.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-sign.c (check_result): Change output format for signature
class to unsigned int.
* gpg/t-signers.c (check_result): Likewise.
* gpg/t-encrypt-sign.c (check_result): Likewise.
* gpgsm/t-sign.c (check_result): Likewise.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (check_result): Change type of SUMMARY to
unsigned int.
* gpg/t-decrypt-verify.c (check_verify_result): Likewise.
* gpg/t-keylist-sig.c (keys): Change type of member CLASS
to
unsigned int.
* t-data.c (read_cb): Change type of AMOUNT to unsigned int.
* t-version.c (version): Remove unused variable.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpg/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.
* gpgsm/Makefile.am (AM_CPPFLAGS): New variable.
(LDADD): Add @GPG_ERROR_LIBS@.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* gpg/Makefile.am (noinst_HEADERS): New variable.
* gpg/t-support.h: New file.
* gpgsm/Makefile.am (noinst_HEADERS): New variable.
* gpgsm/t-support.h: New file.

2003-05-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Adapt to new syntax.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

2003-05-28 Marcus
Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Rewrite recipient management.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpg/t-encrypt.c (main): Likewise.
* gpg/t-export.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.
* gpgsm/t-export.c (main): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (TESTS): Order t-keylist and t-keylist-sig after
t-import.
* gpg/t-edit.c (edit_fnc): Fix primary UID for keylisting tests.
* gpg/t-keylist.c: Change order of user IDs.
* gpg/t-keylist-sig.c: Likewise.
* gpg/t-import.c: Add support for gpg in CVS.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* t-data.c: Remove TEST_OUT_CB.
(main): Likewise.

* gpg/t-trustlist.c (main): Access ITEM directly.

* (t-decrypt-verify.c, t-decrypt.c, t-edit.c, t-encrypt-sign.c,
t-encrypt-sym.c, t-sign.c, t-signers.c): Include <unistd.h>.
(passphrase_cb): Rewritten.
* t-edit.c (edit_fnc): Rewritten.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

*
gpg/t-keylist-sig.c (main): Remove timestamp check.

* gpgsm/t-keylist.c: Add check for timestamp.

* gpg/Makefile.am (TESTS): Add t-keylist-sig.
* gpg/t-keylist-sig.c: New file.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c (main): Do not call print_op_info.
(print_op_info): Function removed.

* gpg/t-keylist.c: Rewritten.
* gpgsm/t-keylist.c (main): Rewritten.
* gpg/t-edit.c (main): Do not use gpgme_key_get_as_xml. Use
gpgme_key_unref instead gpgme_key_release.
* gpg/t-signers.c (main): Use gpgme_key_unref instead
gpgme_key_release.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-trustlist.c: Rewritten.

* gpg/t-verify.c (main): Rewritten.
* gpg/t-decrypt-verify.c: Rewritten.
* gpgsm/t-verify.c (main): Rewritten.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-decrypt.c (main): Rewritten.

* gpg/t-decrypt.c: Rewritten.

* gpg/t-signers.c: Rewritten.

2003-04-27 Marcus Brinkmann <marcus@g10code.de>

*

gpg/t-encrypt-sign.c (check_result): Rewritten.

* gpg/t-sign.c: Rewritten.
* gpgsm/t-sign.c: Rewritten.
* gpg/t-encrypt.c: Check for invalid recipients.
* gpgsm/t-encrypt.c: Likewise.

* gpg/t-import.c (check_result): Really use FPR.
* gpgsm/t-import.c (check_result): Rewritten.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-import.c: Rewritten.

* gpgsm/t-genkey.c: Rewritten.
* gpgsm/Makefile.am (noinst_PROGRAMS): Add t-genkey.
* gpg/t-genkey.c: Include <stdlib.h>.
(main): Check result->fpr before checking its length.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-genkey.c: Rewritten to match new semantics.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-decrypt.c (passphrase_cb): Fix to new prototype.
* gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
* gpg/t-edit.c (passphrase_cb): Likewise.
* gpg/t-encrypt-sign.c (passphrase_cb): Likewise.
* gpg/t-encrypt-sym.c (passphrase_cb): Likewise.
* gpg/t-sign.c (passphrase_cb): Likewise.
*
gpg/t-signers.c (passphrase_cb): Likewise.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* t-engine-info.c: Use file_name instead path throughout.

* Makefile.am (TESTS): Add t-engine-info.
* t-engine-info.c: New file.
* gpg/t-encrypt.c (main): Don't print engine info.
* gpg/t-eventloop.c (main): Likewise.
* gpg/t-encrypt-sign.c (main): Likewise.
* gpgsm/t-encrypt.c (main): Likewise.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (main): Adjust caller of gpgme_op_verify.

* gpg/t-verify.c (main): Likewise.
* gpg/t-decrypt-verify.c (main): Likewise for
gpgme_op_decrypt_verify.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (./gpgsm.conf): Add a faked system time to
avoid certification's expiry.
* gpgsm/t-encrypt.c (main): Use the short certification name.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-genkey.c (main): Add missing argument to gpgme_op_genkey
invocation.

2002-10-09 Marcus Brinkmann
<marcus@g10code.de>

* gpg/t-decrypt.c (print_data): Update to new gpgme_data_read
interface, and use gpgme_engine_check_version instead
gpgme_check_version.
* gpg/t-decrypt-verify.c (print_data): Likewise.
* gpg/t-edit.c (main): Likewise.
* gpg/t-encrypt.c (print_data): Likewise.
* gpg/t-encrypt-sign.c (print_data): Likewise.
* gpg/t-encrypt-sym.c (print_data): Likewise.
* gpg/t-eventloop.c (print_data): Likewise.
* gpg/t-export.c (print_data): Likewise.
* gpg/t-sign.c (print_data): Likewise.
* gpg/t-signers.c (print_data): Likewise.
* gpgsm/t-decrypt.c (print_data): Likewise.
* gpgsm/t-encrypt.c (print_data): Likewise.
* gpgsm/t-export.c (print_data): Likewise.
* gpgsm/t-sign.c (print_data): Likewise.
* gpg/t-verify.c (main): Likewise for gpgme_op_verify.
* gpgsm/t-verify.c (main): Likewise for gpgme_op_verify.
* t-data.c (read_once_test): Likewise.
(write_test): Update for new behaviour of data objects.
(main): Remove type test.

2002-09-30 Werner Koch <wk@gnupg.org>

*
gpgsm/t-keylist.c (doit): Add arg SECRET.
(main): Add option --secret.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* t-version.c: Include <string.h>. Reported by Stphane Corthsy.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-keylist.c (main): Test PATTERN for NULL before printing.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-08-01 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: Also add a test for the expire command (testing
the passphrase callback).

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-edit.c: New file.
* gpg/Makefile (TESTS): Add t-edit.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c (main): Change type of I to size_t and
rename to LEN.
* gpg/t-verify.c (main): Likewise. Submitted by Stphane
Corthsy.

2002-07-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-eventloop.c: New file.
* gpg/Makefile (TESTS): Add t-eventloop.

2002-06-26 Werner Koch <wk@gnupg.org>

*
gpgsm/t-import.c (print_op_info): New.
(main): Print operation info.

2002-06-25 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (DISTCLEANFILES): new.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (TESTS): Add t-export.
gpgsm/t-export.c: New file.

2002-06-20 Werner Koch <wk@gnupg.org>

* gpgsm/t-sign.c (main): Also test a normal signature.

* gpg/Makefile (TESTS_ENVIRONMENT): Set GPG_AGENT_INFO empty.
* gpg/t-signers.c, gpg/t-sign.c, gpg/t-encrypt-sym.c
* gpg/t-encrypt-sign.c, gpg/t-decrypt.c
* gpg/t-decrypt-verify.c (main): Changed the GPG_AGENT_INFO check to
match the one in ../../gpgme/rungpg.c.

2002-06-12 Werner Koch <wk@gnupg.org>

* gpgsm/t-keylist.c (doit): Print operation info if available.

2002-06-10 Werner Koch <wk@gnupg.org>

* gpgsm/t-verify.c (print_sig_stat): Print the error token.

2002-06-04 Werner Koch <wk@gnupg.org>

* gpgsm/t-encrypt.c (main): Add a simple option parser and allow
to specify an encryption
key.

2002-05-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (all-local): Remove dependency on ./secring.gpg.
(./secring.gpg): Remove target, and move all rules for this target
to ...
(./pubring.gpg): ... here. This was necessary because GnuPG 1.0.7
does create an empty secring.gpg file when importing public keys.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.
(status_string): Add new exipred stati.

2002-05-03 Werner Koch <wk@gnupg.org>

* gpg/t-verify.c (validity_string): New.
(print_sig_stat): Print expire time and validity.
(status_string): Add new exipred stati.

2002-04-05 Marcus Brinkmann <marcus@g10code,de>

* gpgsm/Makefile.am (./trustlist.txt): Put more into this file to
prevent use of gpg-agent.
(./gpg-agent.conf): Remove target.
(all-local): Remove ./gpg-agent.conf.

2002-04-05 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c
(main): Use gpgme_engine_check_version instead
gpgme_check_engine.
* gpgsm/t-encrypt.c (main): Likewise.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sym.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sym.

2002-03-05 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): Remove random_seed, which is now
in DISTCLEANFILES.

2002-03-04 Werner Koch <wk@gnupg.org>

* gpg/Makefile.am (DISTCLEANFILES): Added.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-verify.c (main): Add a few more sanity checks, and a check
for normal signatures.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-encrypt-sign.c: New file.
* gpg/Makefile.am (TESTS): Add t-encrypt-sign.

2002-02-13 Werner Koch <wk@gnupg.org>

* gpgsm/Makefile.am (private-keys-v1.d): Don't
fail when the directory already exists.

2002-02-12 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (CLEANFILES): New target.
(distclean-local): Rename to
...
(clean-local): ... this.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (./private-keys-v1.d/$(key_id).key): Fix rule.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-genkey.c: New file (not added to Makefile.am because of
gpg-agent bug).

2002-02-08 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (key_id): Update value.
(all-local): Add .key to keyid filename.
(./private-keys-v1.d/$(key_id)): Renamed to ...
(./private-keys-v1.d/$(key_id).key): ... this.
(all-local): Add ./gpgsm.conf, ./trustlist.txt.
(./gpgsm.conf, ./trustlist.txt): New target.
* gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Renamed to ...
* gpgsm/32100C27173EF6E9C4E9A25D3D69F86D37A4F939: ... this.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-import.c (print_op_info): New function.
(main): Use it.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-signers.c (passphrase_cb): Change type of r_hd to void**.
* gpg/t-sign.c (passphrase_cb):
Likewise.
* gpg/t-decrypt-verify.c (passphrase_cb): Likewise.
* gpg/t-decrypt.c (passphrase_cb): Likewise.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/t-decrypt-verify.c: Don't include `mcheck.h'. Reported by
Stphane Corthsy.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpg/Makefile.am (EXTRA_DIST): Add missing line continuation.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile.am (EXTRA_DIST): Add $(key_id).

2001-12-16 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/Makefile: Rename `pubcerts.kbx' to `pubring.kbx'.

2001-12-15 Marcus Brinkmann <marcus@g10code.de>

* gpgsm/t-keylist.c (check_two_contexts): Set protocols.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-sign.c: New file.
 * gpgsm/Makefile.am (TESTS): Add t-sign.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-decrypt.c: New file.
 * gpgsm/567064FE6D14A17B2D811ABB407728BC558AA455: Likewise.
 * gpgsm/Makefile.am (TESTS): Add
 t-decrypt.
 (key_id): New variable.
 (all-local): New target ./private-keys-v1.d/$(key_id) added.
 (./private-keys-v1.d/$(key_id)): New target.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-verify.c: New file.
 * gpgsm/Makefile.am (TESTS): Add t-verify.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

 * gpg/Makefile.am (GPG): Set to @GPG_PATH@.
 (./pubring.gpg): Use $(GPG) instead gpg.
 (./secring.gpg): Likewise.

 * gpgsm/t-import.c (main): Remove third test case.
 * gpgsm/Makefile.am (GPGSM): Set to @GPGSM@.
 (all-local): New target.
 (./pubcerts.kbx): Likewise.
 * gpgsm/t-encrypt.c: New file.
 * gpgsm/Makefile.am (TESTS): Add t-encrypt.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/t-keylist.c: New file.
 * gpgsm/Makefile.am (TESTS): Add t-keylist.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

 * gpgsm/cert_dfn_pca01.der: New file.
 * gpgsm/cert_dfn_pca15.der: Likewise.
 * gpgsm/cert_g10code_test1.der: Likewise.
 * gpgsm/t-import.c: Likewise.
 *
 gpgsm/Makefile.am (EXTRADIST): Add new files.
 (TESTS): Add t-import.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpg/: New directory.
* Makefile.am, t-verify.c, t-encrypt.c, t-signers.c, t-trustlist.c,
t-sign.c, t-keylist.c, t-import.c, t-genkey.c, t-export.c,
t-decrypt-verify.c, t-decrypt.c, t-version.c, t-data.c, mkdemodirs.
cipher-1.asc, cipher-2.asc, geheim.txt, pubdemo.asc, pubkey-1.asc,
secdemo.asc, seckey-1.asc): Move to sub directory gpg/.

* gpg/Makefile.am (INCLUDES): Include gpgme/, not include/ and
intl/.
(LDD): Correct relative path to gpgme library.
(TESTS): Remove t-version and t-data.
* gpg/t-verify.c, gpg/t-encrypt.c, gpg/t-signers.c, gpg/t-trustlist.c,
gpg/t-sign.c, gpg/t-keylist.c, gpg/t-import.c, gpg/t-genkey.c,
gpg/t-export.c, gpg/t-decrypt-verify.c, gpg/t-decrypt.c,
t-version.c, t-data.c): Include gpgme.h, not "../gpgme/gpgme.h".

* Makefile.am: New file.
* gpgsm/: New directory.
* gpgsm/Makefile.am: New file.

2001-11-16 Marcus
Brinkmann <marcus@g10code.de>

* Makefile.am (TESTS): Add t-decrypt-verify.
* t-decrypt-verify.c: New file.
* cipher-2.asc: Likewise.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

* t-data.c: Include stddef.h.
(read_once_test): Change type of READ to size_t.
(read_test): Likewise.
(write_test): Likewise.

2001-10-29 Marcus Brinkmann <marcus@g10code.de>

* t-signers.c: New file.
* Makefile.am (TESTS): Add t-signers.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Revert last change.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (TEST_ENVIRONMENT): Set environment to $(srcdir),

not current directory.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* t-data.c (write_test): New function.
(main): Invoke write_test for all rounds except TEST_OUT_CB.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (INCLUDES): Remove spurious duplicate to silence
automake.

2001-10-16 Marcus Brinkmann <marcus@g10code.de>

*
t-version.c: New file.
* t-data.c: Likewise.
* t-data-1.txt: Likewise.
* t-data-2.txt: Likewise.
* Makefile.am (TESTS): Add t-version, t-data.

2001-09-17 Werner Koch <wk@gnupg.org>

* t-keylist.c (check_two_contexts): New.

2001-09-03 Werner Koch <wk@gnupg.org>

* t-encrypt.c (print_op_info): New and use it after each operation.

2001-08-28 Werner Koch <wk@gnupg.org>

* t-sign.c (print_op_info): New and use it after each operation.

2001-03-15 Werner Koch <wk@gnupg.org>

* t-keylist.c (doit): List subkeys too, show caps.

2001-02-13 Werner Koch <wk@gnupg.org>

* t-verify.c (print_sig_stat): Repaled ulong by unsigned long
because we don't use the config stuff here.

2001-02-12 Werner Koch <wk@gnupg.org>

* tests/t-verify.c (print_sig_stat): Print info about the keys.

Copyright (C) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009,

2011 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited
 permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
{
  "type": "ciphertext",
  "base64":   true
}
(11:private-key(3:dsa(1:p129:eC_L&$2,6tx.gh1VirlqI9
,^g3.$DveUvX1'oIj)(1:q21: #UFK2z(tuVG)(1:g128:zu^Rab;qeQQA B?/6/aspfE/
gx!Mr0YY*oMrJc2xWG:.r6)(1:y128:Uf]j^@oEn4j#QrRq" RcEa E/}4C[3A
5+~~.#!+
)W&5d)ij)(1:x21:`)))
{
  "success":   true
}
libgpgme.vers - List of symbols to export.
Copyright (C) 2002, 2004, 2005, 2009, 2012 g10 Code GmbH
#
This file is part of GPGME.
#
GPGME is free software; you can redistribute it and/or modify
it under the terms of the GNU Lesser general Public License as
published by the Free Software Foundation; either version 2.1 of
the License, or (at your option) any later version.
#
GPGME is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU Lesser General Public License for more details.
#
You should have received a copy of the GNU Lesser General Public
License along with this program; if not, see <https://www.gnu.org/licenses/>.

#---
Please remember to add new functions also to gpgme.def
#---

GPGME_1.1 {
 global:
   gpgme_set_engine_info;

gpgme_ctx_get_engine_info;
gpgme_ctx_set_engine_info;

gpgme_data_set_file_name;
gpgme_data_get_file_name;
gpgme_data_identify;

gpgme_sig_notation_clear;
gpgme_sig_notation_add;
gpgme_sig_notation_get;

gpgme_free;

gpgme_op_getauditlog_start;
gpgme_op_getauditlog;

gpgme_conf_release;
gpgme_conf_arg_new;
gpgme_conf_arg_release;
gpgme_conf_opt_change;
gpgme_op_conf_load;
gpgme_op_conf_save;
gpgme_op_conf_dir;

gpgme_cancel_async;

gpgme_op_assuan_result;
gpgme_op_assuan_transact;
gpgme_op_assuan_transact_start;

gpgme_check_version_internal;

gpgme_io_read;
gpgme_io_write;

gpgme_result_ref;
gpgme_result_unref;

gpgme_op_import_keys;
gpgme_op_import_keys_start;
gpgme_op_export_keys;
gpgme_op_export_keys_start;

gpgme_op_assuan_transact_ext;

gpgme_wait_ext;

gpgme_op_vfs_mount_result;

gpgme_op_vfs_mount;
gpgme_op_vfs_create;

gpgme_key_from_uid;
gpgme_set_sub_protocol;
gpgme_get_sub_protocol;

gpgme_op_passwd_start;
gpgme_op_passwd;

gpgme_set_global_flag;

gpgme_io_writen;

gpgme_set_pinentry_mode;
gpgme_get_pinentry_mode;

gpgme_get_dirinfo;

gpgme_op_spawn_start;
gpgme_op_spawn;

gpgme_set_offline;
gpgme_get_offline;

gpgme_set_status_cb;
gpgme_get_status_cb;

gpgme_pubkey_algo_string;
gpgme_set_ctx_flag;
gpgme_get_ctx_flag;
gpgme_data_set_flag;

gpgme_op_createkey_start;
gpgme_op_createkey;
gpgme_op_createsubkey_start;
gpgme_op_createsubkey;
gpgme_op_adduid_start;
gpgme_op_adduid;
gpgme_op_revuid_start;
gpgme_op_revuid;
gpgme_op_keysign_start;
gpgme_op_keysign;
gpgme_op_tofu_policy_start;
gpgme_op_tofu_policy;
gpgme_op_interact_start;
gpgme_op_interact;

```
  gpgme_addrspec_from_uid;

  gpgme_set_sender;
  gpgme_get_sender;

  gpgme_op_query_swdb;
  gpgme_op_query_swdb_result;

   gpgme_op_set_uid_flag_start;
  gpgme_op_set_uid_flag;

  gpgme_op_decrypt_ext;
  gpgme_op_decrypt_ext_start;

  gpgme_data_new_from_estream;

};


GPGME_1.0 {
 global:
  gpgme_check_version;
  gpgme_get_engine_info;
  gpgme_engine_check_version;

  gpgme_err_code_from_errno;
  gpgme_err_code_to_errno;
  gpgme_err_make_from_errno;
  gpgme_error_from_errno;
  gpgme_strerror;
  gpgme_strerror_r;
  gpgme_strsource;

  gpgme_data_get_encoding;
  gpgme_data_new;
  gpgme_data_new_from_cbs;
  gpgme_data_new_from_fd;
  gpgme_data_new_from_file;
  gpgme_data_new_from_filepart;
  gpgme_data_new_from_mem;
  gpgme_data_new_from_stream;
  gpgme_data_read;
  gpgme_data_release;
  gpgme_data_release_and_get_mem;
  gpgme_data_seek;
  gpgme_data_set_encoding;
  gpgme_data_write;
```

gpgme_get_protocol_name;
gpgme_hash_algo_name;
gpgme_pubkey_algo_name;

gpgme_new;
gpgme_get_armor;
gpgme_get_include_certs;
gpgme_get_io_cbs;
gpgme_get_keylist_mode;
gpgme_get_passphrase_cb;
gpgme_get_progress_cb;
gpgme_get_protocol;
gpgme_get_textmode;
gpgme_release;
gpgme_set_armor;
gpgme_set_include_certs;
gpgme_set_io_cbs;
gpgme_set_keylist_mode;
gpgme_set_locale;
gpgme_set_passphrase_cb;
gpgme_set_progress_cb;
gpgme_set_protocol;
gpgme_set_textmode;
gpgme_signers_add;
gpgme_signers_clear;
gpgme_signers_count;
gpgme_signers_enum;

gpgme_key_ref;
gpgme_key_unref;
gpgme_key_release;

gpgme_trust_item_ref;
gpgme_trust_item_unref;

gpgme_cancel;
gpgme_op_card_edit;
gpgme_op_card_edit_start;
gpgme_op_decrypt;
gpgme_op_decrypt_result;
gpgme_op_decrypt_start;
gpgme_op_decrypt_verify;
gpgme_op_decrypt_verify_start;
gpgme_op_delete;
gpgme_op_delete_start;
gpgme_op_delete_ext;
gpgme_op_delete_ext_start;
gpgme_op_edit;

gpgme_op_edit_start;
gpgme_op_encrypt;
gpgme_op_encrypt_start;
gpgme_op_encrypt_ext;
gpgme_op_encrypt_ext_start;
gpgme_op_encrypt_sign;
gpgme_op_encrypt_sign_ext;
gpgme_op_encrypt_sign_start;
gpgme_op_encrypt_sign_ext_start;
gpgme_op_encrypt_result;

gpgme_op_export;
gpgme_op_export_ext;
gpgme_op_export_ext_start;
gpgme_op_export_start;
gpgme_op_genkey;
gpgme_op_genkey_result;
gpgme_op_genkey_start;
gpgme_get_key;
gpgme_op_import;
gpgme_op_import_result;
gpgme_op_import_start;
gpgme_op_keylist_end;
gpgme_op_keylist_ext_start;
gpgme_op_keylist_from_data_start;
gpgme_op_keylist_next;
gpgme_op_keylist_result;
gpgme_op_keylist_start;
gpgme_op_sign;
gpgme_op_sign_result;
gpgme_op_sign_start;
gpgme_op_trustlist_end;
gpgme_op_trustlist_next;
gpgme_op_trustlist_start;
gpgme_op_verify;
gpgme_op_verify_result;
gpgme_op_verify_start;
gpgme_wait;

gpgme_data_new_with_read_cb;
gpgme_data_rewind;
gpgme_get_sig_status;
gpgme_get_sig_string_attr;
gpgme_get_sig_ulong_attr;
gpgme_get_sig_key;
gpgme_key_get_string_attr;
gpgme_key_get_ulong_attr;
gpgme_key_sig_get_string_attr;

```
  gpgme_key_sig_get_ulong_attr;
  gpgme_op_import_ext;
  gpgme_trust_item_get_int_attr;
  gpgme_trust_item_get_string_attr;
  gpgme_trust_item_release;

  gpgme_err_code_from_syserror;
  gpgme_err_set_errno;

  gpgme_op_setexpire;
  gpgme_op_setexpire_start;

  gpgme_op_revsig;
  gpgme_op_revsig_start;

 local:
  *;

};
# -*- mode: org -*-
#+TITLE: What's New in the GPGME Python Bindings and Documentation
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* What's New
 :PROPERTIES:
 :CUSTOM_ID: new-stuff
 :END:

| Version:        | 0.0.1                                |
| GPGME Version:  | 1.13.0                               |
| Author:         | Ben McGinnes <ben@gnupg.org>         |
| Author GPG Key: | DB4724E6FA4286C92B4E55C4321E4E2373590E5D |
| Language:       | Australian English, British English  |
| xml:lang:       | en-AU, en-GB, en                     |

Last time the most obviously new thing was adding the /What's New/
section to the HOWTO.  Now it's moving it out of the HOWTO.


** New in GPGME 1130
```

:PROPERTIES:
:CUSTOM_ID: new-stuff-1-13-0
:END:

Additions since GPGME 1.12.0 include:

- Moving the /What's New/ section out of the basic [[file:gpgme-python-howto.org][HOWTO]] document and into its own file so as to more readily include other documents beyond that HOWTO.
- Moving the preceding, archival, segments into [[file:what-was-new.org][another file]].
- Added =gpg.version.versionintlist= to make it easier for Python developers to check for a specific version number, even with beta versions (it will drop the "-betaN" part).
- Added expanded detail on issues pertaining to installing for Windows users.
- Bindings enter [[file:maintenance-mode][maintenance mode]] from January, 2019.
- Added documentation on maintenance mode and what changes can be made to the code when in that status. Essentially that boils down to bug fixes only and no feature requests.
- The import-keys-hkp.py example script, which uses the =hkp4py= module to search the SKS servers for a key, has been tightened up to search for both hexadecimal key IDs and user ID strings with reduced chance of unnecessary repitition. There may still be some repetition if a key includes a user ID matching the hexadecimal value of a key ID.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the

Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The

former contains code derived from the library, whereas the latter must
be combined with the library in order
 to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

 0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

 A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

 The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into
 another language. (Hereinafter, translation is
included without limitation in the term "modification".)

 "Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control
compilation and installation of the library.

 Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

 1. You may copy and distribute verbatim copies of the Library's
complete source code as you receive it, in any
 medium, provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the
ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.
^L
Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete
corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work

that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a)
Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood

that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will
operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.
^L
7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution
system which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free

Software Foundation; we sometimes make exceptions for this.
Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED
ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms
of the ordinary General Public License).

To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file
to most
effectively convey the exclusion of warranty; and each file should
have at least the "copyright" line and a pointer to where the full
notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston,
MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
d97206d060321451439b7c122cd4e699
{
  "base64": true,
  "more": true,
  "response": "*"
}
{
  "op": "config_opt",
  "component": "gpg",
  "option": "default-key"
}
1603972630
{
 "type": "keys",
 "base64":   false,
 "data": "-----BEGIN PGP PUBLIC KEY BLOCK-----

\n\nmQGiBDbjjp4RBAC2ZbFDX0wmJI8yLDYQdIiZeAuHLmfyHsqXaLGUMZtWiAvn/hNp\nctwahmzKm5oXin
HUvUkLOQ0s8rOlu15nhw4azc30rTP1LsIkn5zORNnFdgYC6RKy\nhOeim/63+/yGtdnTm49lVfaCqwsEmBCEkXa
eWDGq+ie1b89J89T6n/JquwCgoQkj\nVeVGG+B/SzJ6+yifdHWQVkcD/RXDyLXX4+WHGP2aet51XlKojWGws
Zmc9LPPYhwU\n/RcUO7ce1QQb0XFlUVFBhY0JQpM/ty/kNi+aGWFzigbQ+HAWZkUvA8+VIAVneN+p\n+SH
hGIyLTXKpAYTq46AwvllZ5Cpvf02Cp/+W1aVyA0qnBWMyeIxXmR9HOi6lxxn5\ncjajA/9VZufOXWqCXkBvz
4Oy3Q5FbjQQ0/+ty8rDn8OTaiPi41FyUnEi6LO+qyBS\n09FjnZj++PkcRcXW99SNxmEJRY7MuNHt5wIvEH2jN
EOJ9lszzZFBDbuwsjXHK35+\nlPbGEy69xCP26iEafysKKbRXJhE1C+tk8SnK+Gm62sivmK/5arQpQWxwaGEgV
GVz\ndCAoZGVtbyBrZXkpIDxhbHBoYUBleGFtcGxlLm5ldD6IVQQTEQIAFQUCNuOOngML\nCgMDFQMC
AxYCAQIXgAAKCRAtcnzHaGl3NDl4AKCBLmRplv/8ZfSqep5IjqEAuaXv\nWwCgl6NEzT+/WewPTGcwZY+p
LkycLv2IVQQTEQIAFQUCNuOOngMLCgMDFQMCAxYC\nAQIXgAAKCRAtcnzHaGl3NDl4AJ4rouHB+LpC
kNi5C59jHEa1kbANzACgmddtrNSj\n1yPyTCwUwRghPUomECS0EEFsaWNlIChkZW1vIGtleSmIVQQTEQIAF
QUCNuO2qwML\nCgMDFQMCAxYCAQIXgAAKCRAtcnzHaGl3NCeMAJ9MeUVrago5Jc6PdwdeN5OMwby3\
n7QCghW65cZTQlD1bBlIq/QM8bz9AN4G0J0FsZmEgVGVzdCAoZGVtbyBrZXkpIDxh\nbGZhQGV4YW1wbG
UubmV0PohVBBMRAgAVBQI247hYAwsKAwMVAwIDFgIBAheAAAoJ\nEC1yfMdoaXc0t8IAoJPwa6j+Vm5V
i3Nvuo8JZri4PJ/DAJ9dqbmaJdB8FdJnHfGh\n1rXK3y/JcrkBDQQ2448PEAQAnI3XH1f0uyN9fZnw72zsHMw706
g7EW29nD4UDQG4\nOzRZViSrUa5n39eI7QrfTO+1meVvs0y8F/PvFst5jH68rPLnGSrXz4sTl1T4cop1\nFBkquvC
AKwPLy0lE7jjtCyItOSwIOo8xoTfY4JEEXmcqsbm+KHv9yYSF/YK4Cf7b\nIzcAAwcD/Rnl5jKxoucDA96pD282
9TKsLFQSau+Xiy8bvOSSDdlyABsOkNBSaeKO\n3eAQEKgDM7dzjVNTnAlpQ0EQ8Y9Z8pxOWYEQYlaMrnR
BC4DZ2IadzEhLlIOz5BVp\n/jfhrr8oVVBwKZXsrz9PZLz+e4Yn+siUUvlei9boD9L2ZgSOHakPiEYEGBECAAAY
F\nAjbjjw8ACgkQLXJ8x2hpdzQgqQCfcDXmD8uNVdKg/C9vqI3JSndqknsAnRxzVeHi\n/iJ73OCKtvFrHbV9Gog
q\n=6f6v\n-----END
PGP PUBLIC KEY BLOCK-----\n",
"sec-fprs": ["A0FF4590BB6122EDEF6E3C542D727CC768697734"]
}
{
"dec_info": {
"wrong_key_usage": false,
"is_de_vs": false,
"is_mime": false,
"legacy_cipher_nomdc": false,
"recipients": [{
"pubkey_algo_name": "ELG-E",
"status_string": "Success",
"status_code": 0
}]
},
"type": "plaintext",
"base64": false,
"data": "Hello\n"
}
```
##Sketch 1 2
document()
layout('A4',1)
fp((0,0,0))
ft(1)
Fn('Helvetica-Bold')
Fs(18)
dstyle('Text')
```

fp((0,1,0.498))
ft(1)
lp((0,0,0))
lw(0.283465)
lc(1)
lj(0)
ld(())
la1()
la2()
dstyle('Application Box')
layer('Layer 1',1,1,0,0,(0,0,0))
lw(1)
r(0,0,0,0,688.145,44.1554)
lw(1)
r(0,0,0,0,682.363,85.0359)
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(605.383,329.758,0)
bs(605.383,230.546,0)
lw(1)
r(0,0,0,0,807.414,53.6148)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(480.134,240.945,0)
bs(480.358,325.277,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(474.803,432.284,0)
bs(475.334,360.243,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(354.331,432.284,0)
bs(352.806,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(212.598,432.284,0)
bs(212.598,361.417,0)
fp((0.999,1,0.4))

lw(0.283465)
r(70.5968,0,0,-56.6929,191.608,488.976,0.0603744,0.151107)
lw(1)
r(0,0,0,0,88.5492,390.805)
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(226.772,524.409,0)
bs(226.772,488.976,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(403.937,528.718,0)
bs(403.937,488.976,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(240.945,432.284,0)
bs(240.574,394.994,0)
bs(595.276,396.85,0)
bs(595.276,361.417,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(333.071,432.284,0)
bs(333.07,425.196,0)
bs(333.07,382.677,0)
bs(240.945,382.677,0)
bs(240.945,361.417,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,318.897,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(10)
txt('GPG',(1,0,0,0.905764,344.004,335.686))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)

r(70.5589,0,0,-28.3464,446.763,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgConf',(0.552654,0,0,0.500564,481.802,340.184),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.347,191.338,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('GpgSM',(0.552654,0,0,0.500574,226.376,340.185),1,1)
G_()
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(347.244,325.984,0)
bs(347.244,325.984,0)
bs(347.244,255.118,0)
bs(304.724,255.118,0)
bs(304.724,226.771,0)
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(233.858,325.984,0)
bs(233.858,255.118,0)
bs(276.378,255.118,0)
bs(276.378,226.771,0)
fp((0,0,0))
le()
lw(1)
Fn('Palatino-Roman')
txt('2008-07-17',(0.608301,0,0,0.608301,708.661,65.8308))
lw(1)
r(0,0,0,0,750.427,153.265)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))

b()
bs(219.685,325.984,0)
bs(219.685,198.425,0)
bs(219.685,162.992,0)
G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4333,162.992,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('LDAP
 Server',(0.552654,0,0,0.552654,92.1261,148.819),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('(CRLs, Certificates)',(0.552654,0,0,0.552654,92.1261,134.646),1,1)
G_()
G()
fp((1,1,1))
lw(0.283465)
r(113.386,0,0,-42.5196,35.4331,99.2125,0.0670228,0.151107)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('HTTP Server',(0.552654,0,0,0.552654,92.1259,85.0394),1,1)
fp((0,0,0))
lw(0.283465)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('(CRLs)',(0.552654,0,0,0.552654,92.1259,70.8662),1,1)
G_()
G()

fp((0.999,1,0.4))
lw(0.283465)
r(70.866,0,0,-31.2962,191.338,158.855,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('DirMngr',(0.552654,0,0,0.552654,224.02,142.978),1,1)
G_()
lw(2)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(219.15,126.18,0)
bs(219.685,77.9528,0)
bs(155.906,77.9528,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(233.858,127.559,0)
bs(233.858,99.2125,0)
bs(276.378,99.2125,0)
bs(276.378,85.0393,0)
lp((0.392,0.584,0.929))
lw(3)
b()
bs(248.031,127.559,0)
bs(248.031,113.386,0)
bs(375.59,113.386,0)
bs(375.59,85.0393,0)
G()
fp((1,0.647,0.31))
lw(0.283465)
r(99.2124,0,0,-28.3464,333.07,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Certificate
 Cache',(0.552654,0,0,0.552654,382.606,69.8548),1,1)
fp((1,0.647,0.31))
lw(0.283465)

r(70.5589,0,0,-28.3464,248.031,85.0393,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('CRL Cache',(0.552654,0,0,0.552654,284.147,70.6936),1,1)
G_()
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,240.945,0)
bs(503.149,283.464,0)
bs(588.189,283.465,0)
bs(588.189,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(503.149,283.464,0)
bs(503.149,283.464,0)
bs(361.417,283.464,0)
bs(361.417,325.984,0)
lw(1)
la2(([(-4.0,
 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(361.417,283.464,0)
bs(205.512,283.465,0)
bs(205.512,325.984,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.015,85.0393,0)
bs(574.015,141.732,0)
bs(262.204,141.732,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(602.361,85.0393,0)
bs(602.361,170.079,0)
bs(439.37,170.079,0)
bs(439.37,311.811,0)
bs(460.629,311.811,0)
bs(460.629,325.984,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))

b()
bs(389.763,240.945,0)
bs(389.763,269.291,0)
bs(290.551,269.291,0)
bs(290.551,340.157,0)
bs(262.204,340.157,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(389.763,269.291,0)
bs(559.843,269.291,0)
bs(559.843,333.071,0)
bs(574.016,333.071,0)
lw(1)
ld((5, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(488.976,85.0393,0)
bs(488.976,127.559,0)
bs(389.763,127.559,0)
bs(389.763,212.598,0)
lw(2)
ld((1,
 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(205.512,127.559,0)
bs(205.512,113.386,0)
bs(170.079,113.386,0)
bs(170.079,141.732,0)
bs(155.906,141.732,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(622.961,356.76,0)
bs(622.961,518.503,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3459,573.199,354.33,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)

style('Text')
txt('GpgAgent',(0.552654,0,0,0.500554,608.238,340.185),1,1)
G_()
lp((0.392,0.584,0.929))
lw(4.25)
b()
bs(721.712,467.717,0)
bs(721.712,297.838,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,686.278,297.637,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('SCdaemon',(0.552654,0,0,0.500564,721.316,283.492),1,1)
G_()
fp((1,0.647,0.31))
lw(0.283465)
lj(1)
r(86.162,0,0,-117.493,679.192,566.929,0.181818,0.333333)
G()
fp((0,0,0))
le()
lw(1)
Fn('Helvetica-Bold')
Fs(18)
txt('Smartcard',(0.552654,0,0,0.552654,698.127,491.036))
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-31.2962,686.279,557.593,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Card
 Reader',(0.552654,0,0,0.552654,721.318,541.975),1,1)
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(73.6353,0,0,-41.2944,587.066,565.703,0.0670228,0.151107)
fp((0,0,0))

le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('PIN Entry',(0.57675,0,0,0.729211,623.632,545.097),1,1)
G_()
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(643.758,340.157,0)
bs(643.758,340.157,0)
bs(707.539,340.158,0)
bs(707.539,304.724,0)
lw(1)
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(574.016,283.465,0)
bs(587.066,283.464,0)
bs(686.278,283.464,0)
G()
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(98.9053,325.985,0)
bs(98.9053,240.945,0)
G()
fp((0.999,1,0.4))
lw(0.283465)
r(70.5589,0,0,-28.3464,63.7795,354.331,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('WatchGnuPG',(0.552654,0,0,0.552654,98.8185,338.713),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.5589,0,0,-28.1194,63.7795,240.718,0.0670228,0.168178)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')

```
Fs(14)
style('Text')
txt('Log
 Socket',(0.552654,0,0,0.552654,98.8175,225.1),1,1)
G_()
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,446.457,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,485.621,226.772),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,545.669,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Config Files',(0.552654,0,0,0.552654,584.834,70.8662),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(84.6546,0,0,-27.3609,347.245,239.959,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help
```

Files',(0.552654,0,0,0.552654,388.252,224.705),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(84.6546,0,0,-27.3609,446.457,85.0394,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Help Files',(0.552654,0,0,0.552654,487.464,69.7854),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(85.0392,0,0,-28.3464,248.032,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Keybox Files',(0.552654,0,0,0.552654,289.59,226.322),1,1)
G_()
G()
fp((1,0.647,0.31))
lw(0.283465)
r(70.866,0,0,-28.3464,574.016,240.945,0.0670228,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(18)
txt('Private Keys',(0.552654,0,0,0.552654,609.449,226.772),1,1)
G_()
G()
fp((0,0,0))
le()
lw(1)

Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(24)
txt('Scute',(0.552654,0,0,0.599958,224.978,465.775),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Times-Roman')
Fs(10)
txt('(pkcs#11)',(1,0,0,1.08559,206.081,445.011))
G_()
G()
fp((0.999,1,0.4))
lw(0.283465)
r(198.827,0,0,-56.6929,304.322,488.976,0.0603744,0.151107)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
Fn('Helvetica-Bold')
Fs(36)
txt('GPGME
 Library',(0.552654,0,0,0.552654,404.952,457.853),1,1)
G_()
G()
lw(1)
style('Application Box')
r(197.598,0,0,-42.5187,304.724,566.928,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('GPGME aware Application',(0.98062,0,0,0.937018,334.892,540.985))
G_()
G()
lw(1)
style('Application Box')
r(127.829,0,0,-41.7496,162.992,566.159,0.0152672,0.0677968)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
txt('Legacy Application',(174.688,540.01))
G_()

G()
G()
lp((0.392,0.584,0.929))
lw(4.25197)
b()
bs(749.296,162.296,0)
bs(705.89,162.296,0)
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0,
 -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,100.083,0)
bs(744.472,100.083,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(705.89,131.189,0)
bs(744.472,131.189,0)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('execute/access',(0.31891,0,0,0.280771,726.951,87.3768),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('closely linked',(0.31891,0,0,0.280771,724.715,149.589),1,1)
fp((0,0,0))
le()
lw(1)
Fn('Helvetica')
Fs(14)
style('Text')
txt('Assuan protocol',(0.31891,0,0,0.280771,728.535,118.483),1,1)
G_()
lw(1)
r(56.6929,0,0,-92.126,701.575,170.079)
G_()
lp((0.392,0.584,0.929))
lw(3.25)

ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(248.031,325.984,0)
bs(248.031,297.638,0)
bs(538.583,297.638,0)
bs(538.583,340.157,0)
bs(566.929,340.157,0)
lp((0.392,0.584,0.929))
lw(3.25)
ld((1, 1))
la2(([(-4.0, 3.0), (2.0, 0.0), (-4.0, -3.0), (-4.0, 3.0)], 1))
b()
bs(375.591,325.984,0)
bs(375.591,304.724,0)
bs(531.496,304.724,0)
bs(531.496,347.244,0)
bs(566.929,347.244,0)
guidelayer('Guide
 Lines',1,0,0,1,(0,0,1))
grid((0,0,7.08661,7.08661),1,(0,0,1),'Grid')
00~0
 *H
0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10
011203093638Z
021203093638Z0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 100
 *H
0l+Pu.\-ZT$e'nE&h4<}BePm[%j-/7PcHKi@FKy~npcd${]K~Q00U37Tq8_eK40U#037Tq8_eK4om0k10 UDE10U
Dsseldorf10U

g10 Code GmbH10UAegypten Project10Utest cert 10U00
 *H
l8gD Z
wYL,M'j
pk2pf|L ;Rl}#h$~O!9;3e\A'v&P^$'Oc.-TS~A>:fQY<
-*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}

#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}

* Introduction
 :PROPERTIES:
 :CUSTOM_ID: intro
 :END:

Version:	0.1.5
GPGME Version:	1.13.0
Author:	Ben McGinnes <ben@gnupg.org>
Author GPG Key:	DB4724E6FA4286C92B4E55C4321E4E2373590E5D
Language:	Australian English, British English
Language codes:	en-AU, en-GB, en

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.

** Python 2 versus Python
 3
  :PROPERTIES:
  :CUSTOM_ID: py2-vs-py3
  :END:

Though the GPGME Python bindings themselves provide support for both
Python 2 and 3, the focus is unequivocally on Python 3 and
specifically from Python 3.4 and above. As a consequence all the
examples and instructions in this guide use Python 3 code.

Much of it will work with Python 2, but much of it also deals with
Python 3 byte literals, particularly when reading and writing data.
Developers concentrating on Python 2.7, and possibly even 2.6, will
need to make the appropriate modifications to support the older string
and unicode types as opposed to bytes.

There are multiple reasons for concentrating on Python 3; some of
which relate to the immediate integration of these bindings, some of
which relate to longer term plans for both GPGME and the python
bindings and some of which relate to the impending EOL period for
Python 2.7. Essentially, though, there is little value in tying the
bindings to a version of the language which
 is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data
types with which GPGME deals considerably easier.

** Examples
  :PROPERTIES:
  :CUSTOM_ID: howto-python3-examples
  :END:

All of the examples found in this document can be found as Python 3
scripts in the =lang/python/examples/howto= directory.

** Unofficial Drafts
  :PROPERTIES:
  :CUSTOM_ID: unofficial-drafts
  :END:

In addition to shipping with each release of GPGME, there is a section
on locations to read or download [[#draft-editions][draft editions]] of this document from
at the end of it. These are unofficial versions produced in between
major releases.

** What's New
  :PROPERTIES:
  :CUSTOM_ID: new-stuff
  :END:

Full details of what is new are now available in the [[file:what-is-new.org][What's New]] file
and archives of the preceding /What's New/ sections are available in
the [[file:what-was-new][What Was New]] file.

*** New in GPGME 1130
   :PROPERTIES:
   :CUSTOM_ID:
 new-stuff-1-13-0
   :END:

See the [[file:what-is-new#new-stuff-1-13-0][What's New]] document for what is new in version 1.13.0.

*** New in GPGME 1120
   :PROPERTIES:
   :CUSTOM_ID: new-stuff-1-12-0
   :END:

See the [[file:what-was-new#new-stuff-1-12-0][What Was New]] document for what was new in version 1.12.0.

* GPGME Concepts
 :PROPERTIES:
 :CUSTOM_ID: gpgme-concepts
 :END:

** A C API
  :PROPERTIES:
  :CUSTOM_ID: gpgme-c-api
  :END:

Unlike many modern APIs with which programmers will be more familiar
with these days, the GPGME API is a C API. The API is intended for
use by C coders who would be able to access its features by including
the =gpgme.h= header file with their own C source code and then access
its functions just as they would any other C headers.

This is a very effective method of gaining complete access to the API
and in the most efficient manner possible. It does, however, have the
drawback that it cannot be directly used by other languages without
some
 means of providing an interface to those languages. This is
where the need for bindings in various languages stems.

** Python bindings
  :PROPERTIES:
  :CUSTOM_ID: gpgme-python-bindings
  :END:

The Python bindings for GPGME provide a higher level means of
accessing the complete feature set of GPGME itself. It also provides
a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of
=gpgme.h= generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied
to the exact same version of GPGME used to generate that copy of
=gpgme.h=.

** Difference between the Python bindings and other GnuPG Python packages
  :PROPERTIES:
  :CUSTOM_ID: gpgme-python-bindings-diffs
  :END:

There have been numerous attempts to add GnuPG support to Python over

the years. Some of the most well known are listed here, along with
what differentiates them.

*** The python-gnupg package maintained
 by Vinay Sajip
  :PROPERTIES:
  :CUSTOM_ID: diffs-python-gnupg
  :END:

This is arguably the most popular means of integrating GPG with
Python. The package utilises the =subprocess= module to implement
wrappers for the =gpg= and =gpg2= executables normally invoked on the
command line (=gpg.exe= and =gpg2.exe= on Windows).

The popularity of this package stemmed from its ease of use and
capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the
past; most of which stemmed from using unsafe methods of accessing the
command line via the =subprocess= calls. While some effort has been
made over the last two to three years (as of 2018) to mitigate this,
particularly by no longer providing shell access through those
subprocess calls, the wrapper is still somewhat limited in the scope
of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

*** The gnupg package created
 and maintained by Isis Lovecruft
  :PROPERTIES:
  :CUSTOM_ID: diffs-isis-gnupg
  :END:

In 2015 Isis Lovecruft from the Tor Project forked and then
re-implemented the python-gnupg package as just gnupg. This new
package also relied on subprocess to call the =gpg= or =gpg2=
binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however,
resulted in conflicts with the original python-gnupg and since its
functions were called in a different manner to python-gnupg, the
release of this package also resulted in a great deal of consternation
when people installed what they thought was an upgrade that
subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License

version 3.0 (or any later version).

*** The PyME package maintained by Martin Albrecht
:PROPERTIES:
:CUSTOM_ID: diffs-pyme
:END:

This package is the origin of these bindings, though they are somewhat
different now.
For details of when and how the PyME package was
folded back into GPGME itself see the [[file:short-history.org][Short History]] document.[fn:1]

The PyME package was first released in 2002 and was also the first
attempt to implement a low level binding to GPGME. In doing so it
provided access to considerably more functionality than either the
=python-gnupg= or =gnupg= packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME
itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version 2.1 (or any
later version).

* GPGME Python bindings installation
:PROPERTIES:
:CUSTOM_ID: gpgme-python-install
:END:

** No PyPI
:PROPERTIES:
:CUSTOM_ID: do-not-use-pypi
:END:

Most
third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against =gpgme.h= and =gpgme.h= is generated from
=gpgme.h.in= at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require
either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding [[#snafu-cffi][CFFI and SWIG]] at the end of this
section for further details.

** Requirements
  :PROPERTIES:
  :CUSTOM_ID: gpgme-python-requirements
  :END:

The GPGME Python bindings only have three requirements:

1. A suitable version of Python 2 or Python 3. With Python 2 that
   means CPython
  2.7 and with Python 3 that means CPython 3.4 or
   higher.
2. [[https://www.swig.org][SWIG]].
3. GPGME itself. Which also means that all of GPGME's dependencies
   must be installed too.

*** Recommended Additions
  :PROPERTIES:
  :CUSTOM_ID: gpgme-python-recommendations
  :END:

Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide
a significant advantage in some way.

1. If possible, use Python 3 instead of 2.
2. Favour a more recent version of Python since even 3.4 is due to
   reach EOL soon. In production systems and services, Python 3.6
   should be robust enough to be relied on.
3. If possible add the following Python modules which are not part of
   the standard library: [[http://docs.python-requests.org/en/latest/index.html][Requests]],
[[https://cython.org/][Cython]],
  [[https://pendulum.eustace.io/][Pendulum]] and [[https://github.com/Selfnet/hkp4py][hkp4py]].

Chances are quite high that at least the first one and maybe two of

those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly
well known and commonly installed ones, however, which are in many
cases likely to have already been installed on many systems or be
familiar to Python programmers.

** Installation
 :PROPERTIES:
 :CUSTOM_ID: installation
 :END:

Installing the Python bindings is effectively achieved by compiling
and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME
are installed you only need to confirm that the version(s) of Python
you want the bindings installed for are in your =$PATH=.

By default GPGME will attempt to install the bindings for the most
recent or highest version number of Python 2 and Python
 3 it detects
in =$PATH=. It specifically checks for the =python= and =python3=
executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: =python=,
=python2= and =python2.7=.

For Python 3 it checks for these executables in this order: =python3=,
=python3.7=, =python3.6=, =python3.5= and =python3.4=.[fn:2]

On systems where =python= is actually =python3= and not =python2= it
may be possible that =python2= may be overlooked, but there have been
no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has
been extensive testing and work with these bindings with no issues
specifically relating to the new version of Python or any of the new
features of either the language or the bindings. This has also been
the case with Python 3.7.1rc1. With that in mind and given the
release of Python 3.7.1 is scheduled for around the same time as GPGME
1.12.0, the order of preferred
 Python versions has been changed to
move Python 3.7 ahead of Python 3.6.

*** Installing GPGME
  :PROPERTIES:
  :CUSTOM_ID: install-gpgme
  :END:

See the GPGME =README= file for details of how to install GPGME from
source.

** Known Issues
 :PROPERTIES:
 :CUSTOM_ID: snafu
 :END:

There are a few known issues with the current build process and the
Python bindings. For the most part these are easily addressed should
they be encountered.

*** Breaking Builds
  :PROPERTIES:
  :CUSTOM_ID: snafu-a-swig-of-this-builds-character
  :END:

Occasionally when installing GPGME with the Python bindings included
it may be observed that the =make= portion of that process induces a
large very number of warnings and, eventually errors which end that
part of the build process. Yet following that with =make check= and
=make install= appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to
dynamically generate the C bindings for GPGME in
 the first place. So
the entire process will always produce =lang/python/python2-gpg/= and
=lang/python/python3-gpg/= directories. These should contain the
build output generated during compilation, including the complete
bindings and module installed into =site-packages=.

Occasionally the errors in the early part or some other conflict
(e.g. not installing as */root/* or */su/*) may result in nothing
being installed to the relevant =site-packages= directory and the
build directory missing a lot of expected files. Even when this
occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the
root user or prepended with =sudo -H=[fn:3] in the =lang/python/=
directory:

#+BEGIN_SRC shell
 /path/to/pythonX.Y setup.py build
 /path/to/pythonX.Y setup.py build
 /path/to/pythonX.Y setup.py install
#+END_SRC

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or
 incomplete steps during the
=configure=, =make= and =make install= steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
=setup.py= and =gpgme.h= files).

**** IMPORTANT Note
   :PROPERTIES:
   :CUSTOM_ID: snafu-swig-build-note
   :END:

If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when
listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build
process before generating bindings for those other languages. In
these cases it may be preferable to configure all preferred language
bindings separately with alternative =configure= steps for GPGME using
the =--enable-languages=$LANGUAGE= option.

Alternatively
 =make= (or =gmake=, depending on your platform) may be
run with the the =-k= option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.

*** Reinstalling Responsibly
  :PROPERTIES:
  :CUSTOM_ID: snafu-lessons-for-the-lazy
  :END:

Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the

relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing
 the previous version(s) is simply a matter of changing to the
relevant =site-packages= directory for the version of Python in
question and removing the =gpg/= directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

*** Multiple installations
  :PROPERTIES:
  :CUSTOM_ID: snafu-the-full-monty
  :END:

For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings *must*
 match those used to
compile Python itself, including the version number(s) (at least going
by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME [[https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e][1.12.1]] the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, and so on
up until the current dev branch that it finds. Usually this will be in the

same prefix as GPGME itself, but is dictated by the =$PATH= when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find, including alternative prefixes.

*** Won't Work With Windows
  :PROPERTIES:
  :CUSTOM_ID: snafu-runtime-not-funtime
  :END:

There are semi-regular reports of Windows users
 having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
[[https://python.org][Python website]] (i.e. mostly MSI installers, sometimes self-extracting
=.exe= files).

The Windows versions of Python are not built using Cygwin, MinGW or
Msys2; they're built using Microsoft Visual Studio. Furthermore the
version used is /considerably/ more advanced than the version which
MinGW obtained a small number of files from many years ago in order to
be able to compile anything at all. Not only that, but there are
changes to the version of Visual Studio between some micro releases,
though that is is particularly the case with Python 2.7, since it has
been kept around far longer than it should have
 been.

There are two theoretical solutions to this issue:

1. Compile and install the GnuPG stack, including GPGME and the
   Python bindings using the same version of Microsoft Visual Studio
   used by the Python Foundation to compile the version of Python
   installed.

   If there are multiple versions of Python then this will need to be
   done with each different version of Visual Studio used for those
   versions of Python.

2. Compile and install Python using the same tools used by choice,
   such as MinGW or Msys2.

Do *not* use the official Windows installer for Python unless
following the first method.

In this type of situation it may even be for the best to accept that there are less limitations on permissive software than free software and simply opt to use a recent version of the Community Edition of Microsoft Visual Studio to compile and build all of it, no matter what.

Investigations into the extent or the limitations of this issue are ongoing.

The following table lists the version of Microsoft Visual Studio which needs to be used when compiling GPGME and the Python bindings with each version of the CPython binary released [[https://www.python.org/downloads/windows/][for Windows]]:

CPython	Microsoft product name	runtime filename
2.7.6	Visual Studio 2008	MSVCR90.DLL
3.4.0	Visual Studio 2010	MSVCR100.DLL
3.5.0	Visual Studio 2015	*see below*
3.6.0	Visual Studio 2015	*see below*
3.7.0	Visual Studio 2017*	*see below*

It is important to note that MingW and Msys2 ship with the Visual C runtime from Microsoft Visual Studio 2005 and are thus *incompatible* with all the versions of CPython which can be used with the GPGME Python bindings.

It is also important to note that from CPython 3.5 onwards, the Python Foundation has adopted the reworking of the Visual C runtime which was performed for Visual Studio 2015 and aimed at resolving many of these kinds of issues. Much greater detail on these issues and the correct file(s) to link to are available from Matthew Brett's invaluable page, [[https://matthew-brett.github.io/pydagogue/python_msvc.html][Using Microsoft Visual C with Python]]. It is also worth reading the Microsoft Developer Network blog post on [[http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx][the universal CRT]] and Steve Dower's blog posts on Python extensions ([[http://stevedower.id.au/blog/building-for-python-3-5][part 1]] and [[http://stevedower.id.au/blog/building-for-python-3-5-part-two][part 2]]).

The second of those two posts by Steve Dower contains the details of specific configuration options required for compiling anything to be used with official CPython releases. In addition to those configuration and compiler settings to use, the versions of Visual Studio prior to Visual Studio 2015 did not support 64-bit systems by default. So compiling a 64-bit version of these bindings for a 64-bit version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the [[https://wiki.python.org/moin/WindowsCompilers][Windows compilers]] wiki page on the
CPython wiki is another essential reference on the relevant versions of Visual Studio to use and the degree of compatibility with CPython releases.

Eventually someone will ask why there isn't an installable binary for Windows, which the GPGME of the licenses do not preclude as long as the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with differing configuration options depending on the target Windows version and whether the architecture is 64-bit or 32-bit makes it difficult to provide a correct binary installer for Windows users. At the bare minimum doing so would require the GnuPG project compile ten different versions of the bindings with each release; both 32-bit and 64-bit versions for CPython 2.7 and 3.4,
with 64-bit versions for both
x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5, 3.6, 3.7 and later releases. That's the bare *minimum*, it'd probably be higher.

Additionally, with only a binary installation used in conjunction with the CPython installer from =python.org= the advanced options available which utilise [[#cython][Cython]] will not be able to be used at all. Cython depends on being able to compile the C code it generates and that too would need to utilise a matching runtime to both the installed version of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

1. Use a recent version of CPython; at least 3.5, but ideally 3.6 or later.

2. Use Visual Studio 2015 or the standalone build tools for Visual Studio 2017 (or later).

3. Compile both CPython and GPGME with these bindings using the tools selected in step 2.

4. Ignore MingW, Msys2 and the official CPython binary installers.

5. Be thankful the answer to this question wasn't simply to say something like, install Linux or install FreeBSD (or even Apple's OS X).

*** CFFI is the Best and GPGME should use it instead of SWIG
:PROPERTIES:
:CUSTOM_ID: snafu-cffi
:END:

There are many reasons for favouring [[https://cffi.readthedocs.io/en/latest/overview.html][CFFI]] and proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the bindings to Python using the =gpgme.h= file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of
applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in
at least one of CFFI's dependencies before any of this can be
addressed.

So if you're a massive fan of CFFI; that's great, but if you want this
project to switch to CFFI then rather than just insisting that it
should, I'd suggest you volunteer to bring CFFI up to the level this
project needs.

If you're actually seriously considering doing so, then I'd suggest
taking the =gpgme-tool.c= file in the GPGME =src/= directory and
getting that to work with any of the CFFI API methods (not the ABI
methods, they'll work with pretty much anything). When you start
running into trouble with "ifdefs" then you'll know what sort of
things are lacking. That doesn't even take into account the amount of
work saved via SWIG's code generation techniques either.

***
Virtualised Environments
:PROPERTIES:
:CUSTOM_ID: snafu-venv
:END:

It is fairly common practice amongst Python developers to, as much as
possible, use packages like virtualenv to keep various things that are

to be installed from interfering with each other. Given how much of the GPGME bindings is often at odds with the usual pythonic way of doing things, it stands to reason that this would be called into question too.

As it happens the answer as to whether or not the bindings can be used with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching prefix of GPGME itself. Which means that when GPGME, and ideally the rest of the GnuPG stack, is installed to a prefix like =/usr/local= or =/opt/local= then the bindings would need to be installed to the main Python installation and not a virtualised abstraction. Attempts to separate the two in the past have been known to cause weird and intermittent errors ranging from
minor annoyances to complete failures
in the build process.

As a consequence we only recommend building with and installing to the main Python installations within the same prefix as GPGME is installed to or which are found by GPGME's configuration stage immediately prior to running the make commands. Which is exactly what the compiling and installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled module may be installed into a virtualenv of the same major and minor version matching the build. Alternatively it is possible to utilise a =sites.pth= file in the =site-packages/= directory of a virtualenv installation, which links back to the system installations corresponding directory in order to import anything installed system wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet complete, preliminary testing of them indicates that both are viable
as
long as the main installation is complete. Which means that certain other options normally restricted to virtual environments are also available, including integration with pythonic test suites (e.g. [[https://docs.pytest.org/en/latest/index.html][pytest]]) and other large projects.

That said, it is worth reiterating the warning regarding non-standard installations. If one were to attempt to install the bindings only to a virtual environment without somehow also including the full GnuPG stack (or enough of it as to include GPGME) then it is highly likely that errors would be encountered at some point and more than a little likely that the build process itself would break.

If a degree of separation from the main operating system is still

required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. [[https://www.virtualbox.org/][VirtualBox]]), a
hardware emulation layer (e.g. [[https://www.qemu.org/][QEMU]]) or an application container
(e.g.
 [[https://www.docker.com/why-docker][Docker]]).

Finally it should be noted that the limited tests conducted thus far
have been using the =virtualenv= command in a new directory to create
the virtual python environment. As opposed to the standard =python3
-m venv= and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command =python3 -m virtualenv /path/to/install/virtual/thingy=
instead.

*** Post installation
  :PROPERTIES:
  :CUSTOM_ID: snafu-docs
  :END:

Following installation it is recommended to move the
=post_installer.py= script from the =lang/python/examples/howto/=
directory to the =lang/python/= directory and run it. This will fix
or restore files needed by Sphinx which may be removed during a
distribution build for release. It will also generate reST files from
Org mode files with Pandoc and generate Texinfo files from Org mode
files with GNU Emacs and Org mode (in batch
 mode). Additionally it
will fix the UTF-8 declaration line in the Texinfo files (Emacs
expects "UTF-8" to be "utf-8").

* Fundamentals
 :PROPERTIES:
 :CUSTOM_ID: howto-fund-a-mental
 :END:

Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly or these Python bindings.

** No REST
  :PROPERTIES:
  :CUSTOM_ID: no-rest-for-the-wicked
  :END:

The first part of which is or will be fairly blatantly obvious upon

viewing the first example, but it's worth reiterating anyway. That being that this API is /*not*/ a REST API. Nor indeed could it ever be one.

Most, if not all, Python programmers (and not just Python programmers) know how easy it is to work with a RESTful API. In fact they've become so popular that many other APIs attempt to emulate REST-like behaviour as much as they are able. Right down to the use of JSON formatted output to facilitate the use of their API without having to retrain developers.

This API does not do that. It would not be able to do that and also provide access to the entire C API on which it's built. It does, however, provide a very pythonic interface on top of the direct bindings and it's this pythonic layer that this HOWTO deals with.

** Context
:PROPERTIES:
:CUSTOM_ID: howto-get-context
:END:

One of the reasons which prevents this API from being RESTful is that most operations require more than one instruction to the API to perform the task. Sure, there are certain functions which can be performed simultaneously, particularly if the result known or strongly anticipated (e.g. selecting and encrypting to a key known to be in the public keybox).

There are many more, however, which cannot be manipulated so readily: they must be performed in a specific sequence and the result of one operation has a direct bearing on the outcome of subsequent operations. Not merely by generating an error either.

When dealing with this type of persistent state on the web, full of both the RESTful and REST-like, it's most commonly referred to as a session. In GPGME, however, it is called a context and every operation type has one.

* Working with keys
:PROPERTIES:
:CUSTOM_ID: howto-keys
:END:

** Key selection
  :PROPERTIES:
  :CUSTOM_ID: howto-keys-selection
  :END:

Selecting keys to encrypt to or to sign with will be a common
occurrence when working with GPGMe and the means available for doing
so are quite simple.

They do depend on utilising a Context; however once the data is
recorded in another variable, that Context does not need to be the
same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that
key's key ID or fingerprint, preferably the full fingerprint without
any spaces in it. A long key ID will probably be okay, but is not
advised and short key IDs are already a problem with some being
generated to match specific patterns. It does not
 matter whether the
pattern is upper or lower case.

So this is the best method:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC

This is passable and very likely to be common:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
#+END_SRC

And this is a really bad idea:

#+BEGIN_SRC python -i
import gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
#+END_SRC

Alternatively it may be that the intention is to create a list of keys
which all match a particular search string. For instance all the
addresses at a particular domain, like this:

#+BEGIN_SRC python -i
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
#+END_SRC

*** Counting keys
  :PROPERTIES:
  :CUSTOM_ID: howto-keys-counting
  :END:

Counting the number of keys in your public keybox (=pubring.kbx=), the
format which has superseded
 the old keyring format (=pubring.gpg= and
=secring.gpg=), or the number of secret keys is a very simple task.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys: {0}
 Number of public keys: {1}
""".format(secnum, pubnum))
#+END_SRC

NOTE: The [[#cython][Cython]] introduction in the [[#advanced-use][Advanced and Experimental]]
section uses this same key counting code with Cython to demonstrate
some areas where Cython can improve performance even with the
bindings. Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.

** Get key
  :PROPERTIES:
  :CUSTOM_ID: howto-get-key
  :END:

An alternative method of getting a single key via its fingerprint is
available directly within a Context
 with =Context().get_key=. This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due to expire at the end of 2018:

#+BEGIN_SRC python -i
import gpg

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
#+END_SRC

Whereas this example demonstrates selecting the author's current key
with the =secret= key word argument set to =True=:

#+BEGIN_SRC python -i
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
#+END_SRC

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively
 display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

** Importing keys
  :PROPERTIES:

```
 :CUSTOM_ID: howto-import-key
 :END:
```

Importing keys is possible with the =key_import()= method and takes one argument which is a bytes literal object containing either the binary or ASCII armoured key data for one or more keys.

The following example retrieves one or more keys from the SKS keyservers via the web using the requests module. Since requests returns the content as a bytes literal object, we can then use that directly to import the resulting data into our keybox.

```
#+BEGIN_SRC python -i
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)
result
 = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
   print(result)
elif result is not None and hasattr(result, "considered") is True:
   num_keys = len(result.imports)
   new_revs = result.new_revocations
   new_sigs = result.new_signatures
   new_subs = result.new_sub_keys
   new_uids = result.new_user_ids
   new_scrt = result.secret_imported
   nochange = result.unchanged
   print("""
 The total number of keys considered for import was:  {0}

    Number of keys revoked:  {1}
  Number of new signatures:  {2}
     Number of new subkeys:  {3}
    Number of new user IDs:  {4}
 Number of new secret keys:  {5}
  Number of unchanged keys:  {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
```

```
        nochange))
  for i in range(num_keys):
      print("{0}\n".format(result.imports[i].fpr))
else:
  pass
#+END_SRC
```

NOTE: When searching for a key ID of any length
or a fingerprint
(without spaces), the SKS servers require the the leading =0x=
indicative of hexadecimal be included. Also note that the old short
key IDs (e.g. =0xDEADBEEF=) should no longer be used due to the
relative ease by which such key IDs can be reproduced, as demonstrated
by the Evil32 Project in 2014 (which was subsequently exploited in
2016).

Testing for whether a string in any given search is or may be a
hexadecimal value which may be missing the leading =0x= is a simple
matter of using a try/except statement which attempts to convert the
string as hex to an integer and then back to hex; then using that to
search with. Raising a ValueError simply results in treating the
string as a string. This is the method and logic utilised in the
=import-keys-hkp.py= script (see below).

*** Working with ProtonMail
  :PROPERTIES:
  :CUSTOM_ID: import-protonmail
  :END:

Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail
public keys.

```
#+BEGIN_SRC python -i
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []
```

```
if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")

if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
  ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
  ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
  ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
  ksearch.append("{0}@protonmail.com".format(keyterm))
  ksearch.append("{0}@protonmail.ch".format(keyterm))
  ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") ==
 2 and keyterm.startswith("@") is False:
  uidlist = keyterm.split("@")
  for uid in uidlist:
     ksearch.append("{0}@protonmail.com".format(uid))
     ksearch.append("{0}@protonmail.ch".format(uid))
     ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
  uidlist = keyterm.split("@")
  for uid in uidlist:
     ksearch.append("{0}@protonmail.com".format(uid))
     ksearch.append("{0}@protonmail.ch".format(uid))
     ksearch.append("{0}@pm.me".format(uid))
else:
  ksearch.append(keyterm)

for k in ksearch:
  payload = {"op": "get", "search": k}
  try:
     r = requests.get(url, verify=True, params=payload)
     if r.ok is True:
        result = c.key_import(r.content)
     elif r.ok is False:
        result = r.content
  except Exception as e:
     result = None

  if result is not None and hasattr(result, "considered") is False:
     print("{0} for {1}".format(result.decode(), k))
  elif result is not None
```

```
 and hasattr(result, "considered") is True:
       num_keys = len(result.imports)
       new_revs = result.new_revocations
       new_sigs = result.new_signatures
       new_subs = result.new_sub_keys
       new_uids = result.new_user_ids
       new_scrt = result.secret_imported
       nochange = result.unchanged
       print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

      {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
       for i in range(num_keys):
           print(result.imports[i].fpr)
       print("")
   elif result is None:
       print(e)
#+END_SRC

Both the above example, [[../examples/howto/pmkey-import.py][pmkey-import.py]],
 and a version which prompts
for an alternative GnuPG home directory, [[../examples/howto/pmkey-import-alt.py][pmkey-import-alt.py]], are
available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool.  One notable difference
being that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.


*** Importing with HKP for Python
   :PROPERTIES:
```

```
  :CUSTOM_ID: import-hkp4py
  :END:
```

Performing the same tasks with the [[https://github.com/Selfnet/hkp4py][hkp4py module]] (available via PyPI) is not too much different, but does provide a number of options of benefit to end users. Not least of which being the ability to perform some checks on a key before importing it or not. For instance it may be the policy of a site or project to only import keys which have not been revoked. The hkp4py module permits such checks prior to the importing of the keys found.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
  pattern = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  pattern = sys.argv[1]
else:
  pattern = input("Enter the pattern to search for keys or user IDs: ")



if pattern is not None:
  try:
    key = server.search(hex(int(pattern, 16)))
    keyed = True
  except ValueError as ve:
    key = server.search(pattern)
    keyed = False

  if key is not None:
    keys.append(key[0])
    if keyed is True:
      try:
        fob = server.search(pattern)
      except:
        fob = None
      if fob is not
 None:
        keys.append(fob[0])
```

```
      else:
         pass
   else:
      pass

   for logrus in pattern.split():
      try:
         key = server.search(hex(int(logrus, 16)))
         hexed = True
      except ValueError as ve:
         key = server.search(logrus)
         hexed = False

      if key is not None:
         keys.append(key[0])
         if hexed is True:
            try:
               fob = server.search(logrus)
            except:
               fob = None
            if fob is not None:
               keys.append(fob[0])
         else:
            pass
      else:
         pass


if len(keys) > 0:
   for key in keys:
      import_result = c.key_import(key.key_blob)
      results.append(import_result)

for result in results:
   if result is not None and hasattr(result, "considered") is False:
      print(result)
   elif result is not None and hasattr(result, "considered") is True:
       num_keys = len(result.imports)
      new_revs = result.new_revocations
      new_sigs = result.new_signatures
      new_subs = result.new_sub_keys
      new_uids = result.new_user_ids
      new_scrt = result.secret_imported
      nochange = result.unchanged
      print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
```

```
Number of new signatures: {2}
  Number of new subkeys: {3}
 Number of new user IDs: {4}
Number of new secret keys: {5}
Number of unchanged keys: {6}

The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
      for i in range(num_keys):
         print(result.imports[i].fpr)
      print("")
  else:
      pass
#+END_SRC
```

Since the hkp4py module handles multiple keys just as effectively as
one (=keys= is a list of responses per matching key), the example
above is able to do a little bit more with the returned
 data before
anything is actually imported.

*** Importing from ProtonMail with HKP for Python
  :PROPERTIES:
  :CUSTOM_ID: import-protonmail-hkp4py
  :END:

Though this can provide certain benefits even when working with
ProtonMail, the scope is somewhat constrained there due to the
limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg"
produces hundreds of results from any time the word appears in any
part of a user ID. Performing the same search on the ProtonMail
keyserver returns zero results, even though there are at least two
test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that
server by ProtonMail to require an exact match of the full email
address of the ProtonMail user whose key is being requested.
Presumably this is intended to reduce breaches of privacy of their
users as an email address must already be known before a key for that
address
 can be obtained.

**** Import from ProtonMail via HKP for Python Example no. 1

```
   :PROPERTIES:
   :CUSTOM_ID: import-hkp4py-pm1
   :END:
```

The following script is available with the rest of the examples under
the somewhat less than original name, =pmkey-import-hkp.py=.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.

Usage:  pmkey-import-hkp.py [search strings]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
  keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
  keyterm = sys.argv[1]
  keyterms.append(keyterm)
else:
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
      ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
```

```
        ksearch.append("{0}@protonmail.com".format(keyterm))
        ksearch.append("{0}@protonmail.ch".format(keyterm))
        ksearch.append("{0}@pm.me".format(keyterm))
    elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    elif keyterm.count("@") > 2:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
             ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    else:
        ksearch.append(keyterm)

for k in ksearch:
    print("Checking for key for: {0}".format(k))
    try:
        keys = server.search(k)
        if isinstance(keys, list) is True:
            for key in keys:
                allkeys.append(key)
                try:
                    import_result = c.key_import(key.key_blob)
                except Exception as e:
                    import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
         new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
```

```
The total number of keys considered for import was: {0}

With UIDs wholely or partially matching the following string:

     {1}

  Number of keys revoked: {2}
Number of new signatures: {3}
   Number of new subkeys: {4}
  Number of new user IDs: {5}
Number of new secret keys: {6}
Number of unchanged keys: {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
      for i in range(num_keys):
         print(result.imports[i].fpr)
      print("")
  elif result is None:
      pass
#+END_SRC


**** Import from ProtonMail via HKP for Python Example no. 2
   :PROPERTIES:
   :CUSTOM_ID: import-hkp4py-pm2
   :END:

Like
 its counterpart above, this script can also be found with the
rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything
passed as a =homedir= which either does not exist or which is not a
directory, as also being a pssible user ID to check for.  It's not
guaranteed to pick up on all such cases, but it should cover most of
them.

#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.
```

```
Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 3:
   homedir = sys.argv[1]
   keyterms = sys.argv[2:]
elif len(sys.argv)
 == 3:
   homedir = sys.argv[1]
   keyterm = sys.argv[2]
   keyterms.append(keyterm)
elif len(sys.argv) == 2:
   homedir = ""
   keyterm = sys.argv[1]
   keyterms.append(keyterm)
else:
   keyterm = input("Enter the key ID, UID or search string: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")
   keyterms.append(keyterm)

if len(homedir) == 0:
   homedir = None
   homeless = False

if homedir is not None:
   if homedir.startswith("~"):
      if os.path.exists(os.path.expanduser(homedir)) is True:
         if os.path.isdir(os.path.expanduser(homedir)) is True:
            c.home_dir = os.path.realpath(os.path.expanduser(homedir))
         else:
            homeless = True
      else:
         homeless = True
   elif os.path.exists(os.path.realpath(homedir)) is True:
      if os.path.isdir(os.path.realpath(homedir)) is True:
         c.home_dir = os.path.realpath(homedir)
      else:
```

```
        homeless = True
    else:
        homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
# a search string.
if homeless is True:
    keyterms.append(homedir)
    c.home_dir = None
else:
    pass

for keyterm in keyterms:
    if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
    elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
        ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
        ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
        ksearch.append("{0}@pm.me".format(keyterm[1:]))
    elif keyterm.count("@") == 0:
        ksearch.append("{0}@protonmail.com".format(keyterm))
        ksearch.append("{0}@protonmail.ch".format(keyterm))
        ksearch.append("{0}@pm.me".format(keyterm))
    elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
        uidlist = keyterm.split("@")

    for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    elif keyterm.count("@") > 2:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    else:
        ksearch.append(keyterm)

for k in ksearch:
    print("Checking for key for: {0}".format(k))
    try:
        keys = server.search(k)
        if isinstance(keys, list) is True:
            for key in keys:
                allkeys.append(key)
```

```
            try:
                import_result = c.key_import(key.key_blob)
            except Exception as e:
                import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception
 as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}
    Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs,
 new_subs, new_uids, new_scrt,
          nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
        pass
#+END_SRC
```

** Exporting keys
  :PROPERTIES:
  :CUSTOM_ID: howto-export-key
  :END:

Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine. Two of those functions are for exporting public keys and the
third is for exporting secret keys.

*** Exporting public keys
   :PROPERTIES:
   :CUSTOM_ID: howto-export-public-key
   :END:

There are two methods of exporting public keys, both of which are very
similar to the other. The default method, =key_export()=, will export
a public key or keys matching a specified pattern as normal. The
alternative, the =key_export_minimal()= method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

#+BEGIN_SRC
 python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = sys.argv[3]
elif len(sys.argv) == 3:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
   keyfile = sys.argv[1]
   logrus = input("Enter the UID matching the key(s) to export: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")

```
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
     c.home_dir = os.path.expanduser(homedir)
  else:
     pass
elif
 os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export(pattern=logrus)
except:
  result = c.key_export(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
else:
  pass
#+END_SRC
```

It should be noted that the result will only return =None= when a search pattern has been entered, but has not matched any keys. When the search pattern itself is set to =None= this triggers the exporting of the entire public keybox.

```
#+BEGIN_SRC python -i
import gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
```

```
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus
 = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_minimal(pattern=logrus)
except:
  result = c.key_export_minimal(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
else:
  pass
#+END_SRC


*** Exporting secret keys
  :PROPERTIES:
  :CUSTOM_ID: howto-export-secret-key
  :END:

Exporting secret keys is, functionally, very similar to exporting
public
 keys; save for the invocation of =pinentry= via =gpg-agent= in
order to securely enter the key's passphrase and authorise the export.

The following example exports the secret key to a file which is then
```

set with the same permissions as the output files created by the
command line secret key export options.

#+BEGIN_SRC python -i
import gpg
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
   keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:

```
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
#+END_SRC

Alternatively the approach
 of the following script can be used.  This
longer example saves the exported secret key(s) in files in the GnuPG
home directory, in addition to setting the file permissions as only
readable and writable by the user.  It also exports the secret key(s)
twice in order to output both GPG binary (=.gpg=) and ASCII armoured
(=.asc=) files.

#+BEGIN_SRC python -i
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
```

```
  gpgconfcmd = "gpgconf --list-dirs homedir"

a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
   logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
     homedir = os.path.realpath(userdir)
  else:
     homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir
 = homedir
else:
  pass
```

```
if c.home_dir is not None:
  if c.home_dir.endswith("/"):
     gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
     ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
     gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
     ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
     hd = os.environ["GNUPGHOME"]
  else:
     try:
        hd = subprocess.getoutput(gpgconfcmd)
     except:
        process = subprocess.Popen(gpgconfcmd.split(),
                                   stdout=subprocess.PIPE)
        procom = process.communicate()
        if sys.version_info[0] == 2:
           hd = procom[0].strip()
        else:
           hd = procom[0].decode().strip()
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)

try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result
 = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
     f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
     f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
#+END_SRC
```

*** Sending public keys to the SKS Keyservers
  :PROPERTIES:
  :CUSTOM_ID: howto-send-public-key
  :END:

As with the previous section on importing keys, the =hkp4py= module adds another option with exporting keys in order to send them to the public keyservers.

The following example demonstrates how this may be done.

```
#+BEGIN_SRC python -i
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server
 = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")

if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
     export_result = c.key_export(pattern=logrus)
  except Exception as e:
     print(e)
     export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
     try:
        send_result = server.add(export_result)
     except:
        send_result = server.add(export_result.decode())
```

```
        if send_result is not None:
            print(send_result)
        else:
            pass
    except Exception as e:
        print(e)
else:
    pass
#+END_SRC
```

An expanded version of this script with additional functions for specifying an alternative homedir location is in the examples directory as =send-key-to-keyserver.py=.

The =hkp4py= module appears to handle both string and byte literal text data equally well, but the GPGME bindings deal primarily with byte literal data only and so this script sends in that format first, then tries the string literal form.

* Basic Functions
:PROPERTIES:
:CUSTOM_ID: howto-the-basics
:END:

The most frequently called features of any cryptographic library will be the most fundamental tasks for encryption software. In this section we will look at how to programmatically encrypt data, decrypt it, sign it and verify signatures.

** Encryption
:PROPERTIES:
:CUSTOM_ID: howto-basic-encryption
:END:

Encrypting is very straight forward. In the first example below the message, =text=, is encrypted to a single recipient's key. In the second example the message will be encrypted to multiple recipients.

*** Encrypting to one key
:PROPERTIES:
:CUSTOM_ID: howto-basic-encryption-single
:END:

Once the the Context is set the main issues with encrypting data is

essentially reduced
 to key selection and the keyword arguments
specified in the =gpg.Context().encrypt()= method.

Those keyword arguments are: =recipients=, a list of keys encrypted to
(covered in greater detail in the following section); =sign=, whether
or not to sign the plaintext data, see subsequent sections on signing
and verifying signatures below (defaults to =True=); =sink=, to write
results or partial results to a secure sink instead of returning it
(defaults to =None=); =passphrase=, only used when utilising symmetric
encryption (defaults to =None=); =always_trust=, used to override the
trust model settings for recipient keys (defaults to =False=);
=add_encrypt_to=, utilises any preconfigured =encrypt-to= or
=default-key= settings in the user's =gpg.conf= file (defaults to
=False=); =prepare=, prepare for encryption (defaults to =False=);
=expect_sign=, prepare for signing (defaults to =False=); =compress=,
compresses the plaintext prior to encryption (defaults to =True=).

#+BEGIN_SRC python -i
import
 gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:
   afile.write(ciphertext)
#+END_SRC

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the =gpg.conf= file:

#+BEGIN_SRC python -i
import gpg

a_key = "0x12345678DEADBEEF"

```
with open("secret_plans.txt", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext,
 result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                 always_trust=True,
                                 add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC
```

If the =recipients= parameter is empty then the plaintext is encrypted symmetrically. If no =passphrase= is supplied as a parameter or via a callback registered with the =Context()= then an out-of-band prompt for the passphrase via pinentry will be invoked.

*** Encrypting to multiple keys
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-encryption-multiple
  :END:

Encrypting to multiple keys essentially just expands upon the key selection process and the recipients from the previous examples.

The following example encrypts a message (=text=) to everyone with an email address on the =gnupg.org= domain,[fn:4] but does /not/ encrypt to a default key or other key which is configured to
 normally encrypt
to.

```
#+BEGIN_SRC python -i
import gpg

text = b"""Oh look, another test message.
```

The same rules apply as with the previous example and more likely than not, the message will actually be drawn from reading the contents of a file or, maybe, from entering data at an input() prompt.

Since the text in this case must be bytes, it is most likely that the input form will be a separate file which is opened with "rb" as this is the simplest method of obtaining the correct data format.

```
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
     logrus.append(rpattern[i])

ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
#+END_SRC
```

All it would take to change the above example to sign
the message
and also encrypt the message to any configured default keys would
be to change the =c.encrypt= line to this:

```
#+BEGIN_SRC python -i
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                  always_trust=True,
                                  add_encrypt_to=True)
#+END_SRC
```

The only keyword arguments requiring modification are those for which
the default values are changing. The default value of =sign= is
=True=, the default of =always_trust= is =False=, the default of
=add_encrypt_to= is =False=.

If =always_trust= is not set to =True= and any of the recipient keys
are not trusted (e.g. not signed or locally signed) then the
encryption will raise an error. It is possible to mitigate this
somewhat with something more like this:

```
#+BEGIN_SRC python -i
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org",
 secret=False))
logrus = []
```

```
for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

  try:
    ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                        add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
    for i in range(len(e.recipients)):
      for n in range(len(logrus)):
        if logrus[n].fpr == e.recipients[i].fpr:
          logrus.remove(logrus[n])
        else:
          pass
    try:
      ciphertext, result, sign_result = c.encrypt(text,
                                          recipients=logrus,
                                          add_encrypt_to=True)
      with open("secret_plans.txt.asc", "wb") as afile:
        afile.write(ciphertext)
    except:
      pass
#+END_SRC
```

This will attempt to encrypt to all the keys searched
 for, then remove
invalid recipients if it fails and try again.

** Decryption
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-decryption
 :END:

Decrypting something encrypted to a key in one's secret keyring is
fairly straight forward.

In this example code, however, preconfiguring either =gpg.Context()=
or =gpg.core.Context()= as =c= is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to =c= simply adds lines for no
gain.

```
#+BEGIN_SRC python -i
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
```

```
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
  try:
     plaintext, result, verify_result = gpg.Context().decrypt(cfile)
  except gpg.errors.GPGMEError as e:
     plaintext = None
     print(e)

if plaintext is not None:
  with open(newfile, "wb") as nfile:
    nfile.write(plaintext)

  else:
     pass
#+END_SRC
```

The data available in =plaintext= in this example is the decrypted content as a byte object, the recipient key IDs and algorithms in =result= and the results of verifying any signatures of the data in =verify_result=.

If =gpg.Context().decrypt(cfile, verify=False)= is called instead, then =verify_result= will be returned as =None= and the rest remains as described here.

** Signing text and files
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-signing
 :END:

The following sections demonstrate how to specify keys to sign with.

*** Signing key selection
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-signers
  :END:

By default GPGME and the Python bindings will use the default key configured for the user invoking the GPGME API. If there is no default key specified and there is more than one secret key available it may be necessary to specify the key or keys with which to sign messages and files.

```
#+BEGIN_SRC python -i
import gpg
```

logrus = input("Enter
 the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
#+END_SRC

The signing examples in the following sections include the explicitly designated =signers= parameter in two of the five examples; once where the resulting signature would be ASCII armoured and once where it would not be armoured.

While it would be possible to enter a key ID or fingerprint here to match a specific key, it is not possible to enter two fingerprints and match two keys since the patten expects a string, bytes or None and not a list. A string with two fingerprints won't match any single key.

*** Normal or default signing messages or files
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-normal
  :END:

The normal or default signing process is essentially the same as is most often invoked when also encrypting a message or file. So when the encryption component is not utilised, the result is to produce an encoded
 and signed output which may or may not be ASCII armoured and which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the plaintext is already compressed. ASCII armouring will be determined according to the value of =gpg.Context().armor=.

The compression algorithm is selected in much the same way as the symmetric encryption algorithm or the hash digest algorithm is when multiple keys are involved; from the preferences saved into the key itself or by comparison with the preferences with all other keys involved.

#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

```
c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
#+END_SRC
```

Though everything in this example is accurate, it is more likely that reading the input data from another
file and writing the result to a
new file will be performed more like the way it is done in the next example. Even if the output format is ASCII armoured.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
#+END_SRC
```

*** Detached signing messages and files
```
  :PROPERTIES:
  :CUSTOM_ID: howto-basic-signing-detached
  :END:
```

Detached signatures will often be needed in programmatic uses of GPGME, either for signing files (e.g. tarballs of code releases) or as a component of message signing (e.g. PGP/MIME encoded email).

```
#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)
```

```
with open("/path/to/statement.txt.asc",
 "w") as afile:
   afile.write(signed_data.decode())
#+END_SRC
```

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
   text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
   afile.write(signed_data)
#+END_SRC
```

*** Clearsigning messages or text
   :PROPERTIES:
   :CUSTOM_ID: howto-basic-signing-clear
   :END:

Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

```
#+BEGIN_SRC python -i
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with
 open("/path/to/statement.txt.asc", "w") as afile:
   afile.write(signed_data.decode())
#+END_SRC
```

In spite of the appearance of a clear-signed message, the data handled

by GPGME in signing it must still be byte literals.

```
#+BEGIN_SRC python -i
import gpg

with open("/path/to/statement.txt", "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
  afile.write(signed_data)
#+END_SRC
```

```
** Signature verification
 :PROPERTIES:
 :CUSTOM_ID: howto-basic-verification
 :END:
```

Essentially there are two principal methods of verification of a signature. The first of these is for use with the normal or default signing method and for clear-signed messages. The second is for use with files and data with detached signatures.

The following example is intended for use with the default signing method where the file was not ASCII armoured:

```
#+BEGIN_SRC python
 -i
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"

c = gpg.Context()

try:
  data, result = c.verify(open(gpg_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
```

```
      sign = result.signatures[i]
      print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
         time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC
```

Whereas this next example, which is almost identical would work with normal ASCII armoured files and with clear-signed files:

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
      sign = result.signatures[i]
      print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
         time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC
```

In both of the previous examples it is also possible to compare the original data that was signed against the signed data in =data= to see if it matches with something like this:

```
#+BEGIN_SRC python -i
```

```
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
else:
  pass
#+END_SRC
```

The following two examples, however, deal with detached signatures. With his method of verification the data that was signed does not get returned since it is already being explicitly referenced in the first argument of =c.verify=. So =data= is =None= and only the information in =result= is available.

```
#+BEGIN_SRC python -i
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()

try:
  data,
 result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
     sign = result.signatures[i]
     print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC

#+BEGIN_SRC python -i
import gpg
import time
```

```
filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
       time.ctime(sign.timestamp)))
else:
  pass
#+END_SRC


*
 Creating keys and subkeys
 :PROPERTIES:
 :CUSTOM_ID: key-generation
 :END:

The one thing, aside from GnuPG itself, that GPGME depends on, of
course, is the keys themselves.  So it is necessary to be able to
generate them and modify them by adding subkeys, revoking or disabling
them, sometimes deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's
greatest secret agent, Danger Mouse.  Since Danger Mouse is a secret
agent he needs to be able to protect information to =SECRET= level
clearance, so his keys will be 3072-bit keys.

The pre-configured =gpg.conf= file which sets cipher, digest and other
preferences contains the following configuration parameters:

#+BEGIN_SRC conf
 expert
```

```
 allow-freeform-uid
 allow-secret-key-import
 trust-model tofu+pgp
 tofu-default-policy unknown
 enable-large-rsa
 enable-dsa2
 cert-digest-algo SHA512
 default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128
 AES BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP
Uncompressed
 personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES
BLOWFISH IDEA CAST5 3DES
 personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
 personal-compress-preferences ZLIB BZIP2 ZIP Uncompressed
#+END_SRC


** Primary key
  :PROPERTIES:
  :CUSTOM_ID: keygen-primary
  :END:

Generating a primary key uses the =create_key= method in a Context.
It contains multiple arguments and keyword arguments, including:
=userid=, =algorithm=, =expires_in=, =expires=, =sign=, =encrypt=,
=certify=, =authenticate=, =passphrase= and =force=.  The defaults for
all of those except =userid=, =algorithm=, =expires_in=, =expires= and
=passphrase= is =False=.  The defaults for =algorithm= and
=passphrase= is =None=.  The default for =expires_in= is =0=.  The
default for =expires= is =True=.  There is no default for =userid=.

If =passphrase= is left as =None=
 then the key will not be generated
with a passphrase, if =passphrase= is set to a string then that will
be the passphrase and if =passphrase= is set to =True= then gpg-agent
will launch pinentry to prompt for a passphrase.  For the sake of
convenience, these examples will keep =passphrase= set to =None=.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
                     sign=True, certify=True)
```

#+END_SRC

One thing to note here is the use of setting the =c.home_dir=
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this
example in a separate location rather than adding it to existing and
active key store data. As with the default directory, =~/.gnupg=, any
temporary or separate directory needs the permissions set to only
permit access by the directory
 owner. On posix systems this means
setting the directory permissions to 700.

The =temp-homedir-config.py= script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
=GenkeyResult= object, which includes the following data:

```
#+BEGIN_SRC python -i
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
        dmkey.uid))
#+END_SRC
```

Alternatively the information can be confirmed using the command line
program:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>

  bash-4.4$
#+END_SRC
```

As with generating keys manually, to preconfigure expanded preferences
for the cipher, digest and compression algorithms, the =gpg.conf= file
must contain those details in the home directory in which the new key

is being generated. I used a cut down version of my own =gpg.conf=
file in order to be able to generate this:

#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
quit
 Secret key is available.

 sec rsa3072/026D2F19E99E63AA
     created: 2018-03-15 expires: 2019-03-15 usage: SC
     trust: ultimate   validity: ultimate
 [ultimate] (1). Danger Mouse <dm@secret.example.net>

 [ultimate] (1). Danger Mouse <dm@secret.example.net>
     Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH,
IDEA, CAST5, 3DES
     Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
     Compression: ZLIB, BZIP2, ZIP, Uncompressed
     Features: MDC, Keyserver
 no-modify

 bash-4.4$
#+END_SRC

** Subkeys
  :PROPERTIES:
  :CUSTOM_ID: keygen-subkeys
  :END:

Adding subkeys to a primary key is fairly similar to creating the
primary key with the =create_subkey= method. Most of the arguments
are the same, but not quite all. Instead of the =userid= argument
there is now a =key= argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key. Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)

```
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
#+END_SRC
```

As with the primary key, the results here can be checked with:

```
#+BEGIN_SRC python -i
print("""
Fingerprint: {0}
Primary Key: {1}
  Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmsub.fpr, dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
          dmsub.uid))
#+END_SRC
```

As well as on the command line with:

```
#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----------------------
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid           [ultimate] Danger Mouse <dm@secret.example.net>
 ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

 bash-4.4$
#+END_SRC
```

```
** User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids
  :END:


*** Adding User IDs
   :PROPERTIES:
   :CUSTOM_ID: keygen-uids-add
   :END:
```

By comparison to creating primary keys and subkeys, adding a new user ID to an existing key is much simpler. The method used to do this is =key_add_uid= and the only arguments it takes are for the =key= and the new =uid=.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr
 = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
#+END_SRC

Unsurprisingly the result of this is:

#+BEGIN_SRC shell
 bash-4.4$ gpg --homedir ~/.gnupg-dm -K
 ~/.gnupg-dm/pubring.kbx
 ----
 sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
 177B7C25DB99745EE2EE13ED026D2F19E99E63AA
 uid   [ultimate] Danger Mouse <danger.mouse@secret.example.net>
 uid   [ultimate] Danger Mouse <dm@secret.example.net>
 ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

 bash-4.4$
#+END_SRC

*** Revoking User IDs
  :PROPERTIES:
  :CUSTOM_ID: keygen-uids-revoke
  :END:

Revoking a user ID is a fairly similar process, except that it uses
the =key_revoke_uid= method.

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid

= "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
#+END_SRC

** Key certification
:PROPERTIES:
:CUSTOM_ID: key-sign
:END:

Since key certification is more frequently referred to as key signing, the method used to perform this function is =key_sign=.

The =key_sign= method takes four arguments: =key=, =uids=, =expires_in= and =local=. The default value of =uids= is =None= and which results in all user IDs being selected. The default value of both =expires_in= and =local= is =False=; which results in the signature never expiring and being able to be exported.

The =key= is the key being signed rather than the key doing the signing. To change the key doing the signing refer to the signing key selection above for signing messages and files.

If the =uids= value is not =None= then it must either be a string to match a single user ID or a list of strings to match multiple user IDs. In this case the matching of those strings must be precise and it
is case sensitive.

To sign Danger Mouse's key for just the initial user ID with a signature which will last a little over a month, do this:

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
#+END_SRC

*** Verifying key certifications
:PROPERTIES:
:CUSTOM_ID: key-sign-verify

```
  :END:

#+BEGIN_SRC python -i
import gpg
import time

c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
          sig.uid)
#+END_SRC
```

Which for Danger Mouse displays the following:

```
#+BEGIN_EXAMPLE
 0x92E3F6115435C65A  Thu Mar 15 13:17:44 2018  Danger Mouse <dm@secret.example.net>
  0x321E4E2373590E5D  Mon Nov 26 12:46:05 2018  Ben McGinnes <ben@adversary.org>
#+END_EXAMPLE
```

The two key signatures listed are for the self-certification of Danger Mouse's key made when the key was created in March, 2018; and the second is a signature made by the author and set to expire at the end of the year. Note that the second signature was made with the following code (including the preceding code to display the output of the certifications or key signatures):

```
#+BEGIN_SRC python -i
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
```

```
ts = tp.total_seconds()
total_secs = math.ceil(ts)
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
keys
 = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
     print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
         sig.uid)
#+END_SRC
```

Note that this final code block includes the use of a module which is
/not/ part of Python's standard library, the [[https://pendulum.eustace.io/][pendulum module]]. Unlike
the standard datetime module, pendulum makes working with dates and
times significantly easier in Python; just as the requests module
makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using
the GPGME Python bindings, they are both highly recommended more
generally.

```
* Advanced or Experimental Use Cases
 :PROPERTIES:
 :CUSTOM_ID: advanced-use
 :END:


** C plus Python plus SWIG plus Cython
  :PROPERTIES:
  :CUSTOM_ID: cython
  :END:
```

In
 spite of the apparent incongruence of using Python bindings to a C
interface only to generate more C from the Python; it is in fact quite
possible to use the GPGME bindings with [[http://docs.cython.org/en/latest/index.html][Cython]]. Though in many
cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable. One of the better and easier examples being the one of

the early examples in this HOWTO, the [[#howto-keys-counting][key counting]] code. Running that
example as an executable Python script, =keycount.py= (available in
the =examples/howto/= directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically
 and timed it using
=time= utility, with the following results:

#+BEGIN_SRC shell
 bash-4.4$ time keycount.py

 Number of secret keys: 23
 Number of public keys: 12112

 real 11m52.945s
 user 0m0.913s
 sys 0m0.752s

 bash-4.4$
#+END_SRC

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the [[http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html][Cython Basic Tutorial]] to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the =gpg= module to the end of the script:

#+BEGIN_SRC python -i
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys: {0}

```
  Number
 of public keys:  {1}

""".format(secnum, pubnum))
#+END_SRC
```

Save that into a file called =keycount.pyx= and then create a
=setup.py= file which contains this:

```
#+BEGIN_SRC python -i
from distutils.core import setup
from Cython.Build import cythonize

setup(
  ext_modules = cythonize("keycount.pyx")
)
#+END_SRC
```

Compile it:

```
#+BEGIN_SRC shell
 bash-4.4$ python setup.py build_ext --inplace
 bash-4.4$
#+END_SRC
```

Then run it in a similar manner to =keycount.py=:

```
#+BEGIN_SRC shell
 bash-4.4$ time python3.7 -c "import keycount"

 Number of secret keys:  23
 Number of public keys:  12113


 real 6m47.905s
 user 0m0.785s
 sys 0m0.331s

 bash-4.4$
#+END_SRC
```

Cython turned =keycount.pyx= into an 81KB =keycount.o= file in the
=build/= directory, a 24KB =keycount.cpython-37m-darwin.so= file to be
imported into Python 3.7 and a 113KB =keycount.c= generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the =keycount.pyx= file or the full
 1,452 bytes of the
full executable =keycount.py= example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The =keycount.pyx= and =setup.py= files used to generate this example
have been added to the =examples/howto/advanced/cython/= directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the
[[http://docs.cython.org/en/latest/src/tutorial/pure.html#magic-attributes-within-the-pxd][Magic Attributes]] section
of the Cython documentation.

* Miscellaneous extras and work-arounds
 :PROPERTIES:
 :CUSTOM_ID: cheats-and-hacks
 :END:

Most of the things in the following sections are here simply because
there was no better place to put them, even though some are only
peripherally related to the GPGME Python bindings. Some are also
workarounds for functions not integrated
 with GPGME as yet. This is
especially true of the first of these, dealing with [[#group-lines][group lines]].

** Group lines
  :PROPERTIES:
  :CUSTOM_ID: group-lines
  :END:

There is not yet an easy way to access groups configured in the
gpg.conf file from within GPGME. As a consequence these central
groupings of keys cannot be shared amongst multiple programs, such as
MUAs readily.

The following code, however, provides a work-around for obtaining this
information in Python.

#+BEGIN_SRC python -i
import subprocess
import sys

if sys.platform == "win32":
   gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
   gpgconfcmd = "gpgconf --list-options gpg"

```
process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
  lines = procom[0].splitlines()
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
    break

groups = line.split(":")[-1].replace("",
 ").split(',')

group_lines = []
group_lists = []

for group in groups:
  group_lines.append(group.split("="))
  group_lists.append(group.split("="))

for glist in group_lists:
  glist[1] = glist[1].split()
#+END_SRC
```

The result of that code is that =group_lines= is a list of lists where =group_lines[i][0]= is the name of the group and =group_lines[i][1]= is the key IDs of the group as a string.

The =group_lists= result is very similar in that it is a list of lists. The first part, =group_lists[i][0]= matches =group_lines[i][0]= as the name of the group, but =group_lists[i][1]= is the key IDs of the group as a list.

A demonstration of using the =groups.py= module is also available in the form of the executable =mutt-groups.py= script. This second script reads all the group entries in a user's =gpg.conf= file and converts them into crypt-hooks suitable for use with the Mutt and Neomutt mail clients.

** Keyserver access for Python
```
 :PROPERTIES:
 :CUSTOM_ID:
hkp4py
 :END:
```

The [[https://github.com/Selfnet/hkp4py][hkp4py]] module by Marcel Fest was originally a port of the old [[https://github.com/dgladkov/python-hkp][python-hkp]] module from Python 2 to Python 3 and updated to use the [[http://docs.python-requests.org/en/latest/index.html][requests]] module instead. It has since been modified to provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the =hkp= protocol prefix as =http= and =hkps= as =https=, the module is able to be used even with servers which do not support the full scope of keyserver functions.[fn:5] It also works quite readily when incorporated into a [[#cython][Cython]] generated and compiled version of any code.

*** Key import format
:PROPERTIES:
:CUSTOM_ID: hkp4py-strings
:END:

The hkp4py module returns key data via requests as string literals (=r.text=) instead of byte literals (=r.content=). This means that the retrurned key data must be encoded to UTF-8 when importing that
key material using a =gpg.Context().key_import()= method.

For this reason an alternative method has been added to the =search= function of =hkp4py.KeyServer()= which returns the key in the correct format as expected by =key_import=. When importing using this module, it is now possible to import with this:

```
#+BEGIN_SRC python -i
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
#+END_SRC
```

Without that recent addition it would have been necessary to encode the contents of each =hkp4py.KeyServer().search()[i].key= in =hkp4py.KeyServer().search()= before trying to import it.

An example of this is included in the [[#howto-import-key][Importing Keys]] section of this HOWTO and the corresponding executable version of that example is available in the =lang/python/examples/howto= directory as normal; the executable version is the =import-keys-hkp.py= file.

** GPGME version checking

```
 :PROPERTIES:
 :CUSTOM_ID: gpgme-version-check
  :END:
```

For various reasons it may be necessary to check which version of GPGME the bindings have been built against; including whether a minimum required version of GPGME is in use.

For the most part the =gpg.version.versionstr= and =gpg.version.versionlist= methods have been quite sufficient. The former returns the same string as =gpgme-config --version=, while the latter returns the major, minor and patch values in a list.

To check if the installed bindings have actually been built against the current installed libgpgme version, this check can be performed:

```
#+BEGIN_SRC python -i
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,
                                      stderr=subprocess.PIPE)
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0]
 >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
     print("The GPGME Python bindings match libgpgme.")
  else:
     print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
#+END_SRC
```

For many developers, however, the preferred checking means checking for a minimum version or point release. This is now readily available via the =gpg.version.versionintlist= method (added in version =1.12.1-beta79=). It is also now possible to easily check whether the installed GPGME Python bindings were built from a development or beta

branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

```
#+BEGIN_SRC python -i
import gpg

try:
  if gpg.version.is_beta is True:
     print("The installed GPGME Python bindings were built from beta code.")
   else:
     print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
     if gpg.version.versionintlist[1] == 12:
        if gpg.version.versionintlist[2] == 1:
           print("This is the minimum version for using versionintlist.")
        elif gpg.version.versionintlist[2] > 1:
           print("The versionintlist method is available.")
        else:
           pass
     elif gpg.version.versionintlist[1] > 12:
        print("The versionintlist method is available.")
     else:
        pass
  elif gpg.version.versionintlist[0] > 1:
     print("The versionintlist method is available.")
  else:
     pass
except Exception as e:
  print(e)
#+END_SRC
```

The points where =pass= is used in the above example will most likely
also produce an =Exception= error since those results should only
occur in versions which do not have the =gpgme.version.is_beta=
 and
=gpgme.version.versionintlist= methods available.

* Copyright and Licensing
 :PROPERTIES:
 :CUSTOM_ID: copyright-and-license
 :END:

** Copyright
:PROPERTIES:
:CUSTOM_ID: copyright
:END:

Copyright The GnuPG Project, 2018.

** Draft Editions of this HOWTO
:PROPERTIES:
:CUSTOM_ID: draft-editions
:END:

Draft editions of this HOWTO may be periodically available directly
from the author at any of the following URLs:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.html][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 no SSL)]]
- [[https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html][GPGME Python Bindings HOWTO draft (HTML multiple files, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto/index.html][GPGME Python Bindings HOWTO draft (HTML
multiple files, AWS S3 no SSL)]]

These draft versions have been generated from this document via GNU
Emacs [[https://orgmode.org/][Org mode]] to =.texi= and [[https://www.gnu.org/software/texinfo/][GNU Texinfo]] to HTML. Though it is
likely that the specific [[https://files.au.adversary.org/crypto/gpgme-python-howto][file]]
[[http://files.au.adversary.org/crypto/gpgme-python-howto.org][version]] used will be on the same server
with the generated output formats. Occasionally I may include the Org
mode generated XHTML versions:

- [[https://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 SSL)]]
- [[http://files.au.adversary.org/crypto/gpgme-python-howto.xhtml][GPGME Python Bindings HOWTO draft (HTML single file, AWS S3 no SSL)]]

That XHTML version, however, is exported in a way which inherits a
colour scheme from [[https://github.com/holomorph/emacs-zenburn][the author's Emacs theme]] (which is a higher contrast
version
of [[http://kippura.org/zenburnpage/][Zenburn]] ported by [[https://github.com/holomorph][Holomorph]]). So it's fine for people who
prefer dark themed web pages, but not so great for everyone else.

The GNU Texinfo and reStructured Text versions ship with the software,
while the GNU Emacs Info version is generated from the Texinfo
version using GNU Texinfo or GNU Makeinfo. The Texinfo format is
generated from the original Org mode source file in Org mode itself
either within GNU Emacs or via the command line by invoking Emacs in
batch mode:

#+BEGIN_SRC shell
 emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
 emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
#+END_SRC

The reStructuredText format is also generated from the Org mode source
file, except it is generated using [[https://pandoc.org][Pandoc]] with either of the following
commands (depending on the filename):

#+BEGIN_SRC shell
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst
 gpgme-python-howto.org
 pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
#+END_SRC

Note that the Org mode source files are identified as such via a mode
line at the top of each file and have had their =.org= file extensions
dropped in order to make scripted generation of output formats easier
and not require renaming files post-conversion.

Due to a bug in Org mode's texinfo conversion method, the recommended
steps for generating the Texinfo files for all the files in the
=lang/python/doc/src/= directory are as follows:

#+BEGIN_SRC shell
 for x in * ; do
    emacs $x --batch -f org-texinfo-export-to-texinfo --kill
    cat $x.texi | sed -e 's/@documentencoding UTF-8/@documentencoding utf-8/g' > ../texinfo/$x.texi
    pandoc -f org -t rst+smart -o ../rst/$x.rst $x
 done ;
 rm -fv *.texi
 cd ../texinfo
 mkdir info
 mkdir html
 for x in *.texi ; do
    makeinfo -v $x
    makeinfo --html --no-split $x
 done ;
 mv *.info info/
 mv

*.html html/
#+END_SRC

This code snippet includes the generation of the reStructuredText
files and would be expected to be run from the =doc/src/= directory
containing the Org mode source files. It also assumes that the
commands are being run on POSIX compliant systems with basic tools
like sed, the Bourne shell and GNU Emacs[fn:6] available. The code
snippet also includes the steps for generating the Emacs Info files
and HTML files from the Texinfo files. Using reStructuredText files
with Sphinx is best left for the documentation of that project.

In addition to these there is a significantly less frequently updated
version as a HTML [[https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html][WebHelp site]]
(AWS S3 SSL); generated from DITA XML
source files, which can be found in [[https://dev.gnupg.org/source/gpgme/browse/ben%252Fhowto-dita/][an
alternative branch]] of the GPGME
git repository.

Various generated output formats may occasionally be found in
subdirectories
of the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python][gpgme-python]] directory. In
particular within
the [[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita][DITA]],
[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst][reStructuredText]] and
[[https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo][Texinfo]] subdirectories. The
=rst=
directory contains output files generated with Sphinx and may include a
considerable number of its possible output formats, but there are no
guarantees as to how recent these are or even if they are present.

These draft editions are not official documents and the version of
documentation in the master branch or which ships with released
versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding
that they may contain errors or may contain content
subject to change prior to an official release.

** License GPL compatible
:PROPERTIES:
:CUSTOM_ID: license
:END:

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without

modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.

* Footnotes

[fn:1] =short-history= and/or =short-history.html=.

[fn:2] With no issues reported specific to Python 3.7, the release of
Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing
with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of
3.6 now. Production environments with more conservative requirements
will always enforce their own policies anyway and installation to each
supported
 minor release is quite possible too.

[fn:3] Yes, even if you use virtualenv with everything you do in
Python. If you want to install this module as just your user account
then you will need to manually configure, compile and install the
/entire/ GnuPG stack as that user as well. This includes libraries
which are not often installed that way. It can be done and there are
circumstances under which it is worthwhile, but generally only on
POSIX systems which utilise single user mode (some even require it).

[fn:4] You probably don't really want to do this. Searching the
keyservers for "gnupg.org" produces over 400 results, the majority of
which aren't actually at the gnupg.org domain, but just included a
comment regarding the project in their key somewhere.

[fn:5] Such as with ProtonMail servers. This also means that
restricted servers which only advertise either HTTP or HTTPS end
points and not HKP or HKPS end points must still be identified as as
HKP or HKPS within the Python
 Code. The =hkp4py= module will rewrite
these appropriately when the connection is made to the server.

[fn:6] Okay, Emacs might not necessarily qualify as a basic tool, but
it is common enough that having it installed on a system isn't too
great an expectation, nor is it difficult to add to most POSIX
systems, even if the users of those systems do not personally use it.
{
  "fingerprint": "*"
}

```
{
  "op": "delete",
  "key": "E8143C489C8D41124DC40D0B47AF4B6961F04784"
}
{
  "op": "createkey",
  "userid": "foo@bar.baz",
  "algo": "rsa1024"
}
{
  "op": "sign",
  "keys": "A0FF4590BB6122EDEF6E3C542D727CC768697734",
  "sender": "alpha@example.net",
  "data": "Hello world",
  "armor": true,
  "base64": false
}
```

2011-12-02 Werner Koch <wk@g10code.com>

NB: ChangeLog files are no longer manually maintained. Starting
on December 1st, 2011 we put change information only in the GIT
commit log, and generate a top-level ChangeLog file from logs at
"make dist". See doc/HACKING for details.

2011-10-25 Marcus Brinkmann <marcus@g10code.com>

* Makefile.am: Remove build rules for libgpgme-pth.
* gpgme.m4: Remove support for libgpgme-pth.

2011-05-26 Marcus Brinkmann <marcus@g10code.com>

* decrypt.c (gpgme_op_decrypt_start, gpgme_op_decrypt): Check CTX.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_edit)
(gpgme_op_card_edit_start, gpgme_op_card_edit): Likewise.
* encrypt.c (gpgme_op_encrypt_start, gpgme_op_encrypt): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.
* export.c (gpgme_op_export_start,
gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)
(gpgme_op_getauditlog): Likewise.
* gpgconf.c (gpgme_op_conf_load, gpgme_op_conf_save): Likewise.

* import.c (gpgme_op_import_start, gpgme_op_import_keys_start)
(gpgme_op_import_keys, gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_start, gpgme_op_keylist_ext_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext): Likewise.
* passwd.c (gpgme_op_passwd_start, gpgme_op_passwd): Likewise.
* sign.c (gpgme_op_sign_start, gpgme_op_sign): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next): Likewise.
* verify.c (gpgme_op_verify_start, gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* vfs-create.c (gpgme_op_vfs_transact, gpgme_op_vfs_create):
Likewise.
* vfs-mount.c (gpgme_op_vfs_mount, gpgme_op_vfs_transact): Likewise.
* gpgme.c (gpgme_set_protocol)
(gpgme_set_sub_protocol)
(gpgme_set_armor, gpgme_set_include_certs)
(gpgme_set_keylist_mode, gpgme_set_passphrase_cb)
(gpgme_set_progress_cb, gpgme_set_io_cbs, gpgme_set_locale)
(gpgme_ctx_set_engine_info, gpgme_sig_notation_clear): Likewise.
* gpgme.c (gpgme_new): Check for valid R_CTX.
(gpgme_cancel, gpgme_cancel_async, gpgme_release): Likewise.

2011-04-06 Werner Koch <wk@g10code.com>

* gpgme-config.in: Add option --host. Change options --cflags and
--libs to collapse duplicate include and lib dirs. Try to put
extra libs at the end.

* gpgme.h.in: Use INSERT__TYPEDEFS_FOR_GPGME_H to include platform
specific typedefs.

2011-02-03 Werner Koch <wk@g10code.com>

* extra-stati.h: New.
* mkstatus: Extend to also process extra-stati.h
* Makefile.am (main_sources): Add extra-stati.h
(status-table.h): Depend on extra-stati.h and adjust rule.

2011-02-03
Marcus Brinkmann <marcus@g10code.com>

* w32-io.c (_gpgme_io_socket): Return fd, not res.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* assuan-support.c (my_socket, my_connect): New functions.

(_gpgme_assuan_system_hooks): Add my_Socket, my_connect.
* priv-io.h (_gpgme_io_socket): New prototype.
* w32-io.c (pid_to_handle, handle_to_oid, fd_to_handle): Remove macros.
(is_socket): Remove function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Remove some dead code.
(_gpgme_io_spawn): Translate handles before DuplicateHandle them.

2011-02-02 Marcus Brinkmann <mb@g10code.com>

* w32-util.c (mkstemp): Don't use CreateFile instead of open (the
function is not used on Windows CE, and the callers were not
adjusted).

2011-01-21 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Fix the case that is
not self-assignment.

2010-12-08 Werner Koch <wk@g10code.com>

* gpgme-tool.c (strcpy_escaped_plus): New.
(DIM, xtoi_1, xtoi_2): New.
(cmd_keylist):
Allow for multiple patterns.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* w32-io.c (create_reader, create_writer): Use small stack size on
Windows CE.

2010-11-23 Marcus Brinkmann <mb@g10code.com>

* gpgme.h.in (gpgme_conf_arg_new): Make VALUE arg const void *.
* gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgme_conf_arg_new): Likewise.
* engine-gpgconf.c (_gpgme_conf_arg_new): Likewise.
(gpgconf_write): Remove debug hack.

2010-11-19 Marcus Brinkmann <mb@g10code.com>

* engine-gpgconf.c (_gpgme_conf_opt_change): Support
self-assignment. Requested by Marc Mutz.

2010-11-17 Marcus Brinkmann <mb@g10code.com>

* vasprintf.c (int_vasprintf) [HAVE_W32CE_SYSTEM]: Just use a
fixed size buffer, as va_copy is not easy to fake.

2010-11-15 Marcus Brinkmann <mb@g10code.com>

* w32-ce.h (strcasecmp, strdup) [_MSC_VER]: Define.
* genkey.c, passphrase.c: Include util.h.

* w32-util.c (_gpgme_w32ce_get_debug_envvar): Fix return value.

2010-11-15 Werner Koch <wk@g10code.com>

*
data-compat.c (gpgme_data_new_from_filepart)
(gpgme_data_new_from_file) [W32CE && _MSC_VER]: Return not
GPG_ERR_NOT_IMPLEMENTED.

* w32-ce.h (HKEY_PERFORMANCE_DATA, HKEY_CURRENT_CONFIG, _IOLBF)
(abort) [_MSC_VER]: Provide these macros.

* ath.h [W32CE && _MSC_VER]: Include winsock2.h.

* ath.c (ath_read, ath_write) [W32CE && _MSC_VER]: Do not call
non-available functions.

2010-11-04 Werner Koch <wk@g10code.com>

* w32-ce.h [_MSC_VER && W32CE]: Undef leave.
* export.c: Include util.h so that we get the above undef.

* memrchr.c: Remove. Used to be a replacement function required
by the formerly included assuan code.

2010-11-03 Werner Koch <wk@g10code.com>

* debug.c (_gpgme_debug) [W32CE]: Replace locatime by GetLocalTime.

* signers.c (gpgme_signers_clear): Remove useless return.
Reported by Patrick Spendrin.

* w32-util.c: s/__inline__/GPG_ERR_INLINE/

* setenv.c: Include string.h due to our strerror replacement.

* w32-ce.h (access, bsearch):
New macros.
* w32-ce.c (_gpgme_wince_access): New.
(RegQueryValueExA): Change DATA to a void*.
(_gpgme_wince_bsearch): New. Taken from glibc 2.6.

Guard include of sys/stat.h and sys/types.h.

2010-11-02 Werner Koch <wk@g10code.com>

* data-fd.c (read, write, lseek) [W32CE && ! __MINGW32CE__]: New.
Taken from Pedro Alves Public Domain code.

* w32-ce.h (SHGetSpecialFolderPath): Remove our defines and
prototypes. We use the system provided prototypes now.
* w32-ce.c: Include shlobj.h
(_WIN32_IE): Define to 0x0400
(CreateFileA): New.
* w32-util.c: Explicitly include windows headers before util.h.
(_gpgme_w32ce_get_debug_envvar): Do not use wchar_t strings for
read_w32_registry_string.
(mkstemp): Use CreateFile instead of open.

* w32-io.c (handle_to_fd, fd_tohandle): Add. We need them for W32.
* w32-util.c (_WIN32_IE): Define to 0x0400.

* util.h [W32]: Include windows.h.
* w32-sema.c: Do not include windows.h directly.
* ath.c (ssize_t, pid_t)[_MSC_VER]: Add new
types.
* gpgme.c (gpgme_result_ref, gpgme_result_unref): Do not use a
void pointer in pointer arithmetic.
* w32-util.c: Include util.h prior to ath.h. Don't include
windows.h directly.
(F_OK): Define if not defined.
* w32-ce.c: Include string.h.
(RegQueryValueExA): Use WINAPI modifier to match the declaration.
* vfs-create.c: Include string.h because under W32CE with MSC we
get a warning related to our strerror replacement.
* encrypt-sign.c: Include stdlib.h, string.h and errno.h.
* priv-io.h [W32CE]: Include w32-ce.h
* w32-ce.h: Include winsock2.h and ws2tcpip.h.
(_MSV_VER): Remove useless macro.
(pid_t): Add typedef.

Guard all includes of unistd.h and sys/time.h.

2010-10-28 Marcus Brinkmann <marcus@g10code.com>

* opassuan.c (gpgme_op_assuan_transact_ext): Fix uninitialized
value use. Reported by Marc Mutz.

2010-10-07 Werner Koch <wk@g10code.com>

* gpgme-tool.c (ARGP_ERR_UNKNOWN): Use EDEADLK if available.

* w32-util.c (_gpgme_w32ce_get_debug_envvar) [W32CE]:
New.
* debug.c (debug_init) [W32CE]: Use new function.

2010-09-16 Werner Koch <wk@g10code.com>

* import.c: Include "util.h".
(parse_import): Return GPG_ERR_MISSING_ISSUER_CERT.

* util.h: Add fallback define for GPG_ERR_MISSING_ISSUER_CERT.
* op-support.c: Include "util.h".
(_gpgme_parse_inv_recp): Handle new code 12.

2010-09-02 Marcus Brinkmann <marcus@g10code.de>

* error.c (gpgme_err_code_to_errno): Fix cut and paste bug (thanks
to Marc Mutz).

2010-09-01 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c: Revert change from 2009-06-18, as it created a race
condition.

2010-08-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.def: Add gpgme_err_code_from_syserror and gpgme_err_set_errno.
* libgpgme.vers: Likewise.
* gpgme.h.in (gpgme_error_from_errno): Fix return type to
gpgme_error_t.
(gpgme_err_code_from_syserror, gpgme_err_set_errno): New prototype.
(gpgme_error_from_syserror): New inline function (why are
gpgme_err_make_from_errno and gpgme_error_from_errno
not inline
functions?).
* error.c (gpgme_error_from_errno): Fix return type to gpgme_error_t.
(gpgme_err_set_errno, gpgme_err_code_from_syserror): New functions.

2010-08-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (result_encrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml): Check vigorously for null pointers.

* w32-io.c (GPGCEDEV_IOCTL_ASSIGN_RVID): New macro.
(_gpgme_io_spawn): Use ASSIGN_RVID.

2010-06-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Remove debug printf.

2010-06-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use special hack for Windows CE to
get at stdin and stdout.

* engine-gpgsm.c (gpgsm_new): Translate returned achild_fds back
to child_fds.

* debug.h (TRACE_SUC6): New macro.
* w32-io.c (MAX_SLAFD): New macro.
(fd_table): New static variable.
(new_fd, release_fd): New functions.
(fd_to_handle, handle_to_fd, handle_to_socket):
Remove macros.
(MAX_READERS, MAX_WRITERS): Increase to 64.
(notify_table): Increase to MAX_SLAFD.
(struct reader_context_s, struct writer_context_s): Add member
file_sock.
(reader, writer): Use file_hd vs file_sock to decide if socket
operations to use. Remove auto-detect mode.
(create_reader, create_writer): Set file_sock. Unblock pending
thread only if this is a pipe fd.
(_gpgme_io_pipe): Allocate fds from table and return slot indices
instead of windows handles. This allows to properly handle RVIDs.
(_gpgme_io_close): Handle dup'ed file descriptors.
(build_commandline) [HAVE_W32_SYSTEM]: Use RVID from fd table now.
(_gpgme_io_spawn): Use fd table now.
(_gpgme_io_fd2str): Use RVID from fd table now.
(_gpgme_io_dup): Implement using fd table.
(_gpgme_io_socket): Allocate fds from table.
(_gpgme_io_connect): Use fd from table.

* w32-glib-io.c (find_channel): Check that the slot is used.

2010-06-09 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c [HAVE_W32CE_SYSTEM]:
Include assuan.h and winioctl.h.
(GPGCEDEV_IOCTL_UNBLOCK) [HAVE_W32CE_SYSTEM]: Define.
(set_synchronize) [HAVE_W32CE_SYSTEM]: Stub it out.
(is_socket): Allow to return -1 for auto-detect (old behaviour).
(is_socket) [HAVE_W32CE_SYSTEM]: Return -1.
(reader): Handle auto-detect case. Handle ctx->stop_me before
checking for EOF.
(destroy_reader) [HAVE_W32CE_SYSTEM]: Unblock a pending reader.

(writer): Handle auto-detect case. Handle ctx->stop_me with
ERROR_BUSY.
(destroy_writer) [HAVE_W32CE_SYSTEM]: Unblock a pending writer.
(_gpgme_io_pipe) [HAVE_W32CE_SYSTEM]: Implement in terms of a
half-pipe.
(build_commandline) [HAVE_W32CE_SYSTEM]: New function.
(_gpgme_io_spawn) [HAVE_W32CE_SYSTEM]: Implement it differently
for this platform.
(_gpgme_io_fd2str) [HAVE_W32CE_SYSTEM]: Implement it for RVIDs.
(_gpgme_io_dup) [HAVE_W32CE_SYSTEM]: Stub it out.

* gpgme-tool.c (result_add_timestamp): Add missing NULL argument.
(result_sign_to_xml): Protect against NULL
fingerprint.
(struct server): New members input_fd, input_filename,
input_stream output_fd, output_filename, output_stream,
message_filename, message_stream.
(server_reset_fds): Deallocate those.
(server_parse_fd): New function.
(server_data_obj): Take optional filename argument and direction
argument. Also take new argument to return a filestream that
needs to be closed after destroying the data object.
Change all callers, too.
(input_notify, output_notify): Removed.
(cmd_input, cmd_output): New functions.
(gpgme_server): Do not register input and output notifier.
(register_commands): Use cmd_input and cmd_output.
(cmd_message): Rewritten to use server_parse_fd.
(cmd_delete, cmd_keylist): Fix inverted option check.
(main) [HAVE_W32CE_SYSTEM]: Sleep a bit to work around bug in ssh.

* genkey.c (gpgme_op_genkey): Return err with TRACE_ERR.

2010-05-12 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_timegm) [HAVE_W32_SYSTEM]: New static
function.
(_gpgme_parse_timestamp)
[HAVE_W32_SYSTEM]: Use it.

* gpgme-tool.c (main): Protect call to setlocale with
HAVE_SETLOCALE.

* Makefile.am (system_components): Remove custom cppflags from
RCCOMPILE (because gpg-error adds -idirafter that makes RC bail.
[HAVE_W32CE_SYSTEM]: Add w32-ce.h and w32-ce.c, clear
libexec_PROGRAMS.
* w32-ce.h, w32-ce.c: New files.

* priv-io.h: Include <sys/types.h>
* util.h: Likewise.

2010-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: Include ath.h
(HAVE_ALLOW_SET_FOREGROUND_WINDOW) [!HAVE_W32CE_SYSTEM]: Define
it.
(RTLD_LAZY, dlopen, dlsym,
dlclose) [!HAVE_ALLOW_SET_FORGROUND_WINDOW]: Don't define anymore.
(_gpgme_allow_set_foreground_window) [!HAVE_ALLOW_SET_FOREGROUND_WINDOW]:
Make it a stub.
(read_w32_registry_string): Use FooA variants of Windows functions
instead of Foo (which dispatches depending on UNICODE).
[!HAVE_W32CE_SYSTEM]: Don't check environment.
(w32_shgetfolderpath): Remove.
(find_program_at_standard_place): Call
SHGetSpecialFolderPath
(which is available on all Windows systems
and also Windows CE).
(mkstemp): Use ath_self instead of getpid.
(_gpgme_mkstemp): Use GetTempPathA instead of GetTempPath.

* gpgme.h.in: Use _WIN32 instead of _MSC_VER. Include time.h for
time_t.

2010-05-07 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c, gpgme.c, engine-gpgsm.c, engine-gpg.c,
op-support.c, engine-assuan.c, gpgme-tool.c: Include <locale.h>
only if available with HAVE_LOCALE_H and conditionalize use of
LC_CTYPE on its definition.
* engine-gpgconf.c: Do not include <locale.h>.

* engine-gpgsm.c (gpgsm_new, start): Cast between int and
assuan_fd_t.
* assuan-support.c (my_pipe, my_close, my_read, my_write): Likewise.
* gpgme-tool.c (server_data_obj, server_reset_fds, gpgme_server),
(my_recvmsg, my_sendmsg, my_spawn): Likewise.
* engine-assuan.c (start): Likewise.
* engine-g13.c (start): Likewise.

2010-05-06 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c, w32-io.c, w32-qt-io.cpp,
w32-sema.c, w32-util.c:
Do not include <signal.h>.

* sign.c, data-user.c, conversion.c, debug.c, verify.c, data.c,
decrypt.c, delete.c, assuan-support.c, import.c, engine-gpgsm.c,
data-mem.c, op-support.c, w32-io.c, w32-util.c, data-compat.c: Use
gpg_error_from_syserror instead gpg_error_from_errno, and use
gpg_err_set_errno to set error number.
* setenv.c: Include <gpg-error.h> and define __set_errno to use
gpg_err_set_errno.
* gpgme-tool.c (ARGP_ERR_UNKNOWN): Define to EDEADLOCK (which is
mapped in Windows CE) instead of E2BIG (which is not).
(gt_import_keys): Initialize err.

2010-04-19 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Cast to avoid warning.
* engine-g13.c (g13_new): Make ARGV array of pointer to const
char.
(g13_assuan_simple_command) [!USE_DESCRIPTOR_FUNCTION]: Don't define.
* ops.h (_gpgme_key_append_name): Same in prototype.
* key.c (_gpgme_key_append_name): Make SRC argument pointer to
const char.
* posix-util.c
(_gpgme_get_uiserver_socket_path): Make HOMEDIR
const.
* vfs-mount.c (gpgme_op_vfs_transact_start): Never define this
potentially useful but currently unused function.
* vfs-create.c (gpgme_op_vfs_transact_start): Likewise.

2010-04-16 Werner Koch <wk@g10code.com>

* w32-io.c (is_socket): New.
(reader, writer): Use it to figure out the API to use.

2010-03-15 Werner Koch <wk@g10code.com>

* gpgme.h.in: Add autoconf template to set generated file to
read-only in an emacs buffer.

2010-03-12 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_STATUS_SUCCESS): Use the right file for the
change; see below.

* passwd.c (op_data_t): New.
(passwd_start): Setup OPD.
(passwd_status_handler): Return GPG_ERR_NOT_SUPPORTED if needed.
* context.h (OPDATA_PASSWD): New.
* gpgme.h (GPGME_STATUS_SUCCESS): New.

2010-03-09 Werner Koch <wk@g10code.com>

 * engine-gpgsm.c (gpgsm_keylist): Try to start the agent.

2010-02-17 Werner Koch <wk@g10code.com>

 * posix-io.c (notify_table):
 Change implementation.
 (notify_table_item_t, notify_table_size, notify_table_lock): New.
 (_gpgme_io_close, _gpgme_io_set_close_notify): Adjust for new
 implementation.

2010-02-16 Werner Koch <wk@g10code.com>

 * gpgme-tool.c (spacep, has_option, skip_options): New.
 (cmd_export): Implement option --minimal.

 * gpgme.h.in (GPGME_EXPORT_MODE_MINIMAL): New.
 * export.c (export_start, export_ext_start): Implement it.
 * engine-gpg.c (export_common): Ditto.

2010-01-25 Werner Koch <wk@g10code.com>

 * w32-io.c (_gpgme_io_connect): Fix return code check to make it work.

 * version.c (do_subsystem_inits): Remove superfluous second
 WSAStartup.

2010-01-22 Werner Koch <wk@g10code.com>

 * w32-io.c (writer): Try to use send first.
 (reader): Try to use recv first.

2010-01-08 Werner Koch <wk@g10code.com>

 * engine-gpg.c (gpg_passwd): New.
 (_gpgme_engine_ops_gpg): Register.
 * passwd.c (parse_error): New.
 (passwd_status_handler): Use it.

2010-01-07 Marcus Brinkmann <marcus@g10code.de>

 *
 gpgme-tool.c (result_xml_write_cb_t, struct result_xml_state):
 New types.
 (MAX_TAGS): New macro.
 (result_init, result_xml_indent, result_xml_tag_start)

(result_xml_tag_data, result_xml_tag_end, result_add_error)
(result_add_pubkey_algo, result_add_hash_algo, result_add_keyid)
(result_add_fpr, result_add_timestamp, result_add_sig_mode)
(result_add_value, result_add_string, result_encrypt_to_xml)
(result_decrypt_to_xml, result_sign_to_xml)
(result_verify_to_xml, result_import_to_xml)
(result_genkey_to_xml, result_keylist_to_xml)
(result_vfs_mount_to_xml): New functions.
(gt_result): Rewritten.

2010-01-05 Werner Koch <wk@g10code.com>

* gpgme-tool.c (gt_passwd, cmd_passwd): New.
(register_commands): Register.

* gpgme.h.in (gpgme_op_passwd_start, gpgme_op_passwd): New.
* libgpgme.vers, gpgme.def: Add new functions.
* passwd.c: New.
* Makefile.am (main_sources): Add passwd.c
* engine.c, engine.h (_gpgme_engine_op_passwd): New.
* engine-backend.h (struct
engine_ops): Add PASSWD.
* engine-gpgsm.c (gpgsm_passwd): New.
(_gpgme_engine_ops_gpgsm): Register.
(gpgsm_reset): Reset only if we have a connection.

* gpgme.h.in (GPGME_PK_ECDSA, GPGME_PK_ECDH): New.
* gpgme.c (gpgme_pubkey_algo_name): Add them.

2009-12-22 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Test for TLS, not __GNUC__

2009-12-15 Marcus Brinkmann <marcus@g10code.de>

* assuan-support.c (my_spawn): Calloc, not malloc, the fd_items.

2009-12-10 Werner Koch <wk@g10code.com>

* debug.c (debug_init): Test on sgid process.

2009-12-08 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (LTRCCOMPILE): Refactor with ...
(RCCOMPILE): ... this new macro.
(SUFFIXES): Add .lo.
(gpgme_res_ldflag): Removed.
(gpgme_res): Use libtool object file name here.

(libgpgme_la_LDFLAGS): Remove gpgme_res_ldflag usage.
(libgpgme_la_LIBADD): Add gpgme_res.

* ath.c (ath_self) [HAVE_W32_SYSTEM]: Fix typo.

2009-12-02 Werner Koch <wk@g10code.com>

* gpgconf.c (gpgme_conf_arg_release):
No return in a function
returning void. Reported by Wyllys Ingersoll.

2009-12-01 Werner Koch <wk@g10code.com>

* gpgme-tool.c (cmd_getauditlog): Add flag --html.
(hlp_getauditlog): New.

* gpgme-tool.c (GT_GCC_A_SENTINEL, GT_GCC_A_PRINTF): New.
(gt_write_status): Use sentinel.
(argp_error, log_error): Use printf attribute.
(argp_parse): Remove extra argument to argp_error.
(_gt_progress_cb, gt_get_engine_info, gt_get_keylist_mode)
(gt_result): Add NULL arg.

2009-11-26 Marcus Brinkmann <marcus@g10code.de>

* opassuan.c (opassuan_start): Allocate result structure before
beginning operation.

2009-11-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (gpgme_server): Use assuan_fd_t and assuan_fdopen
on fds.

2009-11-13   <wk@g10code.com>

* sign.c (_gpgme_sign_status_handler): Handle SIG_CREATED_SEEN.
* engine-uiserver.c (uiserver_sign): Make sending SENDER optional.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset):
Instead of last change, only set
sub protocol if it is not the default.

2009-11-10 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Ignore GPG_ERR_NOT_IMPLEMENTED
while setting the sub protocol.

* engine-uiserver.c (uiserver_new): Pass fdpassing flag to
assuan_socket_connect.
(set_recipients): Replace fingerprint by user id.

* engine-gpgsm.c (set_recipients): Fix non-terminating loop in
case of a missing key.

2009-11-10 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set default sub protocol.
* gpgme-tool.c: Implement get sub protocol.

* gpgme.h.in (gpgme_get_sub_protocol): Add prototype.
* gpgme.def, libgpgme.vers: Add gpgme_get_sub_protocol.
* context.h (struct gpgme_context): New member sub_protocol.
* gpgme.c (gpgme_set_sub_protocol): Set CTX->sub_protocol.
(gpgme_get_sub_protocol): New function.
* op-support.c (_gpgme_op_reset): Set sub protocol.

* Makefile.am (uiserver_components): New variable.
(main_sources):
Add it.
* ops.h, key.c (_gpgme_key_append_name): Take CONVERT argument,
implement it. Adjust callers.
(gpgme_key_from_uid): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_DEFAULT.
(gpgme_encrypt_flags_t): Add GPGME_ENCRYPT_PREPARE,
GPGME_ENCRYPT_EXPECT_SIGN.
(gpgme_set_sub_protocol, gpgme_key_from_uid): New functions.
* libgpgme.vers, gpgme.def: Add new functions.
* gpgme.c (gpgme_set_protocol): Add UIServer protocol.
(gpgme_set_sub_protocol): New function.
(gpgme_get_protocol_name): Add UIServer and default protocol.
* assuan-support.c: Return correct error values, implement
socketpair for POSIX.
* priv-io.h, posix-io.c, w32-io.c, w32-glib-io.c,
w32-qt-io.cpp (_gpgme_io_spawn): Add ATFORK and ATFORKVALUE
arguments. Implement it for POSIX. Adjust all callers.
* engine.h, engine-backend.h (_gpgme_engine_set_protocol)
(_gpgme_engine_op_decrypt_verify): New prototypes. Adjust all
users.
* engine.c (engine_ops, gpgme_get_engine_info): Add UIServer
engine.
(_gpgme_engine_set_protocol,
_gpgme_engine_op_decrypt_verify): New
function.
* decrypt-verify.c (decrypt_verify_start): Call

_gpgme_engine_op_decrypt_verify.
* util.h, posix-util.c,
w32-util.c (_gpgme_get_uiserver_socket_path): New function.
* engine-gpgsm.c (gpgsm_set_fd): Fix _gpgme_io_pipe invocation.
* gpgme-tool.c: Some support for UIServer protocol.
* engine-uiserver.c: New file.

2009-11-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Close server side FDs.

2009-11-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-tool.c (struct gpgme_tool): New members write_data and
write_data_hook.
(gt_write_data): New function.
(gt_result): Output vfs_mount result.
(server_write_data): New function.
(gpgme_server): Initialize write_data members.

2009-11-05 Marcus Brinkmann <marcus@g10code.de>

* engine-g13.c (struct engine_g13): Remove members RESULT_CB and
RESULT_CB_VALUE.
(g13_assuan_simple_command, status_handler): Don't use those
anymore.
(g13_transact): Remove them from argument list, too.
* vfs-mount.c (_gpgme_vfs_mount_status_handler): New function.
(_gpgme_op_vfs_mount): Pass it to transact.

* engine-assuan.c (llass_new): Update use of assuan_socket_connect.
* engine-gpgsm.c (gpgsm_new): Update use of assuan_pipe_connect.
* engine-g13.c (g13_new): Likewise.

* priv-io.h (IOSPAWN_FLAG_NOCLOSE): New flag.
* w32-io.c (_gpgme_io_spawn): Implement this flag.
* posix-io.c (_gpgme_io_spawn): Likewise.
* w32-glib-io.c (_gpgme_io_spawn): Likewise.
* assuan-support.c (my_spawn): Set this flag.

* decrypt.c (gpgme_op_decrypt_start): Fix use of debug macro.
* decrypt-verify.c (gpgme_op_decrypt_verify_start): Likewise.
* delete.c (gpgme_op_delete_start): Likewise.
* edit.c (gpgme_op_edit_start, gpgme_op_card_edit_start):
Likewise.
* encrypt.c (gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (gpgme_op_encrypt_sign_start): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export_ext_start)

(gpgme_op_export_keys_start,
gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start): Likewise.
* import.c (gpgme_op_import_start, gpgme_op_import_keys_start):
Likewise.
* opassuan.c (gpgme_op_assuan_transact_start): Likewise.
* sign.c (gpgme_op_sign_start): Likewise.
* verify.c (gpgme_op_verify_start): Likewise.
* vfs-create.c (gpgme_op_vfs_create): Likewise.
* vfs-mount.c (gpgme_op_vfs_mount): Likewise.

2009-11-04 Marcus Brinkmann <marcus@g10code.de>

* ath.h (ath_self): New prototype. Include <stdint.h>
* ath.c, ath-pth.c, ath-pthread.c (ath_self): New function.
* debug.h: Rewrite most macros to beautify debug output.
(_gpgme_debug_buffer): Remove tagname and tag argument.
(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New prototypes.
* debug.c: Include <time.h>. Don't include assuan.h.
(frame_nr, FRAME_NR): New thread-specific variable and macro.
(debug_init): Do not initialize assuan.
Call _gpgme_debug after
initialization instead using printf directly.
(_gpgme_debug): Do not call debug_init (we now ensure proper
initialization by user). Add timestamp and thread/process ID.
(_gpgme_debug_buffer): Do not take tagname and tag argument.
(_gpgme_debug_frame_begin, _gpgme_debug_frame_end): New functions.
* version.c (gpgme_check_version_internal, gpgme_check_version):
Fix debug string. Do not initialize assuan.
* posix-io.c (get_max_fds): Use 0 not NULL (nicer debug output).

2009-11-04 Werner Koch <wk@g10code.com>

* gpgme-tool.c (register_commands): Add HELP feature.

2009-11-03 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_PROTOCOL_UISERVER): New.

2009-11-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (main_sources): Change g13.c to vfs-mount.c. Add
vfs-create.c
* vfs-create.c: New file.
* g13.c: Renamed to ...
* vfs-mount.c: ... this new file.
* gpgme.h.in (gpgme_op_vfs_create): New prototype.

* gpgme.def, libgpgme.vers: Add gpgme_op_vfs_create.
*
gpgme-tool.c (gt_vfs_create, cmd_vfs_create): New functions.
(register_commands): Add VFS_CREATE and CREAET.

2009-11-02 Marcus Brinkmann <marcus@g10code.de>

* debug.h (_gpgme_debug_buffer): Make TAG argument const const.
* debug.c (_gpgme_debug_buffer): Likewise.
* gpgme-tool.c (input_notify, output_notify): Adjust type to new
assuan interface.
* decrypt.c (gpgme_op_decrypt_result): Remove unused variable.
* opassuan.c (gpgme_op_assuan_transact): Fix return value.

2009-10-30 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (noinst_PROGRAMS): New target gpgme-tool.
(gpgme_tool_LDADD): New variable.
* gpgme-tool.c: New file.
* ops.h (_gpgme_sig_notation_clearm _gpgme_signers_clear): New
prototypes.
* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_GPGCONF (when
had that gone missing?).
(_gpgme_sig_notation_clear): New function without debug output.
(gpgme_release): Call it and _gpgme_signers_clear.
* signers.c (_gpgme_signers_clear): New
function without debug output.
* g13.c (gpgme_op_vfs_mount): Add debug output.
* assuan-support.c (my_spawn): Allow fd_child_list to be NULL.
* conversion.c (_gpgme_encode_percent_string): Fix infinite loop.
* debug.h: Put tag in front of debug lines, should make for nicer
output.
* engine-assuan.c (llass_new): Use our new system hooks for libassuan.
* engine-g13.c (g13_new): Remove redundant assuan context allocation.
* version.c (gpgme_check_version_internal): Delay debug output
until after gpgme_check_version was called.

2009-10-28 Marcus Brinkmann <marcus@g10code.de>

* signers.c, encrypt-sign.c, encrypt.c, delete.c, keylist.c,
edit.c, import.c, export.c: Fix last change in debug output.

2009-10-27 Marcus Brinkmann <marcus@g10code.de>

* edit.c (gpgme_op_edit_start, gpgme_op_edit)
(gpgme_op_card_edit_start, gpgme_op_card_edit): Add debug output.
* encrypt-sign.c (gpgme_op_encrypt_sign_start)
(gpgme_op_encrypt_sign): Likewise.

* encrypt.c (gpgme_op_encrypt_start,
gpgme_op_encrypt)
(gpgme_op_encrypt_result): Likewise.
* export.c (gpgme_op_export_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext)
(gpgme_op_export_keys_start, gpgme_op_export_keys): Likewise.
* genkey.c (gpgme_op_genkey_start, gpgme_op_genkey)
(gpgme_op_genkey_result): Likewise.
* getauditlog.c (gpgme_op_getauditlog_start)
(gpgme_op_getauditlog): Likewise.
* import.c (gpgme_op_import_result, gpgme_op_import_start)
(gpgme_op_import): Likewise.
* keylist.c (gpgme_op_keylist_result, keylist_colon_handler)
(gpgme_op_keylist_start, gpgme_op_keylist_ext_start)
(gpgme_op_keylist_next, gpgme_op_keylist_end, gpgme_get_key): Likewise.
* opassuan.c (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact_ext, gpgme_op_assuan_result)
(gpgme_op_assuan_transact): Likewise.
* signers.c (gpgme_signers_add, gpgme_signers_clear): Likewise.
* trustlist.c (gpgme_op_trustlist_start)
(gpgme_op_trustlist_next, gpgme_op_trustlist_end): Likewise.
* verify.c (gpgme_op_verify_start,
gpgme_op_verify)
(gpgme_op_verify_result): Likewise.

2009-10-26 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (struct gpgme_io_event_done_data)
(gpgme_io_event_done_data_t): New types.
(struct _gpgme_op_assuan_result): Deprecate the err member.
(gpgme_op_assuan_result): Deprecate (for now).
(gpgme_op_assuan_transact_ext): New prototype.
(gpgme_op_assuan_transact): Deprecate.
(struct _gpgme_op_g13_result): Replace with ...
(struct _gpgme_op_vfs_mount_result): ... this.
(gpgme_op_g13_mount): Replace with ...
(gpgme_op_vfs_mount): ... this.
* gpgme.def (gpgme_op_assuan_transact_ext, gpgme_wait_ext)
(gpgme_op_vfs_mount_result, gpgme_op_vfs_mount): New.
(gpgme_op_g13_mount): Remove.
* libgpgme.vers: Likewise.
* engine-backend.h (struct engine_ops): Remove RESULT_CB and
RESULT_CB_VALUE args in opassuan_transact member. Add CANCEL_OP
member.
* ops.h (_gpgme_cancel_with_err, _gpgme_wait_on_condition): Add
OP_ERR argument.
(_gpgme_wait_one_ext):

New prototype.
* context.h (ctx_op_data_id_t): Add OPDATA_VFS_MOUNT.
* engine-g13.c (g13_cancel_op): New function.
(parse_status): Remove declaration.
(g13_assuan_simple_command): Do nothing with status lines for now.
(status_handler): Update opaque value access.
(_gpgme_engine_ops_g13): Add new cancel_op member.
* gpgme.c (_gpgme_cancel_with_err): Add new parameter OP_ERR.
Handle operational errors.
(gpgme_cancel, gpgme_io_read, gpgme_io_write): Add debug output.
* data.c (_gpgme_data_inbound_handler)
(_gpgme_data_outbound_handler): Adjust opaque value access.
* engine-gpg.c (command_handler, status_handler)
(colon_line_handler): Likewise.
* engine-gpgsm.c (status_handler): Likewise.
* engine-gpg.c (_gpgme_engine_ops_gpg): Add cancel_op member.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Likewise.
* g13.c: Rewritten (and will be rewritten again).
* engine.h (_gpgme_engine_op_assuan_transact): Remove result_cb
and result_cb_value parameters from prototype.
(_gpgme_engine_cancel_op):
New prototype.
* engine.c (engine_ops) [! ENABLE_ASSUAN]: Add missing comma.
(_gpgme_engine_op_assuan_transact): Remove result_cb and
result_cb_value parameter.
(_gpgme_engine_cancel_op): New function.
* wait.h (_gpgme_run_io_cb): Add new argument OP_ERR.
(struct io_cb_data): New struct to pass opaque data and get a
op_err return value. Needed because we can't modify I/O callback
handler signature because it is exposed to the user.
* wait.c (_gpgme_run_io_cb): Add OP_ERR parameter. Handle
operational errors.
* wait-user.c (_gpgme_user_io_cb_handler): Handle operational
errors.
* wait-private.c (_gpgme_wait_on_condition): New argument to
retrieve the operational result. Handle operational errors in
session based protocols.
(_gpgme_wait_one_ext): New function.
(_gpgme_wait_one): Pass argument in invocation of
_gpgme_wait_on_condition.
* wait-global.c (struct ctx_list_item): Add member OP_ERR.
(ctx_done): New argument OP_ERR.
(ctx_wait): New argument
OP_ERR.
(gpgme_wait_ext): New function based on gpgme_wait but handling
operational errors.
(gpgme_wait): Implement in term of gpgme_wait_ext.
* keylist.c (gpgme_op_keylist_next): Pass argument in invocation

of _gpgme_wait_on_condition.
* trustlist.c (gpgme_op_trustlist_next): Pass argument in
invocation of _gpgme_wait_on_condition.
* engine-assuan.c (struct engine_llass): Replace members RESULT_CB
and RESULT_CB_VALUE by LAST_OP_ERR.
(_gpgme_engine_assuan_last_op_err): Add this hack function.
(llass_cancel_op): New function.
(_gpgme_engine_llass_ops): Add cancel_op member.
(llass_status_handler): Update opaque value access.
(llass_transact): Remove RESULT_CB and RESULT_CB_VALUE arguments.
* opassuan.c: Move compat hacks to the end of file.
(opassuan_start): Do not set OPD->result.err.
Do not pass RESULT_Cb and CTX to _gpgme_engine_op_assuan_transact.
(gpgme_op_assuan_transact_ext): New function.

* debug.h (DEBUG_GLOBAL): New debug level.
* conversion.c (gnupg_errors,
_gpgme_map_gnupg_error): Removed.
* data-user.c (gpgme_data_new_from_cbs): Add debug output.
* data-fd.c (gpgme_data_new_from_fd): Likewise.
* data-stream.c (gpgme_data_new_from_stream): Likewise.
* decrypt.c (gpgme_op_decrypt_result, gpgme_op_decrypt_start)
(gpgme_op_decrypt): Likewise.
* delete.c (gpgme_op_delete_start, gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify_start)
(gpgme_op_decrypt_verify): Likewise.
* sign.c (gpgme_op_sign_result): Fix debug message.
* data-mem.c (gpgme_data_new): Improve debug output.
* verify.c (parse_trust): Use atoi instead of
_gpgme_map_gnupg_error.
* decrypt.c (_gpgme_decrypt_status_handler): Likewise.

2009-10-22 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Remove @NETLIBS@ from LIBADDs.
(g13_components): New variable.
(main_sources): Add $(g13_components).
* g13.c, engine-g13.c: New files.
* engine.c (engine_ops): Check for assuan for assuan engine, add
g13 engine.
* util.h (_gpgme_get_g13_path,
_gpgme_encode_percent_string): New
prototypes.
* conversion.c (_gpgme_encode_percent_string): New function.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_G13.
(struct _gpgme_op_g13_result, gpgme_g13_result_t): New types.
(gpgme_op_g13_mount): New function.
* gpgme.def, libgpgme.vers: Add gpgme_op_g13_mount.

* gpgme.c (gpgme_set_protocol): Allow GPGME_PROTOCOL_G13.
(gpgme_get_protocol_name): Add GPGME_PROTOCOL_G13.
* posix-util.c (_gpgme_get_g13_path): New function.
* w32-util.c (_gpgme_get_g13_path): New function.
* engine-backend.h (_gpgme_engine_ops_g13): New declaration.

2009-10-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (netlibs): Remove.
(assuan_cflags, assuan_libs): Add.

* Makefile.am (assuan_cppflags, assuan_libobjs): Removed.
(gpgsm_components): Move engine-assuan.c to ...
(assuan_components): ... this new variable.
(main_sources): Add this new variable.
(AM_CPPFLAGS): Remove $(assuan_cppflags).
(AM_CFLAGS): Add @LIBASSUAN_CFLAGS@.
(libgpgme_la_DEPENDENCIES,
libgpgme_pth_la_DEPENDENCIES)
(libgpgme_glib_la_DEPENDENCIES, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_pthread_la_DEPENDENCIES): Remove $(assuan_libobjs).
(libgpgme_la_LIBADD, libgpgme_pth_la_LIBADD)
(libgpgme_glib_la_LIBADD, libgpgme_qt_la_LIBADD))
(libgpgme_pthread_la_LIBADD): Replace $(assuan_libobjs) by
@LIBASSUAN_LIBS@.
* priv-io.h [!HAVE_W32_SYSTEM]: Declare _gpgme_io_recvmsg,
_gpgme_io_sendmsg, _gpgme_io_waitpid.
* engine-backend.h: Define with [ENABLE_ASSUAN] instead
of [ENABLE_GPGSM].
* posix-io.c (_gpgme_io_waitpid): Make non-static.
* util.h (ENABLE_ASSUAN): Declare _gpgme_assuan_system_hooks,
_gpgme_assuan_malloc_hooks, _gpgme_assuan_log_cb.
* engine-gpgsm.c: Don't map assuan error codes. Use
assuan_release instead of assuan_disconnect.
(map_assuan_error): Remove function.
(gpgsm_new): Use new assuan context interface.
* engine-assuan.c: Use assuan_release instead of
assuan_disconnect.
(llass_new): Use new assuan context
interface.

2009-10-07 <wk@g10code.com>

* priv-io.h [W32]: Include windows.h instead of sys/socket.h.

2009-08-06 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Allow for no fingerprint.

* engine-gpgsm.c (gpgsm_sign): Hook up the status func for the
SIGNER command.
* gpgme.h.in (GPGME_STATUS_INV_SGNR, GPGME_STATUS_NO_SGNR): New.
* sign.c (op_data_t): Add fields IGNORE_INV_RECP and INV_SGNR_SEEN.
(_gpgme_op_sign_init_result): Factor code out to ...
(sign_init_result): .. new. Init new fields.
(sign_start): Use sign_init_result.
(_gpgme_sign_status_handler): Take care of the new INV_SGNR.
Return an error if no signature has been created.

2009-07-07 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (struct engine_gpgsm): Add fields
input_helper_data and input_helper_memory.
(close_notify_handler): Release these new fields.
(gpgsm_import): Implement the keyarray feature.

* engine-gpg.c (gpg_import): Actually return GPG_ERR_INV_VALUE.

*
engine-gpgsm.c (gpgsm_import): Return an error for unknown data
encodings.

2009-06-22 Marcus Brinkmann <marcus@g10code.de>

* debug.h: Everywhere, use %p instead of 0x%x to print pointer.
[HAVE_STDINT_H]: Include <stdint.h>.
(_TRACE, TRACE, TRACE0, TRACE1, TRACE2, TRACE3, TRACE6): Cast tag
to (uintptr_t) before casting it to (void*) to silence GCC
warning.

* gpgme.h.in (_GPGME_DEPRECATED_OUTSIDE_GPGME): New macro.
* sign.c (_GPGME_IN_GPGME): Define it.
* keylist.c (_GPGME_IN_GPGME): Define it.

* debug.c (_gpgme_debug_begin, _gpgme_debug_add): Handle error in
vasprintf and asprintf.

* priv-io.h: Include <sys/socket.h>. Declare _gpgme_io_connect.

2009-06-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (GPGME_CONF_PATHNAME): Revert last change, it's
back! (GPA still uses it...).

* gpgme.def: Fix stupid typo.
* w32-io.c (_gpgme_io_pipe): Add missing declaration.

* gpgme.h.in (GPGME_CONF_PATHNAME): Remove obsolete macro.

* w32-io.c (_gpgme_io_pipe): Allocate
reader/writer thread right
away.
(_gpgme_io_read, _gpgme_io_write, _gpgme_io_select)
(_gpgme_io_dup): Never allocate threads here.
(find_writer, find_reader): Check return value of thread creation
function.

* context.h (CTX_OP_DATA_MAGIC): New macro.
(struct ctx_op_data): New member MAGIC.
* op-support.c (_gpgme_op_data_lookup): Initialize magic.
* gpgme.c (gpgme_result_unref, gpgme_result_ref): Check magic.

2009-06-16 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_result_unref): Hot fix to release a lock.

* gpgme.c (result_ref_lock): New global variable.
(gpgme_result_ref, gpgme_result_unref): use it.

2009-06-16 Werner Koch <wk@g10code.com>

* version.c: Include stdlib.h.

* gpgme.h.in (gpgme_data_encoding_t): Add GPGME_DATA_ENCODING_URL,
GPGME_DATA_ENCODING_URLESC, GPGME_DATA_ENCODING_URL0.
* data.c (gpgme_data_set_encoding): Adjust for new values.
* engine-gpg.c (string_from_data): New.
(gpg_import): Implement --fetch-key feature.

* gpgme.h.in
(gpgme_op_export_keys_start, gpgme_op_export_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* export.c (gpgme_op_export_keys_start, gpgme_op_export_keys): New.
(export_keys_start): New.

* gpgme.h.in (gpgme_export_mode_t, GPGME_EXPORT_MODE_EXTERN): New.
(gpgme_op_export_start, gpgme_op_export, gpgme_op_export_ext_start)
(gpgme_op_export_ext): Change arg RESERVED to MODE of new
compatible type.
* export.c (gpgme_export_ext_start, gpgme_op_export)
(gpgme_op_export_ext_start, gpgme_op_export_ext): Ditto.
(export_start): Ditto.
* engine.c (_gpgme_engine_op_export): Ditto.
* engine-backend.h (struct engine_ops): Ditto.

* engine-gpgsm.c (gpgsm_export, gpgsm_export_ext): Ditto.
* engine-gpg.c (gpg_export, gpg_export_ext): Ditto. Implement
mode EXTERN.
(gpg_export, gpg_export_ext): Factor common code out to ..
(export_common): .. this.

* gpgme.h.in (gpgme_op_import_keys_start, gpgme_op_import_keys): New.
* gpgme.def, libgpgme.vers: Add them.
* import.c (gpgme_op_import_keys_start,
gpgme_op_import_keys): New.
(_gpgme_op_import_keys_start): New.
* engine.c (_gpgme_engine_op_import): Add arg KEYARRAY.
* engine-backend.h (struct engine_ops): Ditto.
* engine-gpgsm.c (gpgsm_import): Ditto. Not functional.
* engine-gpg.c (gpg_import): Ditto. Implement it.

2009-06-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_result_ref, gpgme_result_unref): Add
prototypes.
* gpgme.def, libgpgme.vers (gpgme_result_ref, gpgme_result_unref):
Add these.
* context.h (struct ctx_op_data): Add member "references".
* gpgme.c (gpgme_result_ref, gpgme_result_unref): New functions.
(_gpgme_release_result): Use gpgme_result_unref.
* op-support.c (_gpgme_op_data_lookup): Initialize references.

2009-06-12 Werner Koch <wk@g10code.com>

* gpgme-w32spawn.c (translate_get_from_file): Parse optional spawn
flags. Add new arg R_FLAGS. Fix segv on file w/o LF.
(translate_handles): Add new arg R_FLAGS. Avoid possible segv.
(main): Pass flags for my_spawn.
(my_spawn):
Add arg FLAGS and implement AllowSetForegroundWindow.

* priv-io.h (IOSPAWN_FLAG_ALLOW_SET_FG): New.
* w32-io.c (_gpgme_io_spawn): Add arg FLAGS and implement it.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* posix-io.c (_gpgme_io_spawn): Add dummy arg FLAGS.
* engine-gpg.c (start): Call spawn with new flag.

* w32-util.c (_gpgme_allow_set_foregound_window): Rename to
_gpgme_allow_set_foreground_window. Change all callers.
* posix-util.c (_gpgme_allow_set_foreground_window): Ditto.

2009-06-10 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_allow_set_foregound_window): Add trace support.

2009-06-09 Werner Koch <wk@g10code.com>

* engine-gpg.c (gpg_io_event): Test for cmd.fd.

* version.c (gpgme_check_version_internal): Make result const.

* gpgme.c: Include priv-io.h.
(gpgme_io_read, gpgme_io_write): New.
* libgpgme.vers (GPGME_1.1): Add them.
* gpgme.def: Ditto.

* Makefile.am (main_sources): Remove gpgme.h.
(include_HEADERS):
Rename to nodist_include_HEADERS so that a
VPATH build won't use the distributed one.

* util.h (GPG_ERR_NOT_OPERATIONAL): Define.

2009-05-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_check_version_internal): New prototype.
(gpgme_check_version): New macro, overriding function of the same
name.
* libgpgme.vers, gpgme.def: Add gpgme_check_version_internal.o
* context.h (_gpgme_selftest): New variable declaration.
* version.c: Include "context.h".
(gpgme_check_version): Set _gpgme_selftest on success.
(gpgme_check_version_internal): New function.
* gpgme.c (_gpgme_selftest): Define it.
(gpgme_new): Check the selftest result.

2009-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in (gpgme_encrypt_flags_t): Add
GPGME_ENCRYPT_NO_ENCRYPT_TO.
* engine-gpg.c (gpg_encrypt): Pass --no-encrypt-to to gpg if
GPGME_ENCRYPT_NO_ENCRYPT_TO flag is set.

2009-05-14 Werner Koch <wk@g10code.com>

* gpgme.h.in (gpgme_status_code_t):
Explicitly initialize for
better maintainability and to help debugging.

2009-05-05 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h.in: Add compile time check for _FILE_OFFSET_BITS.

2009-04-15 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_socket, _gpgme_io_connect): New functions.
* w32-io.c (_gpgme_io_connect): Fix stupid error.

2009-04-08 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (giochannel_table): New members used, fd, socket.
(find_channel): Drop CREATE argument.
(new_dummy_channel_from_fd, new_channel_from_fd)
(new_channel_from_socket): New functions.
(_gpgm_io_fd2str): Implement for sockets.
(_gpgme_io_write, _gpgme_io_read): Translate EAGAIN errors
correctly.
(_gpgme_io_pipe): Fix for new channel bookkeeping.
(_gpgme_io_close, _gpgme_io_dup): Likewise.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
* w32-io.c (MAX_READERS, MAX_WRITERS): Bump up to 40.
(wsa2errno, _gpgme_io_socket, _gpgme_io_connect): New.
* w32-qt-io.cpp
(_gpgme_io_socket, _gpgme_io_connect): New stubs.
* version.c [HAVE_W32_SYSTEM]: Include "windows.h.
(do_subsystem_inits) [HAVE_W32_SYSTEM]: Call WSAStartup.
* engine-assuan.c (llass_status_handler): Ignore EAGAIN errors.

2009-03-18 Werner Koch <wk@g10code.com>

* gpgme.h.in (GPGME_KEYLIST_MODE_EPHEMERAL): New.
* engine-gpgsm.c (gpgsm_keylist): Send new option.

2009-03-13 Werner Koch <wk@g10code.com>

* gpgme-config.in: Make sure locale is set to C.

2009-02-24 Werner Koch <wk@g10code.com>

* gpgme.h.in (struct _gpgme_op_assuan_result): New.
(gpgme_assuan_result_t): New.
(gpgme_op_assuan_result): Change return type.
(struct _gpgme_assuan_sendfnc_ctx)
(gpgme_assuan_sendfnc_ctx_t, gpgme_assuan_sendfnc_t):Remove.
(gpgme_assuan_inquire_cb_t): Changed.
* opassuan.c (op_data_t): Make use of a result structure.
(gpgme_op_assuan_result): Change return type.
(opassuan_start): Use result structure.

(result_cb): Ditto.
* engine-assuan.c (struct _gpgme_assuan_sendfnc_ctx):
Remove.
(inquire_cb_sendfnc): Remove.
(inquire_cb): Change for new callback scheme. Not yet finished.
(llass_status_handler): Allow sending a CANCEL from the inquire CB.

2009-02-04 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_spawn): Make ARGV argument const to
match prototype.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.

2009-02-03 Werner Koch <wk@g10code.com>

* gpgme.h.in (struct _gpgme_subkey): Add fields IS_CARDKEY and
CARD_NUMBER..
* key.c (gpgme_key_unref): Release field CARD_NUMBER.
* keylist.c (keylist_colon_handler): Factor common code out to ...
(parse_sec_field15): New. Set card number.

2009-01-26 Werner Koch <wk@g10code.com>

* opassuan.c, dirinfo.c, engine-assuan.c: New.
* Makefile.am: Add them.
* engine-backend.h: Add _gpgme_engine_ops_assuan.
(struct engine_ops): Add field OPASSUAN_TRANSACT. Update all
engine intializers.
* Makefile.am (gpgsm_components): Add engine-assuan.c.
* gpgme.h.in (gpgme_protocol_t): Add GPGME_PROTOCOL_ASSUAN.
(gpgme_assuan_data_cb_t,
gpgme_assuan_sendfnc_ctx_t)
(gpgme_assuan_inquire_cb_t, gpgme_assuan_status_cb_t): New.
(gpgme_op_assuan_transact_start, gpgme_op_assuan_transact): New.
* gpgme.c (gpgme_get_protocol_name): Ditto.
(gpgme_set_protocol): Support it.
* engine.c (gpgme_get_engine_info): Ditto.
(engine_ops): Register it.
(_gpgme_engine_op_assuan_transact): New.
* libgpgme.vers (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* gpgme.def (gpgme_op_assuan_transact_start)
(gpgme_op_assuan_transact): New.
* engine-backend.h (struct engine_ops): Add GET_HOME_DIR and
initialize to NULL for all engines.
* engine.c (engine_get_home_dir): New.
(gpgme_get_engine_info): Use it.
(_gpgme_set_engine_info): Use it.

* engine.h (engine_assuan_result_cb_t): New.
* context.h (ctx_op_data_id_t): Add OPDATA_ASSUAN.

* util.h (GPG_ERR_UNFINISHED): Define if not yet defined.

* version.c (gpgme_check_version): Protect trace arg against NULL.

2009-01-19 Werner
Koch <wk@g10code.com>

* rungpg.c: Rename to engine-gpg.c
* Makefile.am (main_sources): Ditto.

2008-12-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (status-table.h): Use $(builddir) to find gpgme.h.

2008-11-18 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Always initialize I/O
subsystem. Fixes regression from 2007-08-02.

* decrypt.c (_gpgme_decrypt_status_handler): Use
_gpgme_map_gnupg_error to parse the error code for decrypt.algorithm.

2008-10-30 Marcus Brinkmann <marcus@g10code.de>

* wait-private.c (_gpgme_wait_on_condition): Remove unused
variable IDX.
* wait-global.c: Include ops.h to silence gcc warning.
(_gpgme_wait_global_event_cb): Pass error value directly.
* wait-user.c: Include ops.h to silence gcc warning.

* posix-io.c (_gpgme_io_spawn): Make ARGV argument const to
silence gcc warning. Cast argument to execv to silence warning.
* w32-io.c (_gpgme_io_spawn): Likewise.
* priv-io.h (_gpgme_io_spawn): Likewise for
prototype.

2008-10-24 Werner Koch <wk@g10code.com>

* rungpg.c (gpg_keylist_preprocess): Escape backslashes too.

2008-10-23 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist_preprocess): Convert percent escaped
string to C coded string.

2008-10-20 Werner Koch <wk@g10code.com>

 * Makefile.am (EXTRA_DIST): Add gpgme.h.in.

 * gpgme.h: Rename to gpgme.h.in.
 * gpgme.h.in (GPGME_VERSION): Use autoconf substitution.

 * posix-io.c: Include sys/uio.h. Fixes bug #818.

2008-10-18 Marcus Brinkmann <marcus@g10code.com>

 * w32-util.c (find_program_in_registry): Don't define.
 (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path)
 (_gpgme_get_gpgconf_path): Do not check for fooProgram in the
 registry anymore. It is now no longer possible to overwrite the
 default location in that way.

2008-10-17 Werner Koch <wk@g10code.com>

 * w32-glib-io.c (_gpgme_io_fd2str): Use "%d" and not "%ld" to work
 around a bug in mingw32.

2008-09-23 Marcus Brinkmann <marcus@g10code.com>

 *
 gpgme.c (gpgme_sig_notation_clear): Clear CTX->sig_notations.
 Submitted by "Daniel Mueller" <daniel@danm.de>

2008-09-16 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (gpg_new): Don't use errno with ttyname_r.

2008-08-11 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (gpg_cancel): Remove cmd fd before status fd.
 * gpgme.c (_gpgme_cancel_with_err): New function.
 (gpgme_cancel): Reimplement in terms of _gpgme_cancel_with_err.
 * wait-private.c (_gpgme_wait_on_condition): Use
 _gpgme_cancel_with_err.
 * wait-user.c (_gpgme_user_io_cb_handler): Likewise.
 * wait-global.c (_gpgme_wait_global_event_cb, gpgme_wait): Likewise.

2008-08-08 Marcus Brinkmann <marcus@g10code.com>

 * rungpg.c (command_handler): Remove I/O callback on error, too.

2008-06-29 Marcus Brinkmann <marcus@g10code.com>

* gpgme.c (gpgme_cancel_async): Remove unused variable.

2008-06-27 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: Add gpgme_cancel_async.
* gpgme.def: Likewise.

* context.h:
Include "sema.h".
(struct gpgme_context): New members lock and canceled.
* gpgme.c (gpgme_new): Initialize lock.
(gpgme_release): Destroy lock.
(gpgme_cancel_async): New function.
* op-support.c (_gpgme_op_reset): Reset the canceled flag.
* wait-global.c (gpgme_wait): Check cancel flag before processing
any I/O callbacks.
* wait-private.c (_gpgme_wait_on_condition): Likewise.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.

2008-06-26 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_mkstemp): Replace sprint by stpcpy.
(mkstemp): Need to use GetSystemTimeAsFileTime for better
compatibility.

2008-06-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme-w32spawn.c: New file.
* Makefile.am (libexec_PROGRAMS) [HAVE_W32_SYSTEM]: New variable
with gpgme-w32spawn.
* engine-gpgsm.c (gpgsm_new): Use server translated handles.
(gpgsm_set_locale): Return early if locale value is NULL.
* util.h (_gpgme_mkstemp)
(_gpgme_get_w32spawn_path) [HAVE_W32_SYSTEM]: New function
prototypes.
*
w32-util.c: Include <stdint.h>, <sys/stat.h> and <unistd.h>.
(letters, mkstemp, _gpgme_mkstemp, _gpgme_get_w32spawn_path): New
functions.
* rungpg.c (gpg_decrypt, gpg_encrypt, gpg_encrypt_sign)
(gpg_genkey, gpg_import, gpg_verify, gpg_sign): Pass data over
special filename FD rather than stdin.
(struct arg_and_data_s): Add member ARG_LOCP.
(struct fd_data_map_s): Add member ARG_LOC.
(struct engine_gpg): Add member ARG_LOC to status and colon.
(_add_arg, add_arg_with_locp): New function.
(add_arg_ext): Reimplement in terms of _add_arg.
(gpg_new): Remember argument location for status FD.

(build_argv): Set argument location if requested. Also set
argument location of fd_data_map for data items.
(start): Adjust caller of _gpgme_io_spawn.
* priv-io.h (struct spawn_fd_item_s): Add members peer_name and
arg_loc.
(_gpgme_io_spawn): Remove parent fd list argument.
* posix-io.c (get_max_fds): New function.
(_gpgme_io_dup): Add tracing.
(_gpgme_io_spawn):
Remove parent fd list. Change meaning of child
fd list to contain all child fds that should be inherited. Close
all other file descriptors after fork.
* w32-io.c, w32-glib-io.c, w32-qt-io.c(_gpgme_io_spawn): Remove
parent fd list. Change meaning of child fd list to contain all
child fds that should be inherited. Do not inherit any file
descriptors, but DuplicateHandle them. Spawn process through
wrapper process. Provide wrapper process with a temporary file
containing handle translation data. Return translated handle
names.
* w32-io.c (reader): Add more tracing output.
(_gpgme_io_read): Likewise.
* engine-gpgconf.c (gpgconf_read): Adjust caller of
_gpgme_io_spawn.
* version.c (_gpgme_get_program_version): Likewise.

2008-06-20 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Change ARGV initialization for
compatibility with old compilers. Fix amount of memmove. Fix
CR removal.

2008-06-19 Werner Koch <wk@g10code.com>

* gpgme.h (GPGME_CONF_PATHNAME):
Replace by GPGME_CONF_FILENAME,
change all callers and provide compatibility macro.
(gpgme_conf_type_t): Add complex types 34..37.
* engine-gpgconf.c (gpgconf_parse_option, arg_to_data)
(_gpgme_conf_arg_new, _gpgme_conf_arg_release): Add new types.

2008-06-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_parse_option): Fix comma detection.

2008-05-09 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Do not pass empty lines to the
callback.

2008-05-07 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_write): Change argv[0] to a
self-explaining string. Needs a proper fix, though.

* rungpg.c (gpg_keylist, gpg_keylist_ext): Factor common code out
to ..
(gpg_build_keylist_options): .. new. Allow combination of extern
and intern mode.
(gpg_new): DFT_TTYNAME is an array, thus check the first character.

2008-05-06 Werner Koch <wk@g10code.com>

* version.c (extract_version_string): New.
(_gpgme_get_program_version):
Use it to allow for suffixes in the
version line.

2008-04-28 Werner Koch <wk@g10code.com>

* engine-gpgconf.c (gpgconf_read): Fixed segv. Avoid memmove for
each line.

2008-04-22 Marcus Brinkmann <marcus@g10code.de>

* w32-qt-io.cpp, kdpipeiodevice.cpp: New versions from Frank
Osterfeld, implement blocking select.

2008-03-11 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read, gpgme_data_write): Retry on EINTR.

2008-03-06 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_add_sig): Terminate UID in case SRC is NULL.
Reported by Marc Mutz.

2008-03-05 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (release_op_data): Release OPD->result.recipients.
* encrypt.c (release_op_data): Release invalid_recipient.

2008-02-15 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_read): Fix end-of-line handline.

2008-02-14 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_spawn): Add arg R_PID to return the pid.
* posix-io.c
(_gpgme_io_spawn): Ditto.
* w32-glib-io.c (_gpgme_io_spawn): Ditto.
* w32-qt-io.cpp (_gpgme_io_spawn): Ditto.
* priv-io.h (_gpgme_io_spawn): Adjust prototyp and change all callers.
* rungpg.c (start): Call _gpgme_allow_set_foregound_window.

* w32-util.c (_gpgme_allow_set_foregound_window): New.
* posix-util.c (_gpgme_allow_set_foregound_window): New.
* engine-gpgsm.c (default_inq_cb): New.
(gpgsm_new) [W32]: Enable pinentry notifications.
(status_handler): Handle inquiries.

2008-01-30 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version by Frank Osterfeld, fixes race
condition.

2008-01-28 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_input_enc): Rename to ...
(map_data_enc): ... this. Also change all callers.
(gpgsm_encrypt, gpgsm_export, gpgsm_export_ext, gpgsm_genkey)
(gpgsm_sign): Set encoding for output.

2008-01-28 Werner Koch <wk@g10code.com>

* keylist.c (gpgme_get_key): Skip duplicated keys. Fixes bug 876.

2008-01-14
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgconf.c (gpgconf_config_load_cb): Fix program_name
field.

2008-01-10 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

* engine-gpgconf.c (gpgconf_config_load_cb2): Handle the flag
NO_ARG_DESC.

2008-01-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgconf_components): New variable.
(main_sources): Add gpgconf.c.

* gpgme.h (gpgme_protocol_t): New protocol GPGME_PROTOCOL_GPGCONF.
(gpgme_conf_level_t, gpgme_conf_type_t, gpgme_conf_arg_t)
(gpgme_conf_opt_t, gpgme_conf_comp_t, gpgme_conf_arg_new)
(gpgme_conf_arg_release, gpgme_conf_opt_change)
(gpgme_conf_release, gpgme_op_conf_load, gpgme_op_conf_save): New
types.
* gpgconf.c, engine-gpgconf.c: New files.
* engine.h: (_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New prototypes.
* op-support.c (_gpgme_op_reset): Ignore not implemented locale
function.
* posix-util.c (_gpgme_get_gpgconf_path): New
function.
* w32-util.c (_gpgme_get_gpgconf_path): New function.
* engine-gpgsm.c:
(_gpgme_engine_ops_gpgsm): Add stubs for conf_load and conf_save.
* rungpg.c:
(_gpgme_engine_ops_gpg): Add stubs for conf_load and conf_save.
* gpgme.def: Add new gpgconf related interfaces.
* libgpgme.vers: Likewise.
* util.h (_gpgme_get_gpgconf_path): New prototype.
* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_GPGCONF.
* engine-backend.h (_gpgme_engine_ops_gpgconf): New prototype.
(struct engine_ops): Add members for conf_load and conf_save.
* engine.c (engine_ops): Add _gpgme_engine_ops_gpgconf.
(_gpgme_engine_op_conf_load,
(_gpgme_engine_op_conf_save): New functions.
(gpgme_get_engine_info): Allow protocol GPGME_PROTOCOL_GPGCONF.

2007-11-28 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Search
for installation directory. Remove old fallback default.
(find_program_in_inst_dir): New function.

2007-11-26 Werner Koch <wk@g10code.com>

*
engine-gpgsm.c (struct engine_gpgsm): Add field INLINE_DATA and
always reset it before calling start.
(gpgsm_new): Clear it.
(status_handler): Implement it.
(gpgsm_getauditlog) [USE_DESCRIPTOR_PASSING]: Use INLINE_DATA.

2007-11-23 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_op_reset): Implement a no-reset flag.
* getauditlog.c (getauditlog_start): Use that flag.

2007-11-20 Werner Koch <wk@g10code.com>

* op-support.c (_gpgme_parse_inv_recp): Add new reason code 11.

2007-11-22 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_op_getauditlog_start, gpgme_op_getauditlog): New.
* libgpgme.vers: Ditto.
* gpgme.def: Ditto.
* getauditlog.c: New.
* engine-backend.h (struct engine_ops): Add member GETAUDITLOG.
* engine-gpgsm.c (gpgsm_getauditlog): New.
(_gpgme_engine_ops_gpgsm): Insert new function.
(gpgsm_new): Try to enable audit log support.
* rungpg.c (_gpgme_engine_ops_gpg): Insert dummy entry.

2007-11-12 Marcus Brinkmann <marcus@g10code.de>

*
kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-11 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld.

2007-10-09 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp: New version from Frank Osterfeld and Marc
Mutz.

2007-10-05 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, w32-qt-io.cpp: New versions from Frank
Osterfeld.

2007-10-04 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.h, kdpipeiodevice.cpp, kdpipeiodevice.moc,
w32-qt-io.cpp: New versions from Frank Osterfeld.

2007-10-02 Marcus Brinkmann <marcus@g10code.de>

* kdpipeiodevice.cpp, kdpipeiodevice.moc: New versions.
* w32-qt-io.cpp (_gpgme_io_fd2str): Print actual_fd if available.
(_gpgme_io_dup): Only acquire a reference, do not actually dup.
Submitted by Frank Osterfeld.

* priv-io.h, engine-gpgsm.c: Add comments.
* w32-qt-io.cpp (_gpgme_io_select): Remove code handling frozen FDs.
* w32-glib-io.c (_gpgme_io_close):
Always dereference the channel,
even if not primary.
(_gpgme_io_dup): Acquire a reference. Replace unused
implementation by assertion.

2007-09-28 Werner Koch <wk@g10code.com>

* engine-gpgsm.c (iocb_data_t): Add SERVER_FD_STR.
(gpgsm_new): Set it.
(gpgsm_set_fd): Use it.

* w32-glib-io.c (find_channel): Add a new primary flag.
(_gpgme_io_close): Close channel only if primary.
(_gpgme_io_dup): Put newfd into the table as shallow copy.

* priv-io.h (struct io_select_fd_s): Remove member FROZEN.
* w32-io.c (_gpgme_io_select): Ditto.
* w32-glib-io.c (_gpgme_io_select): Ditto.

* posix-io.c (_gpgme_io_select): Ditto.
* rungpg.c (read_status): Ditto.
* wait.c (fd_table_put): Ditto.

* rungpg.c (gpg_io_event): Add tracing.
(start): Use gpg_io_event for sending the start event.
* engine-gpgsm.c (gpgsm_io_event): Add tracing.
(start): Use gpgsm_io_event for sending the start event.
* wait.c (_gpgme_add_io_cb, _gpgme_run_io_cb): Add tracing.

2007-09-28 Marcus Brinkmann
 <marcus@g10code.de>

* kdpipeiodevice.moc, w32-qt-io.cpp, kdpipeiodevice.cpp: New
versions from Frank Osterfeld.

2007-09-27 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_spawn),
w32-qt-io.cpp (_gpgme_io_spawn), w32-io.c (_gpgme_io_spawn): Close
the process handle, return 0.

* gpgme.h (gpgme_protocol_t): Add GPGME_PROTOCOL_UNKNOWN.
* gpgme.c (gpgme_get_protocol_name): Implement support for
GPGME_PROTOCOL_UNKNOWN.

* kdpipeiodevice.h: Fix last change.

* w32-glib-io.c (_gpgme_io_pipe), w32-qt-io.c (_gpgme_io_pipe),
w32-io.c (_gpgme_io_pipe), posix-io.c (_gpgme_io_pipe): Fix debug
output.

2007-09-25 Marcus Brinkmann <marcus@g10code.de>

* conversion.c, keylist.c: Include <sys/types.h>.

* kdpipeiodevice.h: Use namespace _gpgme_.
* kdpipeiodevice.cpp: Use namespace _gpgme_.
[Q_OS_WIN32 && NOMINMAX]: Do not define NOMINMAX again.
* w32-qt-io.cpp: Change namespace of KDPipeIODevice to
gpgme::KDPipeIODevice.

2007-09-17 Werner Koch <wk@g10code.com>

*
rungpg.c (gpg_new): Make robust against undefined ttyname or
ttytype.

2007-09-14 Werner Koch <wk@g10code.com>

* data-mem.c (gpgme_data_release_and_get_mem): Fix tracing bug.

2007-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_release): Call gpgme_sig_notation_clear.

2007-09-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_new): Handle return value of _gpgme_getenv (fixes
small memory leak).

2007-09-07 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_qt_la_SOURCES): Move
moc_kdpipeiodevice.cpp to EXTRA_DIST, as this is only included by
another file (it's more like a header file than a cpp file, but
automake doesn't know that).

* w32-qt-io.cpp (_gpgme_io_spawn): Fix several cast errors and typos.
* w32-io.c (_gpgme_io_write): Use TRACE_SYSRES instead of TRACE_SYS.
(libgpgme_qt_la_LIBADD): Add QT4_CORE_LIBS, not QT4_CORE_LIB.

* kdpipeiodevice.h, kdpipeiodevice.cpp, moc_kdpipeiodevice.cpp,
kdpipeiodevice.moc, w32-qt-io.c:

New files.
* Makefile.am (ltlib_gpgme_extra): Rename to ltlib_gpgme_glib.
(ltlib_gpgme_qt): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_qt).
(libgpgme_qt_la_SOURCES): New variable.
(AM_CPPFLAGS): Add @QT4_CORE_INCLUDES@
(AM_CFLAGS): Add @QT4_CORE_CFLAGS@.
(libgpgme_qt_la_LDFLAGS, libgpgme_qt_la_DEPENDENCIES)
(libgpgme_qt_la_LIBADD): New variables.

* sema.h (struct critsect_s): Rename "private" to "priv" to make
C++ users happy. Change users.
* posix-sema.c (_gpgme_sema_cs_enter, _gpgme_sema_cs_leave)
(_gpgme_sema_cs_destroy): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_enter)
(_gpgme_sema_cs_leave, _gpgme_sema_cs_destroy): Likewise.
* w32-glib-io.c (gpgme_get_giochannel): Change return type to
void*.
(gpgme_get_fdptr): New function.
* w32-io.c (gpgme_get_fdptr): New function
* gpgme.def: Add gpgme_get_fdptr.

2007-08-22 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_write): Return early if COUNT is zero.
(writer): Remove superfluous
check.

2007-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Move include of gpg-error.h out of extern "C".

2007-08-07 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Add member CHAIN_MODEL.
* verify.c (parse_trust): Set Chain_MODEL.

2007-08-02 Werner Koch <wk@g10code.com>

* w32-glib-io.c (_gpgme_io_spawn): Use DETACHED_PROCESS flag.
* w32-io.c (_gpgme_io_spawn): Ditto.
(_gpgme_io_write): Map ERROR_NO_DATA to EPIPE.
* debug.c (_gpgme_debug): Enable assuan logging.
(_gpgme_debug_subsystem_init): New.
* version.c (do_subsystem_inits): Disable assuan logging and
initialize the debug system.
(gpgme_check_version): Do not trace before the subsystems are
initialized.

2007-07-17 Marcus Brinkmann <marcus@g10code.de>

* debug.c: Include <errno.h> and "debug.h".
(_gpgme_debug): Save and restore ERRNO.
(TOHEX): New macro.
(_gpgme_debug_buffer): New function.
* conversion.c, data-compat.c, data-mem.c, data.c, engine-gpgsm.c,
gpgme.c,
keylist.c, posix-io.c, rungpg.c, sign.c, version.c,
w32-io.c, wait.c: Replace DEBUG macros by TRACE_* variants. In
most of these files, add many more tracepoints.

2007-07-16 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (status_handler): Do not send BYE here.

* w32-io.c (struct reader_context_s, struct writer_context_s): New
members REFCOUNT.
(create_reader, create_writer): Initialize C->refcount to 1.
(destroy_reader, destroy_writer): Only destroy if C->refcount
drops to 0.
(find_reader, find_writer, kill_reader, kill_writer): Beautify.
* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.
* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Reverting to version 2007-07-10.

2007-07-13 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_read, user_write, user_seek): Set errno and
return -1 instead returning the error code directly.
* data-compat.c (old_user_seek):
Likewise.
* gpgme.c (gpgme_sig_notation_add): Return error properly.

* Revert the "close_notify_handler" returns int stuff. Always
close in the _gpgme_io_close implementations.
* engine-gpgsm.c (status_handler): Try to terminate the connection
in case of error.
* w32-io.c (_gpgme_io_read): Return C->error_code in ERRNO.
(_gpgme_io_write): Likewise.

* priv-io.h (_gpgme_io_set_close_notify): Change type of HANDLER
to _gpgme_close_notify_handler.
(_gpgme_close_notify_handler): New type.
(_gpgme_io_dup): Remove prototype.

* posix-io.c (notify_table, _gpgme_io_set_close_notify): Change
type of HANDLER to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-io.c (notify_table, _gpgme_io_set_close_notify,
_gpgme_io_close): Change type of HANDLER to
_gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
(_gpgme_io_dup): Remove function.
* w32-glib-io.c
(_gpgme_io_dup): Remove function.
(_gpgme_io_set_close_notify, notify_table): Change type of HANDLER
to _gpgme_close_notify_handler_t.
(_gpgme_io_close): Do not close the FD if handler returns 0.
* rungpg.c (close_notify_handler): Change return type to int,
return 1.
* engine-gpgsm.c (close_notify_handler): Change return type to
int, return 0 for status FD and 1 for all other FDs.
(start): Do not duplicate the status FD.

2007-07-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Replace implicit rule by suffix rule. Add
SUFFIXES for that.

2007-07-12 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits) [W32]: Make sure that the socket
system has been started.

2007-07-10 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_dup): New prototype.
* posix-io.c (_gpgme_io_dup): New function.
* w32-io.c (_gpgme_io_dup): Likewise.
* w32-glib-io.c (_gpgme_io_dup): Likewise.
* engine-gpgsm.c (start): Use _gpgme_dup() instead of dup().

2007-07-08
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c [HAVE_W32_SYSTEM]: Enable the bunch of the file.
* funopen.c (funopen): Rename to _gpgme_funopen.

2007-04-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Fix error handling for ttyname_r.
* rungpg.c (gpg_new): Likewise.

Submitted by Stephen Tether.

2007-02-26 Werner Koch <wk@g10code.com>

* verify.c (op_data_t): New element PLAINTEXT_SEEN.
(_gpgme_verify_status_handler): Return an error if more than one
plaintext has been seen.
(parse_error): New arg SET_STATUS. Also detect it based on an
ERROR status (gpg > 1.4.6).

2007-01-26 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Fixed stupid quoting bug.
* w32-glib-io.c (build_commandline): Ditto.

* rungpg.c (gpg_set_locale): Avoid dangling pointer after free.

* gpgme-config.in: New options --get-gpg and --get-gpgsm.

2007-01-18 Marcus Brinkmann <marcus@g10code.de>

* data.h (_gpgme_data_get_fd): Add prototype.
(gpgme_data_get_fd_cb):
New type.
(struct _gpgme_data_cbs): New member get_fd.
* data.c (_gpgme_data_get_fd): New function.
* data-fd.c (fd_get_fd): New function.
(fd_cbs): Add fd_get_fd.
* data-stream.c (stream_get_fd): New function.
(stream_cbs): Add stream_get_fd.
* data-mem.c (mem_cbs): Add NULL for get_fd callback.
* data-user.c (user_cbs): Likewise.
* engine-gpgsm.c (gpgsm_set_fd) [USE_DESCRIPTOR_PASSING]: Try to
short-cut by passing the data descriptor directly.

2007-01-17 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (build_commandline): Quote all command line arguments.
* w32-glib-io.c (build_commandline): Likewise.

2007-01-10 Werner Koch <wk@g10code.com>

* ttyname_r.c (ttyname_r) [W32]: Return a dummy name.

2007-01-08 Werner Koch <wk@g10code.com>

* version.c (do_subsystem_inits): Do assuan init only if building
with Assuan.

* setenv.c: Include assuan-def.h only if building with Assuan
support.

* op-support.c (_gpgme_op_reset): Set LC_MESSAGES only if
if
defined.
* engine-gpgsm.c (gpgsm_set_locale): Ditto.
* rungpg.c (gpg_set_locale): Ditto.

2006-12-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_protocol): Shut down the engine when
switching protocols.
(gpgme_ctx_set_engine_info): Likewise for engine info.
* engine.h (_gpgme_engine_reset): New function prototype.
* engine.c (_gpgme_engine_reset): New function.
* engine-backend.h (struct engine_ops): New member RESET.
* rungpg.c (_gpgme_engine_ops_gpg): Add NULL for reset function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm)
[USE_DESCRIPTOR_PASSING]: Add gpgsm_reset for reset.
(_gpgme_engine_ops_gpgsm) [!USE_DESCRIPTOR_PASSING]: Add NULL for
reset function.
(gpgsm_reset) [USE_DESCRIPTOR_PASSING]: New function.
* op-support.c (_gpgme_op_reset): Try to use the engine's reset
function if available.
* engine-gpgsm.c (gpgsm_new): Move code to dup status_fd to ...
(start): ... here.
* posix-io.c (_gpgme_io_recvmsg, _gpgme_io_sendmsg): New functions.

*
engine.h (_gpgme_engine_new): Remove arguments lc_ctype and
lc_messages from prototype.
(_gpgme_engine_set_locale): New prototype.
* engine.c (_gpgme_engine_set_locale): New function.
* op-support.c (_gpgme_op_reset): Call _gpgme_engine_set_locale.
* engine-backend.h (struct engine_ops): Add new member SET_LOCALE.
Remove arguments lc_messages and lc_ctype from member NEW.
* engine-gpgsm.c (struct engine_gpgsm): New members lc_ctype_set
and lc_messages_set.
(gpgsm_new): Remove lc_messages and lc_ctype
arguments.
(gpgsm_set_locale): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_set_locale.
* rungpg.c (struct engine_gpg): Add new members lc_messages and
lc_ctype.
(gpg_release): Release lc_messages and lc_ctype if set.
(gpg_new): Remove lc_messages and lc_ctype arguments.
(gpg_set_locale): New function.

(_gpgme_engine_ops_gpg): Add gpg_set_locale.
(add_arg): Implement in terms of:
(add_arg_ext): New function.
(start): Set lc-messages and lc-ctype arguments here.

2006-12-03
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct engine_gpgsm): Move members
input_fd_server, output_fd_server, message_fd_server to ...
(iocb_data): ... here (as server_fd).
(close_notify_handler): Reset tags as well.
(gpgsm_new): Implement support for descriptor
passing.
(fd_type_t): New type.
(gpgsm_clear_fd): New function. Use it instead of _gpgsm_io_close
for unused communication channels.
(gpgsm_set_fd): Rewritten to support descriptor passing. All
relevant callers adjusted as well (previously of _gpgme_io_close).

2006-12-02 Marcus Brinkmann <marcus@g10code.de>

* version.c: Include "assuan.h".
(do_subsystem_inits): Call assuan_set_assuan_err_source.

2006-12-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_real_la_SOURCES): Rename to main_sources.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
libgpgme_glib_la_SOURCES, libgpgme_pth_la_SOURCES): Add
$(main_sources).
(libgpgme_la_DEPENDENCIES, libgpgme_la_LIBADD,
libgpgme_pthread_la_DEPENDENCIES,
libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_DEPENDENCIES, libgpgme_pth_la_LIBADD,
libgpgme_glib_la_DEPENDENCIES, libgpgme_glib_la_LIBADD): Remove
libgpgme-real.la.
(noinst_LTLIBRARIES): Removed.
(libgpgme_glib_la_CFLAGS, libgpgme_pth_la_CFLAGS): Removed.
(AM_CFLAGS): New variable.

2006-11-30 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Replace AssuanError with gpg_error_t and
ASSUAN_CONTEXT with assuan_context_t.

2006-11-29 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Check return value of
assuan_pipe_connect.

* rungpg.c: Include <unistd.h>.
(gpg_new): Support --display, --ttyname, --ttytype, --lc-ctype and
--lc-messages. Fixes issue 734.

2006-10-24 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (gpgme_op_trustlist_next): Return error if OPD is
NULL.

2006-10-23 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Unlock CTX_LIST_LOCK while calling
_gpgme_engine_io_event().

*
keylist.c (gpgme_op_keylist_next): Return error if OPD is NULL.

2006-09-25 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (gpgme_data_release_and_get_mem): Release the data
object properly.

2006-09-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_colon_handler): Move debug output after
initialising KEY.

2006-07-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options): Add NETLIBS.
* Makefile.am (libgpgme_la_LIBADD, libgpgme_pthread_la_LIBADD,
libgpgme_pth_la_LIBADD, libgpgme_glib_la_LIBADD): Add NETLIBS.

* rungpg.c (read_status): Fix comparison disguising as an
assignment.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_locale): Remove conditional on
HAVE_W32_SYSTEM, and just check for LC_MESSAGES.

2006-07-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): Strip potential carriage return.
* genkey.c (get_key_parameter): Skip potential carriage return.

* version.c (_gpgme_get_program_version):
Strip potential carriage
return.

* data.c (gpgme_data_set_file_name): Allow to clear the file name
by passing NULL.

2006-06-22 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Also clone the engine info.

2006-03-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (cflags_pth): Revert accidental removal of
pthread support with last change.

2006-02-28 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (O_BINARY) [!O_BINARY]: New macro.
(_gpgme_io_pipe): Open pipes in binary mode.

2006-02-22 Marcus Brinkmann <marcus@g10code.de>

* engine.c (gpgme_engine_check_version): Reimplemented to allow
checking the version correctly even after changing the engine
information. Bug reported by Stphane Corthsy.

* rungpg.c (read_colon_line): Invoke colon preprocess handler if
it is set.
(colon_preprocessor_t): New type.
(struct engine_gpg): New member colon.preprocess_fnc.
(gpg_keylist_preprocess): New function.
* keylist.c
(keylist_colon_handler): Allow short key IDs.

2006-02-15 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (create_writer): Make C->have_data a manually reset
event.
(writer): Move code from end of if block to beginning, so it
is also run the first time.
(_gpgme_io_write): Move assert check after error check. Reset
the is_empty event, and also do it eagerly.
(_gpgme_io_select): Unconditionally wait for the is_empty event.

2006-01-26 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_conf_int): New.

* posix-util.c (_gpgme_get_conf_int): New.
* w32-io.c (get_desired_thread_priority): New.
(create_reader, create_writer): Use it here.

2006-01-04 Werner Koch <wk@g10code.com>

* debug.h (_gpgme_debug_srcname): New. Use it with the debug macros.

* w32-glib-io.c (_gpgme_io_set_nonblocking): Add debug
statements. Disable error return for failed nonblocking call.

2006-01-03 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_close): Only close fd if there
is no
channel for it.

2005-12-31 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (find_channel): Set channel to unbuffered.
(_gpgme_io_select): Fix debug output.

2005-12-23 Werner Koch <wk@g10code.com>

* gpgme.h (struct _gpgme_signature): Append field PKA_ADDRESS.
* verify.c (release_op_data, _gpgme_verify_status_handler): Set
this field.

2005-12-20 Werner Koch <wk@g10code.com>

* gpgme.h (gpgme_status_code_t): Added GPGME_STATUS_PKA_TRUST_BAD
and GPGME_STATUS_PKA_TRUST_GOOD.
(struct _gpgme_signature): New field pka_trust.
* verify.c (_gpgme_verify_status_handler): Set pka_trust.

2005-12-06 Werner Koch <wk@g10code.com>

* keylist.c (keylist_colon_handler): Store fingerprints of the
subkeys. Reset the secret flag of subkeys for stub secret keys.
(NR_FIELDS): Bumped up to 16

2005-11-27 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Use new_file_name in
engine_get_version invocation. Reported by Stphane Corthsy.

2005-11-24

Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c (_gpgme_io_fd2str): Remove debug printf.

2005-11-18 Werner Koch <wk@g10code.com>

* w32-glib-io.c: Include glib.h before windows to avoid a symbol
shadowing warning.
(find_channel): Better use g_io_channel_win32_new_fd instead of
the autodetection function g_io_channel_unix_new.
(_gpgme_io_select): Rewritten. It is now a fully working select
implementation.

2005-11-18 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_fd2str): New prototype.
* posix-io.c (_gpgme_io_fd2str): New function.
* w32-io.c (_gpgme_io_fd2str): New function.
* rungpg.c: Use this new function.
* w32-glib-io.c (_gpgme_io_fd2str): Rewrote the file handle code
again. Two's company, three's the musketeers.

* w32-glib-io.c: Rewrote the file handle code. We don't create
system fds for every handle (doesn't work for inherited handles),
but we create pseudo fds in a private namespace that designate a
handle and potentially
a giochannel.

2005-11-18 Werner Koch <wk@g10code.com>

* versioninfo.rc.in: Set file version to LT-version + Svn-revision.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* w32-glib-io.c: New file.
* gpgme.def (gpgme_get_giochannel): Add symbol.
* Makefile.am (system_components) [HAVE_DOSISH_SYSTEM]: Remove
w32-io.c.
(ltlib_gpgme_extra): New variable.
(lib_LTLIBRARIES): Add $(ltlib_gpgme_extra).
(system_components_not_extra): New variable.
(libgpgme_la_SOURCES, libgpgme_pthread_la_SOURCES,
(libgpgme_pth_la_SOURCES): Add $(system_components_not_extra).
(libgpgme_glib_la_LDFLAGS, libgpgme_glib_la_DEPENDENCIES,
(libgpgme_glib_la_LIBADD, libgpgme_glib_la_CFLAGS)
[BUILD_W32_GLIB]: New variables.
* gpgme-config.in (glib): New option.
* gpgme.m4 (AM_PATH_GPGME_GLIB): New macro.

2005-11-17 Marcus Brinkmann <marcus@g10code.de>

* priv-io.h (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* w32-io.c (_gpgme_io_waitpid, _gpgme_io_kill): Removed.
* posix-io.c (_gpgme_io_kill):
Removed.
(_gpgme_io_waitpid): Declare static.

2005-10-24 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_spawn): Don't minimize window, hide it.

2005-10-21 Werner Koch <wk@g10code.com>

* Makefile.am: Fixed cut+paste problem

2005-10-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am: Build versioninfo.lo, not versioninfo.o. Also, fix
the whole mess.

2005-10-16 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_edit): Don't add a key argument if in card edit
mode.

2005-10-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (gpgme.dll gpgme.dll.a): Use $(srcdir) for
gpgme.def.

* gpgme.h (gpgme_free): New prototype.
* data-mem.c (gpgme_free): New function.
* libgpgme.vers (GPGME_1.1): Add gpgme_free.
* gpgme.def: Add gpgme_free.

2005-10-02 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_decode_percent_string): Add new argument BINARY
to prototype.
* verify.c (parse_notation): Likewise for invocation.
* conversion.c (_gpgme_decode_percent_string):
Likewise to
declaration. If set, do not replace '\0' characters with a
printable string.
* gpgme.h (struct _gpgme_key_sig): New field notations.
* ops.h (_gpgme_parse_notation): New prototype.

* sig-notation.c (_gpgme_parse_notation): New function.
* key.c (gpgme_key_unref): Free all signature notations.
* keylist.c (op_data_t): New member tmp_keysig.
(finish_key): Clear OPD->tmp_keysig.
* gpgme.c (gpgme_set_keylist_mode): Remove check.
* rungpg.c (gpg_keylist): Support listing signature notations.
(gpg_keylist_ext): Likewise.

2005-10-01 Marcus Brinkmann <marcus@g10code.de>

* engine.h (_gpgme_set_engine_info): Add prototype.
* engine-backend.h (struct engine_ops): Change return type of
get_file_name() to const char * to silence gcc warning.
* engine.c (engine_get_file_name): Change return type to const
char * to silence gcc warning.
(gpgme_get_engine_info): Use transitional variable to go from
const char * to char * to silence gcc warning.
(_gpgme_set_engine_info):
Likewise.
* engine-gpgsm.c (struct engine_gpgsm): Change type of LINE to
char * to silence gcc warning.
(gpgsm_new): Make ARGV a pointer to const char.
(status_handler): Change type of SRC, END, DST, ALINE and NEWLINE
to char * to silence gcc warning.

* gpgme.def: Add gpgme_data_set_file_name,
gpgme_data_get_file_name, gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* libgpgme.vers: Add gpgme_sig_notation_clear,
gpgme_sig_notation_add and gpgme_sig_notation_get.
* Makefile.am (libgpgme_real_la_SOURCES): Add sig-notation.c.
* context.h (struct gpgme_context): New field sig_notations.
* gpgme.h (struct _gpgme_sig_notation): New member value_len and
critical.
(GPGME_SIG_NOTATION_CRITICAL): New symbol.
(gpgme_sig_notation_flags_t): New type.
(gpgme_sig_notation_add, gpgme_sig_notation_clear,
gpgme_sig_notation_get): New prototypes.
* ops.h (_gpgme_sig_notation_create, _gpgme_sig_notation_free):
New prototypes.
*
sig-notation.c (_gpgme_sig_notation_free): New file.
* verify.c (parse_notation): Use support functions.
(release_op_data): Likewise.
* rungpg.c (append_args_from_sig_notations): New function.
(gpg_encrypt_sign, gpg_sign): Call it.

2005-09-30 Marcus Brinkmann <marcus@g10code.de>

* data.h (struct gpgme_data): New member file_name.
* data.c (gpgme_data_set_filename): New function.
(_gpgme_data_release): Free DH->filename if necessary.
(gpgme_data_get_filename): New function.
* rungpg.c (gpg_encrypt): Set filename option.
(gpg_encrypt_sign): Likewise.
(gpg_sign): Likewise.
* libgpgme.vers (GPGME_1.1): Add gpgme_data_set_file_name and
gpgme_data_get_file_name.

* decrpyt.c, verify.c, gpgme.h: Replace plaintext_filename with
file_name.

2005-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key): Add field is_qualified.
(struct _gpgme_subkey): Likewise.
* keylist.c (set_subkey_capability, set_mainkey_capability): Set
field is_qualified.

2005-09-23
Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): Removed use of environment variable
again.
(create_reader, create_writer): Set thread priority higher.

2005-09-19 Werner Koch <wk@g10code.com>

* w32-io.c (_gpgme_io_pipe): New environment variable to change
the size of the pipe buffer.

2005-09-13 Werner Koch <wk@g10code.com>

* ath.c: Changes to make it work under W32.

2005-09-12 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Set to ath.h and ath.c.
(ath_pth_src, ath_pthread_src): Removed.
(w32_o_files): Replace ath-compat.o with ath.o.
(libgpgme_pth_la_CFLAGS): New variable.
* ath-compat.c, ath-pthread-compat.c, ath-pth-compat.c: Removed.
* ath.h (ath_pthread_available, ath_pth_available): Removed.
(ath_init) [!_ATH_EXT_SYM_PREFIX]: Do not define macro.
(struct ath_ops, ath_init) [_ATH_COMPAT]: Removed.
(_ATH_COMPAT): Macro removed.

* posix-sema.c (_gpgme_sema_subsystem_init): Do not call
_gpgme_ath_init.

2005-09-12
Marcus Brinkmann <marcus@g10code.de>

* keylist.c (release_op_data): Do not free opd->tmp_uid.

2005-09-07 Werner Koch <wk@g10code.com>

* w32-io.c (build_commandline): Quote argv[0].

2005-08-26 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (command_handler): Use _gpgme_io_write instead of write.

* edit.c (command_handler): Do not depend on PROCESSED being
available.

* engine.h (engine_command_handler_t): Add new argument processed.
* ops.h (_gpgme_passphrase_command_handler_internal): Rename
prototype to ...
(_gpgme_passphrase_command_handler): ... this one.
* passphrase.c (_gpgme_passphrase_command_handler_internal):
Rename to ...
(_gpgme_passphrase_command_handler): ... this one.
* edit.c (command_handler): Add new argument processed. Remove
local variable with the same name. Always return processed as
true.
* rungpg.c (command_handler): Send a newline character if the
handler did not.

2005-08-26 Werner Koch <wk@g10code.com>

* w32-util.c (read_w32_registry_string):
Updated from code used by
GnuPG. This allows for expanding strings and features the
implicit fallback key.
(w32_shgetfolderpath, find_program_at_standard_place): New.
(_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): With no registry
entry, locate the programs at the standard place.
(dlopen, dlsym, dlclose): New, so that we can keep on using what
we are accustomed to.

* debug.c (debug_init): Use PATHSEP_C so that under W32 a
semicolon is used which allows us to create files with drive
letters.

* w32-io.c (_gpgme_io_read, _gpgme_io_write): Print content in
debug mode too.

2005-07-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_PLAINTEXT.
(struct _gpgme_op_decrypt_result): New member plaintext_filename.
(struct _gpgme_op_verify_result): Likewise.
* ops.h (_gpgme_parse_plaintext): Add prototype.
* op-support.c (_gpgme_parse_plaintext): New function.
* decrypt.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_decrypt_status_handler):
Handle GPGME_STATUS_PLAINTEXT.
* verify.c (release_op_data): Release
OPD->result.plaintext_filename.
(_gpgme_verify_status_handler): Handle GPGME_STATUS_PLAINTEXT.

2005-08-08 Werner Koch <wk@g10code.com>

* util.h (stpcpy): Renamed to ..
(_gpgme_stpcpy): .. this and made inline. This avoids duplicate
definitions when linking statically.
* stpcpy.c: Removed.

2005-08-19 Werner Koch <wk@g10code.com>

* gpgme.def: New.
* versioninfo.rc.in: New.
* Makefile.am: Adds support for building a W32 DLL.

* ttyname_r.c (ttyname_r) [W32]: Return error.
* ath-compat.c [W32]: select and co are not yet supported; return
error.
* data-stream.c (stream_seek): Use ftell if ftello is not available.

2005-07-26 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_get_key): Allow key IDs.

2005-06-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Only call GPGME_CONFIG if found.

2005-06-03 Marcus Brinkmann <marcus@g10code.de>

*

gpgme.h (struct _gpgme_signature): New members pubkey_algo and
hash_algo.
* verify.c (parse_valid_sig): Parse pubkey and hash algo numbers.
(parse_new_sig): Parse pubkey, hash algo and timestamp for ERRSIG.

(_gpgme_decrypt_status_handler): Fix last change.

* gpgme.h (struct _gpgme_recipient): New structure.
(gpgme_recipient_t): New type.
(struct _gpgme_op_decrypt_result): Add member recipients.
* decrypt.c (op_data_t): New member last_recipient_p.
(_gpgme_op_decrypt_init_result): Initialize last_recipient_p.
(parse_enc_to): New function.
(_gpgme_decrypt_status_handler): Handle status ENC_TO and
NO_SECKEY.

* wait-global.c (gpgme_wait): Break out of the fd processing loop
after an error.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-06-02 Marcus Brinkmann <marcus@g10code.de>

* wait.h (_gpgme_run_io_cb): New prototype.
* wait.c (_gpgme_run_io_cb): New function.
* wait-global.c (gpgme_wait): Call it.
* wait-user.c (_gpgme_user_io_cb_handler): Likewise.
*
wait-private.c (_gpgme_wait_on_condition): Likewise.

2005-06-02 Werner Koch <wk@g10code.com>

* passphrase.c (_gpgme_passphrase_status_handler): Take care of
GPGME_STATUS_NEED_PASSPHRASE_PIN.
(_gpgme_passphrase_command_handler_internal): Also act on the key
"passphrase.pin.ask".

* gpgme.h: Added status codes GPGME_STATUS_SIG_SUBPACKET,
GPGME_STATUS_NEED_PASSPHRASE_PIN, GPGME_STATUS_SC_OP_FAILURE,
GPGME_STATUS_SC_OP_SUCCESS, GPGME_STATUS_CARDCTRL,
GPGME_STATUS_BACKUP_KEY_CREATED.

2005-05-28 Marcus Brinkmann <marcus@g10code.de>

* data-user.c: Include <errno.h>.

2005-05-17 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_new): Set the CTX->include_certs default to the

default.

2005-05-11 Marcus Brinkmann <marcus@g10code.de>

* w32-io.c (_gpgme_io_select): Fix loop increment.

2005-05-05 Marcus Brinkmann <marcus@g10code.de>

* data-user.c (user_release): Only call user hook if provided.
(user_seek): Return EBADF if no user hook is provided.
(user_read):
Likewise.
(user_write): Likewise.

2005-04-28 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_INCLUDE_CERTS_DEFAULT): New macro.
* engine-gpgsm.c (gpgsm_sign): Send the include-certs option after
the reset, just for cleanliness, and do not sent it at all if the
default is requested.
* gpgme.c (gpgme_set_include_certs): Allow to use
GPGME_INCLUDE_CERTS_DEFAULT.

2005-04-21 Werner Koch <wk@g10code.com>

* verify.c (calc_sig_summary): Set the key revoked bit.

2005-04-14 Marcus Brinkmann <marcus@g10code.de>

* wait-global.c (gpgme_wait): Use LI->ctx when checking a context
in the list, not the user-provided CTX.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

* wait-global.c (gpgme_wait): If no context is found, and we
should not hang, set *status to 0 and return NULL.
Reported by Igor Belyi <gpgme@katehok.ac93.org>.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* data.h (EOPNOTSUPP) [_WIN32]: Remove definition.
* data.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]:
Remove definition.
(gpgme_data_read, gpgme_data_write, gpgme_data_seek): Return
ENOSYS instead EOPNOTSUPP.
* data-compat.c (EOPNOTSUPP) [HAVE_W32_SYSTEM]: Remove definition.
(gpgme_error_to_errno): Map GPG_ERR_NOT_SUPPORTED
to ENOSYS.

2005-03-24 Marcus Brinkmann <marcus@g10code.de>

* io.h: Rename to ...
* priv-io.h: ... this.
* Makefile.am (libgpgme_real_la_SOURCES): Change io.h to priv-io.h.
* data.c, engine-gpgsm.c, posix-io.c, rungpg.c, version.c,
w32-io.c, wait-private.c, wait-global.c, wait-user.c, wait.c:
Change all includes of "io.h" to "priv-io.h"

2005-03-09 Werner Koch <wk@g10code.com>

* w32-util.c (_gpgme_get_gpg_path, _gpgme_get_gpgsm_path): Do not
cast away type checks.

* io.h [W32]: Do not include stdio.h. If it is needed do it at
the right place.

* data.h [W32]: Removed kludge for EOPNOTSUP.
* data.c, data-compat.c [W32]: Explicitly test for it here.

Replaced use of _WIN32 by HAVE_W32_SYSTEM except for public header
files.

2005-03-07
 Timo Schulz <twoaday@g10code.de>

    * gpgme.h: [_WIN32] Removed ssize_t typedef.
    * ath.h: [_WIN32] Added some (dummy) types.
    * io.h: [_WIN32] include stdio.h.
    * data.h: [_WIN32] Define EOPNOTSUPP.
    * w32-io.c [_WIN32] (_gpgme_io_subsystem_init): New.
    * gpgme.c [_WIN32] (gpgme_set_locale): Disabled.

2004-12-12 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_set_engine_info): Fix assertion.

2004-12-11 Marcus Brinkmann <marcus@g10code.de>

* util.h [HAVE_CONFIG_H && HAVE_TTYNAME_R] (ttyname_r): Define
prototype.
* ttyname_r.c: New file.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* putc_unlocked.c, funopen.c: I just claim copyright on these
files and change their license to LGPL, because they are totally
trivial wrapper functions.

* isascii.c: Change copyright notice to the one from ctype/ctype.h
in the GNU C Library (CVS Head 2004-10-10), where isascii is
defined as a macro doing exactly the same as the
function in this
file.
* memrchr.c: Update from the GNU C Library (CVS Head 2001-07-06).
* stpcpy.c: Update from the GNU C Library (CVS Head 2004-10-10).
* ath.c, ath-compat.c, ath.h, ath-pth.c, ath-pth-compat.c,
ath-pthread.c, ath-pthread-compat.c, context.h, conversion.c,
data.c, data-compat.c, data-fd.c, data.h, data-mem.c,
data-stream.c, data-user.c, debug.c, debug.h, decrypt.c,
decrypt-verify.c, delete.c, edit.c, encrypt.c, encrypt-sign.c,
engine-backend.h, engine.c, engine-gpgsm.c, engine.h, error.c,
export.c, genkey.c, get-env.c, gpgme.c, gpgme.h, import.c, io.h,
key.c, keylist.c, mkstatus, Makefile.am, ops.h, op-support.c,
passphrase.c, posix-io.c, posix-sema.c, posix-util.c, progress.c,
rungpg.c, sema.h, sign.c, signers.c, trust-item.c, trustlist.c,
util.h, verify.c, version.c, w32-io.c, w32-sema.c, w32-util.c,
wait.c, wait-global.c, wait.h, wait-private.c, wait-user.c: Change
license to LGPL.

2004-12-07 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers
(GPGME_1.1): New version.
* engine-backend.h (struct engine_ops): Add argument FILE_NAME to
member get_version(). Add arguments FILE_NAME and HOME_DIR to
member new(). Change return type of get_file_name and get_version
to char *.
* engine-gpgsm.c (gpgsm_get_version): Change return type to char
pointer. Do not cache result.
(gpgsm_new): Add file_name and home_dir argument, and use them
instead of the defaults, if set.
* rungpg.c (struct engine_gpg): New member file_name.
(gpg_get_version): Change return type to char pointer, and do not
cache result.
(gpg_release): Free gpg->file_name.
(gpg_new): Take new arguments file_name and home_dir. Set the
--homedir argument if HOME_DIR is not NULL. Set gpg->file_name.
(start): Use gpg->file_name instead _gpgme_get_gpg_path, if set.
* engine.h (_gpgme_engine_info_copy, _gpgme_engine_info_release):
New prototypes.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info.
* engine.c: Include <assert.h>.
(gpgme_get_engine_info):
Set *INFO within the lock. Move
ENGINE_INFO and ENGINE_INFO_LOCK to ....

(engine_info, engine_info_lock): ... here. New static variables.
(engine_get_version): Add file_name argument to
get_version invocation. Change return type to char pointer.
(gpgme_engine_check_version): Rewritten to free() the return value
of engine_get_version after using it.
(_gpgme_engine_info_release): New function.
(gpgme_get_engine_info): Rewritten.
(_gpgme_engine_info_copy): New function.
(_gpgme_set_engine_info): New function.
(gpgme_set_engine_info): New function.
(_gpgme_engine_new): Change first argument to gpgme_engine_info_t
info, and use that.
* gpgme.h (struct _gpgme_engine_info): Change type of file_name
and version to char * (remove the const). New member home_dir.
(gpgme_set_engine_info, gpgme_ctx_get_engine_info,
gpgme_ctx_set_engine_info): New prototypes.
* context.h (struct gpgme_context): New member engine_info.
* gpgme.c (gpgme_new): Allocate CTX->engine_info.
(gpgme_release):
Deallocate CTX->engine_info.
(gpgme_ctx_get_engine_info, gpgme_ctx_set_engine_info): New
functions.
* op-support.c (_gpgme_op_reset): Look for correct engine info and
pass it to _gpgme_engine_new.
* version.c (gpgme_check_version): Adjust to
_gpgme_compare_versions returning an int.
(_gpgme_compare_versions): Return an int value, not a const char
pointer.
* ops.h (_gpgme_compare_versions): Same for prototype.

2004-10-03 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_trust): If no reason is provided, set
SIG->validity_reason to 0.
(calc_sig_summary): Set GPGME_SIGSUM_CRL_TOO_OLD if appropriate.

2004-10-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Return 0 if ERR is 0.
(start): Call map_assuan_error on return value of
assuan_write_line.

2004-10-05 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_data_lookup): Use char pointer for
pointer arithmetic.

2004-09-30 Marcus Brinkmann

<marcus@g10code.de>

* gpgme.m4: Implement the --api-version check.

* rungpg.c (read_status): Move the polling of the output data pipe
to just before removing the command fd, from just before adding
it. This avoids buffering problems.

* data.c (_gpgme_data_inbound_handler): Use _gpgme_io_read, not
read, to improve debug output.

2004-09-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GPGME_IMPORT_NEW, GPGME_IMPORT_UID, GPGME_IMPORT_SIG,
GPGME_IMPORT_SUBKEY, GPGME_IMPORT_SECRET,
(GPGME_KEYLIST_MODE_LOCAL, GPGME_KEYLIST_MODERN_EXTERN,
GPGME_KEYLIST_MODE_SIGS, GPGME_KEYLIST_MODE_VALIDATE): Change from
enum to macros.
(gpgme_keylist_mode_t): Define as unsigned int.
(gpgme_key_t): Change type of keylist_mode to
gpgme_keylist_mode_t.

2004-09-23 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_outbound_handler): Close the file descriptor
if we get an EPIPE.

* data-stream.c (stream_seek): Call ftello and return the current
offset.
* data.h (struct
gpgme_data): Change type of data.mem.offset to
off_t.
* data.c (gpgme_data_seek): Check dh->cbs->seek callback, not read
callback. If SEEK_CUR, adjust the offset by the pending buffer
size. Clear pending buffer on success.

2004-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Add copyright notice.

2004-08-18 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Always run the
status handler.

2004-08-17 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-sk-comment, not --no-comment.

2004-06-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Make sure tail points to the
byte following the uid.
(_gpgme_key_add_sig): Likewise. Don't use calloc, but malloc and
memset.

2004-06-02 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: Remove C-style comment, which is not supported by
older binutils.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (Options):
Support --api-version.

* libgpgme.vers: List all gpgme symbols under version GPGME_1.0.

* decrypt.c (_gpgme_decrypt_status_handler): Fix last change.
* verify.c (parse_error): Likewise.

* verify.c (parse_error): Do not skip location of where token.

* gpgme.h (gpgme_status_code_t): Add GPGME_STATUS_REVKEYSIG.
* verify.c (_gpgme_verify_status_handler): Add handling of
GPGME_STATUS_REVKEYSIG.
(parse_trust): Likewise.

2004-05-21 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_decrypt_result): New fields
wrong_key_usage and _unused.
* decrypt.c (_gpgme_decrypt_status_handler): Don't skip over
character after a matched string, as in a protocol error this
could skip over the trailing binary zero.
Handle decrypt.keyusage error notifications.

* gpgme.h (struct _gpgme_key): New member keylist_mode.
* keylist.c (keylist_colon_handler): Set the keylist_mode of KEY.

2004-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_signature):
Change member WRONG_KEY_USAGE
to unsigned int. Same for member _unused.

* keylist.c (set_mainkey_trust_info): Rewritten.
(set_subkey_capability): Handle 'd' (disabled).
(set_mainkey_capability): Rewritten.

2004-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.m4: Quote first argument to AC_DEFUN.

2004-04-21 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_unref): Allow passing NULL like free does.
The rule of least surprise.

2004-04-15 Werner Koch <wk@gnupg.org>

* verify.c (prepare_new_sig, _gpgme_verify_status_handler): Remove
unused result.signatures items.

* keylist.c (gpgme_get_key): Return an error if FPR is NULL.

2004-04-08 Werner Koch <wk@gnupg.org>

* verify.c (_gpgme_verify_status_handler): Ignore the error status
if we can't process it.
* decrypt-verify.c (decrypt_verify_status_handler): Backed out
yesterday's hack. It is not any longer required.

2004-04-07 Werner Koch <wk@gnupg.org>

* decrypt-verify.c (decrypt_verify_status_handler):
Hack to cope
with meaningless error codes from the verify status function.

2004-04-05 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_STATUS_NEWSIG.

* verify.c (parse_error): Compare only the last part of the where
token.
(prepare_new_sig): New.
(parse_new_sig): Use prepare_new_sig when required.
(_gpgme_verify_status_handler): Handle STATUS_NEWSIG.

* engine-gpgsm.c (gpgsm_keylist_ext): Send with-validation
option. Fixed pattern construction.
(status_handler): Add debugging output.

2004-03-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect _only_ tty related code with
isatty(). Submitted by Bernhard Herzog.

2004-03-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_new): Protect all tty related code with
isatty().

* rungpg.c (gpg_cancel): Set GPG->fd_data_map to NULL after
releasing it.
* engine-gpgsm.c (gpgsm_cancel): Only call assuan_disconnect if
GPGSM->assuan_ctx is not NULL. Set it to NULL afterwards.

2004-03-07
 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Do not emit include and lib directory for
prefix "/usr" or "".

2004-03-03 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (gpgsm_export_ext): Properly insert a space
between patterns.

2004-02-18 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Ignore setting of --prefix.

2004-02-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_cancel): New function.
(gpg_release): Call it here.
(_gpgme_engine_ops_gpg): Add it here.
* engine-gpgsm.c (gpgsm_cancel): Fix last change.

2004-02-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_cancel): New function.
* engine-backend.h (struct engine_ops): New member cancel.
* engine.h (_gpgme_engine_cancel): New prototype.
* engine.c (_gpgme_engine_cancel): New function.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Add new member cancel.
(gpgsm_cancel): New function.
(gpgsm_release): Use it.
* rungpg.c (_gpgme_engine_ops_gpg): Add new member cancel.

2004-02-17
Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_KEYLIST_MODE_VALIDATE.
* engine-gpgsm.c (gpgsm_keylist): Send this to gpgsm.

2004-02-15 Werner Koch <wk@gnupg.org>

* memrchr.c (memrchr): Fixed implementation. Problem pointed out
by Adriaan de Groot.

2004-02-01 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (build_argv): Use --no-comment, not --comment "".

* data-compat.c (gpgme_data_new_from_filepart): Call fseeko if
available.
* data-stream.c (stream_seek): Likewise.

2004-01-16 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_map_gnupg_error): Handle numerical codes as
used by GnuPG 1.9.x

2004-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_key_sig): Fix comment on REVOKED.

2004-01-12 Werner Koch <wk@gnupg.org>

* sign.c: Include util.h for prototype of _gpgme_parse_timestamp.

2003-12-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (_GPGME_D_CLASS): Revert this change.
(struct _gpgme_key_sig): For C++ compilers,
rename class
member to _obsolete_class. Add new member sig_class.
(struct _gpgme_new_signature): Same here.
* key.c (gpgme_key_sig_get_ulong_attr): Use CERTSIG->sig_class,
not CERTSIG->class.
* keylist.c (keylist_colon_handler): Likewise for KEYSIG, but keep
setting KEYSIG->class, too. Rename variable CLASS to SIG_CLASS.
* sign.c (parse_sig_created): Set SIG->sig_class.

2003-12-22 Werner Koch <wk@gnupg.org>

* gpgme.h (_GPGME_D_CLASS): Kludge for C++ compatibility without

changing the C API.

2003-11-19 Werner Koch <wk@gnupg.org>

* conversion.c (_gpgme_parse_timestamp): New.
(atoi_1, atoi_2, atoi_4): New.
* keylist.c (parse_timestamp): Removed. Changed all callers to use
the new function.
* verify.c (parse_valid_sig): Ditto. Repalced the errno check.
* sign.c (parse_sig_created): Ditto.

2003-10-31 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Detect ISO 8601 timestamps and try
to convert them.

2003-10-10 Marcus Brinkmann <marcus@g10code.de>

*
genkey.c (get_key_parameter): Make a copy of the key parameters.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2003-10-06 Marcus Brinkmann <marcus@g10code.de>

* data-compat.c: Include <sys/time.h> before <sys/stat.h> for
broken systems.

* engine-gpgsm.c (map_assuan_error): If ERR is -1, return sensible
error.

* io.h (_gpgme_io_subsystem_init): New prototype.
* posix-io.c (_gpgme_io_subsystem_init): Add function.
(_gpgme_io_spawn): Do not fixup signal handler here.
* version.c (do_subsystem_inits): Call _gpgme_io_subsystem_init.

* debug.c (debug_init): Drop const qualifier from E.

* ath.h (struct ath_ops): Make ADDR argument of CONNECT prototype
const.
(ath_connect): Make ADDR argument const.
* ath-pthread.c (ath_connect): Likewise.
* ath-pth.c (ath_connect): Likewise.
* ath-compat.c (ath_connect): Likewise.
* ath.c (ath_connect): Likewise.

* ath.h [HAVE_SYS_SELECT_H]: Include <sys/select.h> for fd_set.
[!HAVE_SYS_SELECT_H]: Include <sys/time.h>.

*
conversion.c (_gpgme_hextobyte): Drop "unsigned" from type of
SRC argument.
* util.h (_gpgme_hextobyte): Likewise for prototype.

* gpgme.h: Remove trailing comma in enum.

* rungpg.c: Do not include <time.h>, <sys/time.h>, <sys/types.h>,
<signal.h>, <fcntl.h>, or "unistd.h".

2003-10-02 Marcus Brinkmann <marcus@g10code.de>

* engine-backend.h (struct engine_ops): Add argument TYPE.
* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* rungpg.c (gpg_edit): Likewise. Use it.
* edit.c (edit_start): Likewise. Pass it on.
(gpgme_op_edit_start, gpgme_op_edit): Likewise.
(gpgme_op_card_edit_start, gpgme_op_card_edit): New functions.

2003-09-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpg_strerror_r): Change prototype to match
gpg_strerror_r change.
* error.c (gpg_strerror_r): Likewise, also update implementation.

* gpgme.c (gpgme_hash_algo_name): Change name of RMD160 to
RIPEMD160, name of TIGER to TIGER192, name of CRC32-RFC1510 to
CRC32RFC1510,
and name of CRC24-RFC2440 to CRC24RFC2440.

2003-09-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_set_locale.

* gpgme.h: Define macro _GPGME_INLINE depending on the compiler
characteristics and use that instead __inline__.

* context.h (struct gpgme_context): New members lc_ctype and
lc_messages.
* gpgme.c: Include <locale.h>.
(def_lc_lock, def_lc_ctype, def_lc_messages): New static
variables.
(gpgme_set_locale): New function.
* engine.c (_gpgme_engine_new): Add arguments lc_ctype and
lc_messages.
* engine.h (_gpgme_engine_new): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.

* rungpg.c (gpg_new): Likewise.
* engine-backend.h (struct engine_ops): Likewise to NEW.
* op-support.c (_gpgme_op_reset): Likewise to invocation of
_gpgme_engine_new.

2003-09-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_strerror_r): New prototype.
* error.c (gpgme_strerror_r): New function.

* get-env.c: New file.
* util.h (_gpgme_getenv):
Add prototype.
* Makefile.am (libgpgme_real_la_SOURCES): Add get-env.c.
* rungpg.c (build_argv): Use _gpgme_getenv.
* debug.c (debug_init): Likewise.
* engine-gpgsm.c (gpgsm_new): Likewise.
(gpgsm_new): Use ttyname_r.
* w32-io.c (_gpgme_io_spawn): Disable debugging for now.

2003-09-03 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Use $libdir, not @libdir@, for the echo
command.

* gpgme-config.in: Rewritten.
* gpgme.m4: Rewritten.

2003-08-19 Marcus Brinkmann <marcus@g10code.de>

The ath files (ath.h, ath.c, ath-pth.c, ath-pthread.c,
ath-compat.c, ath-pth-compat.c and ath-pthread-compat.c) have been
updated to have better thread support, and the Makefile.am was
changed to reflect that.

* util.h [!HAVE_FOPENCOOKIE]: Remove fopencookie declaration.
* engine-gpgsm.c (gpgsm_assuan_simple_command): Set ERR to return
value of status_fnc.
* rungpg.c (start): Return SAVED_ERRNO, not errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (start):
Use saved_errno instead errno.

2003-08-18 Marcus Brinkmann <marcus@g10code.de>

* funopen.c, putc_unlocked.c, isascii.c, memrchr.c: New files.

* fopencookie.c: File removed.

2003-08-15 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in: Put gpg-error related flags after gpgme's.

2003-08-14 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_new_signature): Rename member CLASS to
_OBSOLETE_CLASS, add member CLASS with type unsigned int.
* sign.c (parse_sig_created): Also set SIG->_unused_class for
backward compatibility.

2003-08-04 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix status parsing case.

2003-07-31 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_subkey): Add flag CAN_AUTHENTICATE.
Lower _UNUSED to 23 bits.
(struct _gpgme_key): Likewise.
* keylist.c (set_mainkey_capability): Support 'a' and 'A'.
(set_subkey_capability): Support 'a'.

* keylist.c (gpgme_get_key): Check if there is more than
one key
listed, and return GPG_ERR_AMBIGUOUS_NAME in that case.

* util.h (_gpgme_decode_c_string): Change type of LEN argument to
size_t.
(_gpgme_decode_percent_string): Likewise.
* conversion.c (_gpgme_decode_c_string): Likewise.
(_gpgme_decode_percent_string): Likewise.
(_gpgme_map_gnupg_error): Change type of I to unsigned int.
* signers.c (gpgme_signers_clear): Likewise.
(gpgme_signers_enum): New unsigned variable SEQNO, set to SEQ.
Use SEQNO instead SEQ.
* wait.c (fd_table_put): Change type of I and J to unsigned int.
* wait-global.c (_gpgme_wait_global_event_cb): Change type of IDX
to unsigned int.
(gpgme_wait): Change type of I and IDX to unsigned int.
* wait-private.c (_gpgme_wait_on_condition): Change type of IDX
and I to unsigned int.
* posix-io.c (_gpgme_io_close): Cast return value of macro DIM to
int to suppress gcc warning.
(_gpgme_io_set_close_notify): Likewise.
(_gpgme_io_select): Change type of I to unsigned int.

* engine.c (gpgme_get_engine_info):
Change type of PROTO to
unsigned int.
* wait-user.c (_gpgme_user_io_cb_handler): Change type of IDX and
I to unsigned int.

2003-07-29 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c (decrypt_verify_status_handler): Expand silly
and wrong expression.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* encrypt.c (encrypt_sym_status_handler): Likewise.
* sign.c (sign_status_handler): Likewise.
* verify.c (verify_status_handler): Likewise.
* decrypt.c (decrypt_status_handler): Likewise.

* engine.c (gpgme_get_engine_info): Initialize NULL.

2003-07-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme-config.in (gpg_error_libs): Quote GPG_ERROR_CFLAGS and
GPG_ERROR_LIBS when setting the corresponding variables.
Reported by Stphane Corthsy.

2003-07-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (set_recipients): Move declaration of NEWLEN to
the beginning of the block.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c (mem_write):
Copy original buffer content.

2003-06-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_user_ids_release, gpgme_user_ids_append): Remove
prototypes.

2003-06-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (AM_CPPFLAGS): Add @GPG_ERROR_CFLAGS@.
* gpgme-config.in (gpg_error_libs, gpg_error_cflags): New variables.
Print them.

* op-support.c (_gpgme_parse_inv_userid): Rename to
_gpgme_parse_inv_recp and change to new datatype.
* ops.h (_gpgme_parse_inv_key): Fix prototype.

* gpgme.h (struct _gpgme_invalid_user_id): Rename to
__gpgme_invalid_key. Rename field ID to KEY.
(gpgme_invalid_user_id_t): Rename to gpgme_invalid_key_t.
(struct _gpgme_op_encrypt_result): Here, too.
(struct _gpgme_op_sign_result): Likewise.
* encrypt.c (struct op_data): Likewise.
(release_op_data): Likewise.
* sign.c (struct op_data): Likewise.
(release_op_data): Likewise.

* posix-io.c (_gpgme_io_read): Save errno across debug calls.
(_gpgme_io_write): Likewise.
(_gpgme_io_pipe):
Likewise.
(_gpgme_io_select): Likewise.

* rungpg.c (struct engine_gpg): Remove arg_error.
(add_arg): Don't set arg_error.
(add_data): Likewise.
(start): Don't check arg_error.
(gpg_new): Check return value of add_arg.
* verify.c (parse_notation): Free allocated memory at error.

2003-06-05 Marcus Brinkmann <marcus@g10code.de>

Everywhere: Use libgpg-error error codes.

* Makefile.am (EXTRA_DIST): Remove mkerrors.
(BUILT_SOURCES): Remove errors.c.
(MOSTLYCLEANFILES): Likewise.
(libgpgme_la_SOURCES): Likewise. Add error.c.
(errors.c): Remove target.
* mkerrors: File removed.
* error.c: New file.

* gpgme.h (gpgme_error_t): Change to type gpg_error_t.
(gpgme_err_code_t, gpgme_err_source_t): New types.
(gpgme_err_code, gpgme_err_source, gpgme_error, gpgme_err_make):
New static inline functions.
(gpgme_strsource, gpgme_err_code_from_errno,
gpgme_err_code_to_errno, gpgme_err_make_from_errno,
gpgme_error_from_errno): New prototypes.

2003-05-29 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_export_start): Change second arg to const char *.
(gpgme_op_export): Likewise.

(gpgme_op_export_ext_start): New prototype.
(gpgme_op_export_ext): Likewise.
* engine.h: Likewise for _gpgme_engine_op_export and
_gpgme_engine_op_export_ext.
* engine-backend.h (struct engine_ops): Change second argument of
prototype of export to const char *, and add reserved int as
third argument. Add prototype for export_ext.
* engine.c (_gpgme_engine_op_export_ext): New function.
(_gpgme_engine_op_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
* rungpg.c (gpg_export): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpg_export_ext): New function.
(gpg_keylist_ext): Break loop at error.
(_gpgme_engine_ops_gpg): Add gpg_export_ext.
* engine-gpgsm.c (gpgsm_export): Change second argument of
prototype of export to const
char *, and add reserved int as
third argument.
(gpgsm_export_ext): New function.
(_gpgme_engine_ops_gpgsm): Add gpgsm_export_ext.
* export.c (export_start): Change second argument of prototype of
export to const char *, and add reserved int as third argument.
(gpgme_op_export_start): Likewise.
(export_ext_start): New function.
(gpgme_op_export_ext_start): Likewise.
(gpgme_op_export_ext): Likewise.

* gpgme.h (gpgme_keylist_mode_t): New type for anonymous enum.
(gpgme_sigsum_t): New type for anonymous enum.

* encrypt-sign.c (encrypt_sign_start): Check for errors earlier,
and return an error if RECP is not set.

* Makefile.am (libgpgme_la_SOURCES): Remove user-id.c.
* user-id.c: Remove file.
* ops.h: Remove prototype for _gpgme_user_ids_all_valid.
* gpgme.h (gpgme_encrypt_flags_t): New type.
(gpgme_op_encrypt_start): Change second parameter to type
gpgme_key_t[], and add third parameter.
(gpgme_op_encrypt): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign):
Likewise.
* encrypt.c (encrypt_start): Likewise.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt): Likewise. Pass flags to engine.
* encrypt-sign.c (encrypt_sign_start): Likewise.

(gpgme_op_encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
* engine-backend.h (struct engine_ops): Likewise for prototypes of
encrypt and encrypt_sign.
* engine.h: Likewise for prototypes of _gpgme_engine_op_encrypt
and _gpgme_engine_op_encrypt_sign.
* engine.c (_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
* rungpg.c (gpg_encrypt): Check flags for always trust option.
* engine-gpgsm.c (gpgsm_encrypt): Likewise.
(set_recipients): Rewritten to use keys instead user IDs.
* rungpg.c (append_args_from_recipients): Rewritten to use keys
instead user IDs.
* encrypt.c (_gpgme_encrypt_status_handler): Change errors
returned to GPGME_Invalid_Key and GPGME_General_Error.

2003-05-28
Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Rename GpgsmObject to engine_gpgsm_t.
(struct gpgsm_object_s): Rename to struct engine_gpgsm.
* rungpg.c: Rename GpgObject to engine_gpg_t.
(struct gpg_object_s): Rename to struct engine_gpg.

* context.h (struct gpgme_context): Change EngineObject to
engine_object_t.
(enum ctx_op_data_type): Rename to ctx_op_data_id_t.
(ctx_op_data_t): New type.
(struct gpgme_context): Use it.
* ops.h (_gpgme_op_data_lookup): Use new type name.
* op-support.c (_gpgme_op_data_lookup): Likewise.
* engine.c: Rename EngineObject to engine_t in the file. Also
EngineStatusHandler to engine_status_handler_t,
EngineCommandHandler to engine_command_handler_t and
EngineColonLineHandler to engine_colon_line_handler.
* rungpg.c (start): Likewise.
* engine-gpgsm.c: Likewise.
* engine-backend.h (struct engine_ops): Likewise
* engine.h (struct engine_object_s): Rename to struct engine.
(EngineObject): Rename to
engine_t. Also everywhere else in the
file.
(EngineStatusHandler): Rename to engine_status_handler_t.
(EngineColonLineHandler): Rename to engine_colon_line_handler_t.
(EngineCommandHandler): Rename to engine_command_handler_t.

* engine-gpgsm.c (gpgsm_export): Fix bug in last change.

* Makefile.am (libgpgme_la_SOURCES): Remove recipient.c, add
user-id.c.
* gpgme.h (gpgme_recipients_t): Removed.
(gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name,
gpgme_recipients_add_name_with_validity, gpgme_recipients_count,
gpgme_recipients_enum_open, gpgme_recipients_enum_read,
gpgme_recipients_enum_close): Removed.
(gpgme_op_encrypt, gpgme_op_encrypt_start, gpgme_op_encrypt_sign,
gpgme_op_encrypt_sign_start, gpgme_op_export_start,
gpgme_op_export): Change second argument to gpgme_user_id_t.
(gpgme_user_ids_release): New prototype.
(gpgme_user_ids_append): Likewise.
* ops.h (_gpgme_recipients_all_valid): Remove.
(_gpgme_user_ids_all_valid): Add.
* context.h
(struct gpgme_recipients): Removed.
* user-id.c: New file.
* recipient.c: Removed file.
* rungpg.c (append_args_from_recipients): Change last arg to
gpgme_user_id_t. Reimplement.
(gpg_encrypt): Change second arg to gpgme_user_id_t.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise. Rewrite user ID list code.
* engine.c (_gpgme_engine_op_encrypt): Change second arg to
gpgme_user_id_t.
(_gpgme_engine_op_encrypt_sign): Likewise.
(_gpgme_engine_op_export): Likewise.
* engine.h (_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export): Likewise.
* engine-gpgsm.c (set_recipients): Likewise. Rewrite loop code.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
* engine-backend.h (struct engine_ops): Likewise for members
ENCRYPT, ENCRYPT_SIGN and EXPORT.
* export.c (export_start, gpgme_op_export_start, gpgme_op_export):
Likewise.
* encrypt.c (encrypt_start): Likewise. Don't check for count of
recipients.
(gpgme_op_encrypt_start): Likewise.
(gpgme_op_encrypt):
Likewise.
* encrypt-sign.c (encrypt_sign_start): Likewise.
(gpgme_op_encrypt_sign): Likewise.
(gpgme_op_encrypt_sign_start): Likewise.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_import_result): Add skipped_new_keys.
* import.c (parse_import_res): Add skipped_new_keys parser.

* op-support.c (_gpgme_parse_inv_userid): Add missing break
statements.
* encrypt.c (gpgme_op_encrypt): Use gpgme_error_t instead of int.

2003-05-27 Marcus Brinkmann <marcus@g10code.de>

* encrypt.c (gpgme_op_encrypt_result): Use intermediate variable
HOOK to avoid compiler warning. Don't ask, you don't want to know.
(_gpgme_encrypt_status_handler): Likewise.
(_gpgme_op_encrypt_init_result): Likewise.
* decrypt.c (gpgme_op_decrypt_result): Likewise.
(_gpgme_decrypt_status_handler): Likewise.
(_gpgme_op_decrypt_init_result): Likewise.
* verify.c (gpgme_op_verify_result): Likewise.
(_gpgme_verify_status_handler): Likewise.
(_gpgme_op_verify_init_result):
Likewise.
* edit.c (edit_status_handler): Likewise.
(command_handler): Likewise.
(edit_start): Likewise.
* genkey.c (gpgme_op_genkey_result): Likewise.
(genkey_status_handler): Likewise.
(genkey_start): Likewise.
* import.c (gpgme_op_import_result): Likewise.
(import_status_handler): Likewise.
(_gpgme_op_import_start): Likewise.
* trustlist.c (gpgme_op_trustlist_next): Likewise.
(_gpgme_op_trustlist_event_cb): Likewise.
(gpgme_op_trustlist_start): Likewise.
* keylist.c (gpgme_op_keylist_result): Likewise.
(keylist_colon_handler): Likewise.
(keylist_status_handler): Likewise.
(_gpgme_op_keylist_event_cb): Likewise.
(gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): Likewise.
* sign.c (gpgme_op_sign_result): Likewise.
(_gpgme_sign_status_handler): Likewise.
(_gpgme_op_sign_init_result):
Likewise.

* passphrase.c (_gpgme_passphrase_command_handler_internal): Fix
access to pointer type.

2003-05-26 Marcus Brinkmann <marcus@g10code.de>

* engine.h (EngineCommandHandler): Change last argument to int fd.
* gpgme.h (gpgme_passphrase_cb_t): Rewritten to take parts of the
description and fd.
(gpgme_edit_cb_t): Change last argument to int fd.
* ops.h (_gpgme_passphrase_command_handler_internal): New prototype.
* passphrase.c: Include <assert.h>.
(op_data_t): Rename userid_hint to uid_hint, remove last_pw_handle.
(release_op_data): Check values before calling free.
(_gpgme_passphrase_status_handler): Likewise.
(_gpgme_passphrase_command_handler_internal): New function.
(_gpgme_passphrase_command_handler): Rewritten.
* edit.c (edit_status_handler): Pass -1 as fd argument.
(command_handler): Update prototype. New variable processed. Use
it to store return value of
_gpgme_passphrase_command_handler_internal which is now used
instead _gpgme_passphrase_command_handler.
 Use it also to check
if we should call the user's edit function. Pass fd to user's
edit function.
* rungpg.c (struct gpg_object_s): Change type of cmd.cb_data to
void *.
(gpg_release): Check value before calling free. Do not release
cmd.cb_data.
(command_cb): Function removed.
(command_handler): New function. Thus we don't use a data object
for command handler stuff anymore, but handle it directly. This
allows proper error reporting (cancel of passphrase requests, for
example). Also all callbacks work via direct writes to the file
descriptor (so that passphrases are not kept in insecure memory).
(gpg_set_command_handler): Rewritten to use even more ugly hacks.
(read_status): Check cmd.keyword before calling free. Install
command_handler as the I/O callback handler with GPG as private
data.

* rungpg.c (gpg_new): Add --enable-progress-filter to gpg
invocation.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Rename to
decrypt_verify_start.
(gpgme_op_decrypt_verify_start):
Call decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* verify.c (verify_status_handler): New function that also calls
progress status handler.

(_gpgme_op_verify_start): Set status handler to verify_status_handler.
Rename to (verify_start).
(gpgme_op_verify_start): Call verify_start.
(gpgme_op_verify): Likewise.
* encrypt.c (encrypt_status_handler): New function.
(_gpgme_encrypt_sym_status_handler): Call progress status handler.
Make static. Rename to encrypt_sym_status_handler.
(encrypt_start): Set status handler to encrypt_sym_status_handler
or encrypt_status_handler.
* sign.c (sign_status_handler): New function.
(sign_start): Set status handler to sign_status_handler.
* decrypt.c (decrypt_status_handler): New function that also calls
progress status handler.
(decrypt_start): Set status handler to decrypt_status_handler.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler):
Call
_gpgme_progress_status_handler.

* conversion.c (_gpgme_decode_c_string): Add missing break
statement.

* recipient.c (gpgme_recipients_add_name_with_validity): Add one
to buffer to allocate.

2003-05-19 Marcus Brinkmann <marcus@g10code.de>

* verify.c (parse_new_sig): Fix ERRSIG case.
Submitted by Benjamin Lee <benjaminlee@users.sf.net>.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: The following types are renamed. The old name is kept
as a deprecated typedef.
(GpgmeCtx): Rename to gpgme_ctx_t.
(GpgmeData): Rename to gpgme_data_t.
(GpgmeRecipients): Rename to gpgme_recipients_t.
(GpgmeError): Rename to gpgme_error_t.
(GpgmeDataEncoding): Rename to gpgme_data_encoding_t.
(GpgmePubKeyAlgo): Rename to gpgme_pubkey_algo_t.
(GpgmeHashAlgo): Rename to gpgme_hash_algo_t.
(GpgmeSigStat): Rename to gpgme_sig_stat_t.
(GpgmeSigMode): Rename to gpgme_sig_mode_t.
(GpgmeAttr): Rename to gpgme_attr_t.
(GpgmeValidity): Rename to gpgme_validity_t.
(GpgmeProtocol):
Rename to gpgme_protocol_t.
(GpgmeStatusCode): Rename to gpgme_status_code_t.

(GpgmeEngineInfo): Rename to gpgme_engine_info_t.
(GpgmeSubkey): Rename to gpgme_subkey_t.
(GpgmeKeySig): Rename to gpgme_keysig_t.
(GpgmeUserID): Rename to gpgme_user_id_t.
(GpgmePassphraseCb): Rename to gpgme_passphrase_cb_t.
(GpgmeProgressCb): Rename to gpgme_progress_cb_t.
(GpgmeEditCb): Rename to gpgme_edit_cb_t.
(GpgmeIOCb): Rename to gpgme_io_cb_t.
(GpgmeRegisterIOCb): Rename to gpgme_register_io_cb_t.
(GpgmeRemoveIOCb): Rename to gpgme_remove_io_cb_t.
(GpgmeEventIO): Rename to gpgme_event_io_t.
(GpgmeEventIOCb): Rename to gpgme_event_io_cb_t.
(GpgmeIOCbs): Rename to gpgme_io_cbs.
(gpgme_io_cbs_t): New type.
(GpgmeDataReadCb): Rename to gpgme_data_read_cb_t.
(GpgmeDataWriteCb): Rename to gpgme_data_write_cb_t.
(GpgmeDataSeekCb): Rename to gpgme_data_seek_cb_t.
(GpgmeDataReleaseCb): Rename to gpgme_data_release_cb_t.
(GpgmeDataCbs): Rename to gpgme_data_cbs.
(gpgme_data_cbs_t):
New type.
(GpgmeInvalidUserID): Rename to gpgme_invalid_user_id_t.
(GpgmeEncryptResult): Rename to gpgme_encrypt_result_t.
(GpgmeDecryptResult): Rename to gpgme_decrypt_result_t.
(GpgmeNewSignature): Rename to gpgme_new_signature_t.
(GpgmeSignResult): Rename to gpgme_sign_result_t.
(GpgmeSigNotation): Rename to gpgme_sig_notation_t.
(GpgmeSignature): Rename to gpgme_signature_t.
(GpgmeVerifyResult): Rename to gpgme_verify_result_t.
(GpgmeImportStatus): Rename to gpgme_import_status_t.
(GpgmeImportResult): Rename to gpgme_import_result_t.
(GpgmeGenKeyResult): Rename to gpgme_genkey_result_t.
(GpgmeKeyListResult): Rename to gpgme_keylist_result_t.
(GpgmeTrustItem): Rename to gpgme_trust_item_t.
* gpgme.h (gpgme_deprecated_error_t): New type, swallowing macros
GPGME_No_Recipients, GPGME_Invalid_Recipient and
GPGME_No_Passphrase.
* data.h (struct gpgme_data_s): Rename to struct gpgme_data.
* context.h (struct gpgme_context_s): Rename to struct
gpgme_context.
(struct
gpgme_recipients_s): Rename to gpgme_recipients.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (finish_key): Clear OPD->tmp_uid.

2003-05-18 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Return GPGME_No_Data
for NODATA status without signatures.

2003-05-05 Marcus Brinkmann <marcus@g10code.de>

* key.c (_gpgme_key_append_name): Use decoded string to parse user id.
(_gpgme_key_add_sig): Likewise.

2003-05-04 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): Remove member op_info.

* key.c (_gpgme_key_add_sig): Initialize SIG->uid.

* gpgme.h (GpgmeError): Add deprecated values for
GPGME_Invalid_Type and GPGME_Invalid_Mode.

2003-04-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_op_info): Remove prototype.
* ops.h (_gpgme_set_op_info,
_gpgme_data_release_and_return_string, _gpgme_data_get_as_string,
_gpgme_data_append, _gpgme_data_append_string,
_gpgme_data_append_string_for_xml,
_gpgme_data_append_for_xml,
_gpgme_data_append_percentstring_for_xml): Likewise.
(_gpgme_progress_status_handler): Change first arg to void *.
* progress.c (_gpgme_progress_status_handler): Likewise.
* conversion.c: Do not include <string.h>, <errno.h>, <ctype.h>,
and <sys/types.h>, but <string.h>.
(_gpgme_data_append): Remove function.
(_gpgme_data_append_string): Likewise.
(_gpgme_data_append_for_xml): Likewise.
(_gpgme_data_append_string_for_xml): Likewise.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data-mem.c (_gpgme_data_get_as_string): Likewise.
(_gpgme_data_release_and_return_string): Likewise.
* gpgme.c (gpgme_get_op_info): Likewise.
(_gpgme_set_op_info): Likewise.

* gpgme.h (struct _gpgme_key): New structure.
(GpgmeKey): Define using _gpgme_key.
(struct _gpgme_subkey): New structure.
(GpgmeSubKey): New type.
(struct _gpgme_key_sig): New structure.
(GpgmeKeySig): New type.
(struct _gpgme_user_id): New structure.

(GpgmeUserID):
New type.
(struct _gpgme_op_keylist_result): New structure.
(GpgmeKeyListResult): New type.
(gpgme_op_keylist_result): New function.
(gpgme_key_get_as_xml): Remove prototype.
* context.h (struct gpgme_context_s): Remove members tmp_key,
tmp_uid, key_cond and key_queue.
(struct key_queue_item_s): Remove structure.
(struct user_id_s): Remove structure.
(struct gpgme_recipients_s): Replace with simple
GpgmeUserID list.
* gpgme.c (gpgme_release): Do not release CTX->tmp_key.
* ops.h (_gpgme_key_add_subkey, _gpgme_key_append_name,
_gpgme_key_add_sig, _gpgme_trust_item_new): New prototypes.
* rungpg.c (command_cb): Return GpgmeError instead int.
New variable ERR. Use it to hold return value of cmd handler.
(gpg_delete): Access fingerprint of key directly.
(append_args_from_signers): Likewise.
(gpg_edit): Likewise.
(append_args_from_recipients): Use GpgmeUserID for recipient list.
* engine-gpgsm.c: Do not include "key.h".
(gpgsm_delete): Access fingerprint of key
directly.
(gpgsm_sign): Likewise.
(set_recipients): Use GpgmeUserID for recipients. Invert invalid
user ID flag.
* key.h: File removed.
* key.c: Completely reworked to use exposed GpgmeKey data types.
* keylist.c: Likewise.
* recipient.c: Completely reworked to use GpgmeUserID.

2003-04-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_get_key): Remove force_update argument.
* key-cache.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove key-cache.c.
* ops.h (_gpgme_key_cache_add, _gpgme_key_cache_get): Remove
prototypes.
* keylist.c (_gpgme_op_keylist_event_cb): Don't call
_gpgme_key_cache_add.
(gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Remove last argument to
gpgme_get_key invocation.

* gpgme.h (struct _gpgme_trust_item): New structure.
(GpgmeTrustItem): New type.
(gpgme_trust_item_ref, gpgme_trust_item_unref): New prototypes.

* context.h (struct trust_queue_item_s): Remove structure.
(struct gpgme_context_s): Remove trust_queue
member.
* Makefile.am (libgpgme_la_SOURCES): Add trust-item.c.
* trust-item.c: New file.
* trustlist.c: Do not include <stdio.h> or <time.h>, but
"gpgme.h".
(struct trust_queue_item_s): Change to new type op_data_t.
(trust_status_handler): Change first argument to void *.
(trust_colon_handler): Likewise.
(_gpgme_op_trustlist_event_cb): Use op_data_t type.
(gpgme_op_trustlist_start): Use op_data_t and rework error
handling.
(gpgme_op_trustlist_next): Use op_data_t.
(gpgme_trust_item_release): Remove function.
(gpgme_trust_item_get_string_attr): Likewise.
(gpgme_trust_item_get_int_attr): Likewise.

* verify.c (calc_sig_summary): Do not set GPGME_SIGSUM_SYS_ERROR
for bad signatures.

2003-04-28 Marcus Brinkmann <marcus@g10code.de>

* context.h: Remove OPDATA_VERIFY_COLLECTING.
(struct gpgme_context_s): Remove member notation.
* gpgme.h: Make enum for GPGME_KEYLIST_MODE_* values.

* gpgme.h (struct _gpgme_sig_notation): New structure.
(GpgmeSigNotation): New
type.
(struct _gpgme_signature): New structure.
(GpgmeSignature): New type.
(struct _gpgme_op_verify_result): New structure.
(GpgmeVerifyResult): New type.
(gpgme_op_verify_result): New prototype.
(gpgme_get_notation): Remove prototype.
* ops.h (_gpgme_op_verify_init_result): New prototype.
(_gpgme_verify_status_handler): Change first argument to void *.
* util.h (_gpgme_decode_percent_string, _gpgme_map_gnupg_error):
New prototypes.
* conversion.c (_gpgme_decode_percent_string): New function.
(gnupg_errors): New static global.
(_gpgme_map_gnupg_error): New function.
* gpgme.c (gpgme_release): Don't release CTX->notation.
(gpgme_get_notation): Remove function.
* decrypt-verify.c (_gpgme_op_decrypt_verify_start): Call
_gpgme_op_verify_init_result.
* verify.c: Do not include <stdio.h>, <assert.h> and "key.h", but

do include "gpgme.h".
(struct verify_result): Replace with ...
(op_data_t): ... this type.
(release_verify_result): Remove function.
(release_op_data):
New function.
(is_token): Remove function.
(skip_token): Remove function.
(copy_token): Remove function.
(gpgme_op_verify_result): New function.
(calc_sig_summary): Rewritten.
(finish_sig): Remove function.
(parse_new_sig): New function.
(parse_valid_sig): New function.
(parse_notation): New function.
(parse_trust): New function.
(parse_error): New function.
(_gpgme_verify_status_handler): Rewritten. Change first argument
to void *.
(_gpgme_op_verify_start): Rework error handling. Call
_gpgme_op_verify_init_result.
(gpgme_op_verify): Do not release or clear CTX->notation.
(gpgme_get_sig_status): Rewritten.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.
(gpgme_get_sig_key): Likewise.

* gpgme.h (struct _gpgme_op_decrypt_result): New structure.
(GpgmeDecryptResult): New type.
(gpgme_op_decrypt_result): New prototype.
* ops.h (_gpgme_op_decrypt_init_result): New prototype.
(_gpgme_decrypt_status_handler): Fix prototype.
(_gpgme_decrypt_start):
Remove prototype.
* decrypt-verify.c: Do not include <stdio.h>, <stdlib.h>,
<string.h> and <assert.h>, "util.h" and "context.h", but
"gpgme.h".
(decrypt_verify_status_handler): Change first argument to void *,
and rework error handling.
(_gpgme_op_decrypt_verify_start): New function.
(gpgme_op_decrypt_verify_start): Rewrite using
_gpgme_op_decrypt_verify_start.
(gpgme_op_decrypt_verify): Likewise.
* decrypt.c: Include <string.h>, "gpgme.h" and "util.h".
(struct decrypt_result): Change to typedef op_data_t, rewritten.
(is_token): Remove function.
(release_op_data): New function.
(skip_token): Remove function.

(gpgme_op_decrypt_result): New function.
(_gpgme_decrypt_status_handler): Change first argument to void *.
Rework error handling.
(_gpgme_decrypt_start): Rename to ...
(decrypt_start): ... this. Call _gpgme_op_decrypt_init_result.
(_gpgme_op_decrypt_init_result): New function.
(gpgme_op_decrypt_start): Use decrypt_start.
(gpgme_op_decrypt): Likewise.

2003-04-27
Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c: Do not include <stddef.h>, <stdio.h>,
<stdlib.h>, <string.h>, <assert.h> and "util.h", but "gpgme.h".
(_gpgme_op_encrypt_sign_start): Rename to ...
(encrypt_sign_start): ... this.
(gpgme_op_encrypt_sign_start): Use encrypt_sign_start, not
_gpgme_op_encrypt_sign_start.
(gpgme_op_encrypt_sign): Likewise.

* gpgme.h (GpgmeEncryptResult): New data type.
(gpgme_op_encrypt_result): New prototype.
* ops.h (_gpgme_op_encrypt_init_result): New prototype.
(_gpgme_op_encrypt_status_handler): Fix prototype.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call
_gpgme_op_encrypt_init_result.
* encrypt.c: Do not include <stdio.h>, <assert.h>, "util.h" and
"wait.h". Include <errno.h> and "gpgme.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct encrypt_result): Rename to ...
(op_data_t): ... new data type. Rewrite for user result data.
(append_xml_encinfo): Remove function.
(release_op_data): New function.
(gpgme_op_encrypt_result):
New function.
(_gpgme_op_encrypt_status_handler): Change first argument to void *.
Rewrite result parsing.
(_gpgme_op_encrypt_sym_status_handler): Change first argument to
void *.
(_gpgme_op_encrypt_init_result): New function.
(_gpgme_op_encrypt_start): Rename to ...
(encrypt_start): ... this.
(gpgme_op_encrypt_start): Use encrypt_start, not
gpgme_op_encrypt_start.
(gpgme_op_encrypt): Likewise.

* gpgme.h (GpgmePubKeyAlgo, GpgmeHashAlgo, GpgmeInvalidUserID,
GpgmeNewSignature, GpgmeSignResult): New data types.

(gpgme_op_sign_result, gpgme_pubkey_algo_name,
gpgme_hash_algo_name): New prototypes.
* gpgme.c (gpgme_pubkey_algo_name): New function.
(gpgme_hash_algo_name): Likewise.
* ops.h (_gpgme_parse_inv_userid, _gpgme_op_sign_init_result): New
prototype.
(_gpgme_op_sign_status_handler): Fix prototype.
* op-support.c: Include <errno.h> and <string.h>.
(_gpgme_parse_inv_userid): New function.
* sign.c: Include <errno.h> and "gpgme.h", but
not <stdio.h>,
<assert.h> and "util.h".
(SKIP_TOKEN_OR_RETURN): Remove macro.
(struct sign_result): Change to op_data_t type and rework it.
(release_sign_result): Rename to ...
(release_op_data): ... this and rewrite it.
(append_xml_info): Remove function.
(gpgme_op_sign_result): New function.
(parse_sig_created): New function.
(_gpgme_sign_status_handler): Change first argument to void *.
Rewrite the function to use the new result structure and functions.
(_gpgme_op_sign_init_result): New function.
(_gpgme_op_sign_start): Rename to ...
(sign_start): ... this. Call _gpgme_op_sign_init_result.
(gpgme_op_sign_start): Use sign_start instead _gpgme_op_sign_start.
(gpgme_op_sign): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Call
_gpgme_op_sign_init_result.

* delete.c: Include <errno.h> and "gpgme.h", but not "util.h" or
"key.h".
(enum delete_problem): Move into function delete_status_handler.
(delete_status_handler): Change first argument to void *. Parse
delete
problem with strtol instead atoi. Return better error
values.
(_gpgme_op_delete_start): Rename to ...
(delete_start): ... this. Rework error handling.
(gpgme_op_delete_start): Use delete_start instead
_gpgme_op_delete_start.
(gpgme_op_delete): Likewise.
* gpgme.h (GpgmeDataType): Removed.

2003-04-25 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Change GPGME_IMPORT_PRIVATE to GPGME_IMPORT_SECRET.
* import.c (parse_import_res): Parse unchanged field.

* gpgme.h: New enum for GPGME_IMPORT_NEW, GPGME_IMPORT_UID,
GPGME_IMPORT_SIG, GPGME_IMPORT_SUBKEY, GPGME_IMPORT_PRIVATE.
(GpgmeError): GPGME_Unknown_Reason, GPGME_Not_Found,
GPGME_Ambiguous_Specification, GPGME_Wrong_Key_Usage,
GPGME_Key_Revoked, GPGME_Key_Expired, GPGME_No_CRL_Known,
GPGME_CRL_Too_Old, GPGME_Policy_Mismatch, GPGME_No_Secret_Key,
GPGME_Key_Not_Trusted, GPGME_Issuer_Missing, GPGME_Chain_Too_Long,
GPGME_Unsupported_Algorithm, GPGME_Sig_Expired,
GPGME_Bad_Signature, GPGME_No_Public_Key added
as new error codes.
(struct _gpgme_import_status): New structure.
(GpgmeImportStatus): New type.
(struct _gpgme_op_import_result): New structure.
(GpgmeImportResult): New type.
(gpgme_op_import_result): New function.
* import.c: Include <errno.h> and "gpgme.h", but not "util.h".
(struct import_result): Change to type op_data_t.
(release_import_result): Rename to ...
(release_op_data): ... this.
(append_xml_impinfo): Function removed.
(gpgme_op_import_result): New function.
(parse_import): New function.
(parse_import_res): Likewise.
(import_status_handler): Change first argument to void *. Rewrite
to use new functions.
(_gpgme_op_import_start): Rework error handling.

* edit.c: Do not include <assert.h>, "util.h", but "gpgme.h".
(edit_resut): Change to typedef for op_data_t.
(edit_status_handler): Change first argument to void *.
Rework error handling.
(command_handler): Rework error handling.
(_gpgme_op_edit_start): Rename to ...
(edit_start): ... this. Rework
error handling.
(gpgme_op_edit_start): Rewrite using edit_start.
(gpgme_op_edit): Likewise.

* ops.h (_gpgme_passphrase_start): Remove prototype.
* passphrase.c: Do not include <assert.h>, "util.h" or
"debug.h", but "gpgme.h".
(struct passphrase_result): Change to typedef for op_data_t.
(release_passphrase_result): Rename to release_op_data.
(_gpgme_passphrase_status_handler): Change first argument to void *.
Use new op_data_t type.
(_gpgme_passphrase_command_handler): Use new op_data_t type.
(_gpgme_passphrase_start): Remove function.
* decrypt.c (_gpgme_decrypt_start): Rewrite error handling. Do

not call _gpgme_passphrase_start, but install command handler.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.

* context.h (struct gpgme_context_s): Remove member initialized,
use_cms and help_data_1. Add member protocol. Make use_armor and
use_textmode bit flags.
 Make keylist_mode, include_certs,
signers_len and signers_size unsigned.
* gpgme.c (gpgme_new): Initialize CTX->protocol.
(gpgme_set_protocol): Do not check CTX. Use CTX->protocol.
(gpgme_get_protocol): Likewise.
(gpgme_release): Do not release CTX->help_data_1.
* op-support.c (_gpgme_op_reset): Use CTX->protocol.

* wait-private.c (_gpgme_wait_private_event_cb): Remove variable CTX.

* data.c: Do not include <assert.h>, but "gpgme.h".
(_gpgme_data_inbound_handler): Expand _gpgme_data_append, because
it will go. Do not assert DH.
(_gpgme_data_outbound_handler): Do not assert DH.

* export.c: Do not include <stdlib.h>, "debug.h" and "util.h", but
"gpgme.h".
(export_status_handler): Change type of first argument to void *.
(_gpgme_op_export_start): Rename to ...
(export_start): ... this. Rework error handling.
(gpgme_op_export_start): Rewritten to use export_start instead
_gpgme_op_export_start.
(gpgme_op_export): Likewise.

* gpgme.h (GpgmeError): Add GPGME_Busy,
GPGME_No_Request.
(GPGME_No_Recipients, GPGME_Invalid_Recipient,
GPGME_No_Passphrase): New macros.

* key.c (gpgme_key_get_string_attr): Fix validity attribute.

2003-04-24 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (struct _gpgme_op_genkey_result): New structure.
(GpgmeGenKeyResult): New type.
(gpgme_op_genkey): Drop last argument.
(gpgme_op_genkey_result): New function.
* genkey.c: Do not include "util.h", but "gpgme.h".
(struct genkey_result): Replace with ...
(op_data_t): ... this new type.

(release_genkey_result): Replace with ...
(release_op_data): ... this new function.
(gpgme_op_genkey_result): New function.
(genkey_status_handler): Rewritten using new op_data_t type.
(get_key_parameter): New function.
(_gpgme_op_genkey_start): Renamed to
(genkey_start): ... this and rewritten.
(gpgme_op_genkey_start): Use genkey_start instead
_gpgme_op_genkey_start.
(gpgme_op_genkey): Rewritten. Remove FPR argument.

* context.h (struct gpgme_context_s): Remove member
verbosity.
* gpgme.c (gpgme_new): Do not set member verbosity.
* engine.h (_gpgme_engine_set_verbosity): Remove prototype.
* engine.c (_gpgme_engine_set_verbosity): Remove function.
* engine-backend.h (struct engine_ops): Remove set_verbosity.
* engine-gpgsm.c (_gpgme_engine_ops_gpgsm): Remove set_verbosity member.
* rungpg.c (_gpgme_engine_ops_gpg): Likewise.
(gpg_set_verbosity): Remove function.
* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_set_verbosity.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start):
Likewise.

* Makefile.am (libgpgme_la_SOURCES): Add key-cache.c.
* key.c (key_cache_initialized, key_cache_size,
key_cache_max_chain_length,): Removed.
(struct key_cache_item_s, key_cache_lock, key_cache,
key_cache_unused_items, hash_key, _gpgme_key_cache_add,
_gpgme_key_cache_get, gpgme_get_key): Moved to ...
* key-cache.c: ... here. New file.
* key.h (_gpgme_key_cache_init): Remove prototypes.
(_gpgme_key_cache_add,_gpgme_key_cache_get): Move to ...
* ops.h: ... here.
* version.c: Do not include "key.h".
(do_subsystem_inits): Do not call _gpgme_key_cache_init.

* mkstatus: Strip trailing comma.
* gpgme.h (GpgmeStatus): Pretty print.

* gpgme.h (GpgmeError): Rename GPGME_No_Passphrase to
GPGME_Bad_Passphrase.
* passphrase.c (_gpgme_passphrase_status_handler): Use
GPGME_Bad_Passphrase instead GPGME_No_Passphrase.

* gpgme.h (GpgmeError): Rename GPGME_No_Recipients to
GPGME_No_UserID and GPGME_Invalid_Recipient to
GPGME_Invalid_UserID.
* encrypt.c (_gpgme_encrypt_status_handler):
Use GPGME_No_UserID
instead GPGME_No_Recipients and GPGME_Invalid_UserID instead
GPGME_Invalid_Recipient.
(_gpgme_op_encrypt_start): Likewise.

* gpgme.h (GpgmeError): Remove GPGME_Busy and GPGME_No_Request.
* wait-user.c (_gpgme_wait_user_event_cb): Don't clear CTX->pending.
* wait-private.c (_gpgme_wait_private_event_cb): Likewise.
* wait-global.c (gpgme_wait): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_get_sig_status): Don't check pending flag.
(gpgme_get_sig_string_attr): Likewise.
(gpgme_get_sig_ulong_attr): Likewise.
(gpgme_get_sig_key): Likewise.
* op-support.c (_gpgme_op_reset): Likewise.
* trustlist.c (gpgme_op_trustlist_start): Don't clear pending flag.
(gpgme_op_trustlist_next): Don't check or clear pending flag.
(gpgme_op_trustlist_end): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* context.h (struct gpgme_context_s): Remove member PENDING.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* delete.c (_gpgme_op_delete_start):
Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* key.c (gpgme_get_key): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.
(gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_next): Likewise.
(gpgme_op_keylist_end): Likewise.
* data-compat.c (gpgme_error_to_errno): Don't convert EBUSY.

2003-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type to return GpgmeError,
and add argument for returning the result string.
(gpgme_cancel): Remove prototype.
* gpgme.c (gpgme_cancel): Remove function.
* context.h (struct gpgme_context_s): Remove member cancel.
* passphrase.c (_gpgme_passphrase_command_handler): Call the
passphrase callback in the new way.

2003-01-30
Marcus Brinkmann <marcus@g10code.de>

* edit.c (_gpgme_edit_status_handler): Call the progress status
handler.

2003-02-05 Marcus Brinkmann <marcus@g10code.de>

* wait-user.c (_gpgme_wait_user_remove_io_cb): Move check for no
I/O handlers left to ...
(_gpgme_user_io_cb_handler): ... here.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c (trustlist_colon_handler): Release ITEM if name
could not be allocated.
(gpgme_trust_item_release): Only release name if it is allocated.
Reported by Marc Mutz <Marc.Mutz@uni-bielefeld.de>.

2003-02-04 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (read_status): If he status handler returns an error,
return it.
(status_handler): If read_status fails, just return the error.

2003-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (start): Handle all errors, not only most of
them.
(xtoi_1, xtoi_2): Remove macro.
(status_handler): Replace use of xtoi_2 with _gpgme_hextobyte.

2003-02-01 Marcus
Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Replace
ASSUAN_Bad_Certificate_Path with ASSUAN_Bad_Certificate_Chain.
(gpgsm_new): Use assuan_pipe_connect instead assuan_pipe_connect2.

* util.h (DIMof): Remove macro.

* ops.h (_gpgme_op_event_cb, _gpgme_op_event_cb_user,
_gpgme_data_unread): Prototypes removed.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove types.h.
* io.h (struct spawn_fd_item_s): Do not include "types.h".
* key.h: Likewise.
* context.h: Likewise.
* cengine-gpgsm.h: Likewise.
* engine.h: Include "gpgme.h" instead "types.h". Add prototypes
for EngineStatusHandler, EngineColonLineHandler and
EngineCommandHandler.
(_gpgme_engine_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler):
Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* engine-backend.h: Include "engine.h" instead "types.h".
(struct engine_ops): Change Gpgme*Handler parameters in members
set_command_handler, set_colon_line_handler and set_status_handler
to Engine*Handler.
* engine.c (_gpgme_engine_set_status_handler): Change parameter
type from GpgmeStatusHandler to EngineStatusHandler.
(_gpgme_engine_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.
(_gpgme_engine_set_colon_line_handler): Change parameter type from
GpgmeColonLineHandler to EngineColonLineHandler.
* rungpg.c (struct gpg_object_s): Change type of member status.fnc
from GpgmeStatusHandler to EngineStatusHandler. Change type of
member colon.fnc from GpgmeColonLineHandler to
EngineColonLineHandler. Change type of member cmd.fnc from
GpgmeCommandHandler to EngineCommandHandler.
* engine-gpgsm.c (struct gpgsm_object_s): Likewise.
* rungpg.c
(gpg_set_status_handler): Change parameter type from
GpgmeStatusHandler to EngineStatusHandler.
* engine-gpgsm.c (gpgsm_set_status_handler): Likewise.
(assuan_simple_command): Likewise.
* rungpg.c (gpg_set_colon_line_handler): Change parameter type
from GpgmeColonLineHandler to EngineColonLineHandler.
* engine-gpgsm.c (gpgsm_set_colon_line_handler): Likewise.

* rungpg.c (gpg_set_command_handler): Change parameter type from
GpgmeCommandHandler to EngineCommandHandler.

* engine-gpgsm.c (status_handler): Do not close status fd at end
of function.

* ops.h (_gpgme_op_data_lookup): Add prototype.
* op-support.c: Include <stdlib.h>.
(_gpgme_op_data_lookup): New function.
* decrypt.c (_gpgme_release_decrypt_result): Function removed.
(struct decrypt_result_s): Rename to ...
(struct decrypt_resul): ... this.
(DecryptResult): New type.
(_gpgme_decrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* sign.c
(_gpgme_release_sign_result): Function removed.
(release_sign_result): New function.
(struct sign_result_s): Rename to ...
(struct sign_result): ... this.
(SignResult): New type.
(_gpgme_sign_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* encrypt.c (struct encrypt_result_s): Rename to ...
(struct encrypt_result): ... this.
(_gpgme_release_encrypt_result): Function removed.
(release_encrypt_result): New function.
(_gpgme_encrypt_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* verify.c (struct verify_result_s): Rename to ...
(struct verify_result): ... this. Remove member next.
(VerifyResult): New type.
(_gpgme_release_verify_result): Function removed.
(release_verify_result): New function.
(finish_sig): Change first argument to type VerifyResult. Diddle
the type of the op_data structure.
(add_notation): Change first argument
to type VerifyResult.
(_gpgme_verify_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* passphrase.c (struct passphrase_result_s): Rename to ...
(struct passphrase_result): ... this. Remove member next.
(PassphraseResult): New type.
(_gpgme_release_passphrase_result): Function removed.

(release_passphrase_result): New function.
(_gpgme_passphrase_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(_gpgme_passphrase_command_handler): Likewise.
* keylist.c (struct keylist_result_s): Rename to ...
(struct keylist_result): ... this. Remove member next.
(KeylistResult): New type.
(_gpgme_release_keylist_result): Function removed.
(release_keylist_result): New function.
(keylist_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
* edit.c (struct edit_result_s): Rename to ...
(struct
edit_result): ... this. Remove member next.
(EditResult): New type.
(_gpgme_release_edit_result): Function removed.
(release_edit_result): New function.
(edit_status_handler): Don't use
test_and_allocate_result, but use _gpgme_op_data_lookup to
retrieve result data object.
(command_handler): Likewise.
* types.h (DecryptResult, SignResult, EncryptResult,
PassphraseResult, ImportResult, DeleteResult, GenKeyResult,
KeylistResult, EditResult): Types removed.
* ops.h: Don't include "types.h", but "gpgme.h" and "context.h".
(test_and_allocate_result): Remove macro.
(_gpgme_release_decrypt_result): Remove prototype.
(_gpgme_decrypt_result): Remove prototype.
(_gpgme_release_sign_result): Remove prototype.
(_gpgme_release_encrypt_result): Remove prototype.
(_gpgme_release_passphrase_result): Remove prototype.
(_gpgme_release_import_result): Remove prototype.
(_gpgme_release_delete_result): Remove prototype.
(_gpgme_release_genkey_result): Remove prototype.
(_gpgme_release_keylist_result):
Remove prototype.
(_gpgme_release_edit_result): Remove prototype.
(_gpgme_release_verify_result): Remove prototype.
* gpgme.c (_gpgme_release_result): Rewritten.
* context.h (enum ctx_op_data_type): New enum.
(struct ctx_op_data): New structure.
(struct gpgme_context_s): Replace the member result with a member
op_data.
(fail_on_pending_request): Remove macro.
* op-support.c (_gpgme_op_reset): Expand macro
fail_on_pending_request.

* util.h: Don't include "types.h" or "debug.h", but include "gpgme.h".

2003-01-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_engine_ops_gpg): Remove gpg_start.
(gpg_start): Rename to ...
(start): ... this function. Change arguments to GpgObject.
(gpg_decrypt): Call start.
(gpg_edit): Likewise.
(gpg_encrypt): Likewise.
(gpg_encrypt_sign): Likewise.
(gpg_export): Likewise.
(gpg_import): Likewise.
(gpg_keylist): Likewise.
(gpg_keylist_ext): Likewise.
(gpg_trustlist): Likewise.
(gpg_verify): Likewise.

*
engine-gpgsm.c (_gpgme_engine_ops_encrypt): Remove gpgsm_start.
(gpgsm_start): Rename to ...
(struct gpgsm_object_s): Remove member command.
(gpgsm_release): Don't free command.
(start): ... this function. Change arguments to GpgsmObject and
const char *.
(gpgsm_decrypt): Call start.
(gpgsm_delete): Likewise.
(gpgsm_encrypt): Likewise.
(gpgsm_export): Likewise.
(gpgsm_genkey): Likewise.
(gpgsm_import): Likewise.
(gpgsm_keylist): Likewise.
(gpgsm_keylist_ext): Likewise.
(gpgsm_verify): Likewise.

* decrypt.c (_gpgme_decrypt_start): Don't call
_gpgme_engine_start.
* delete.c (_gpgme_op_delete_start): Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start):
* encrypt-sign.c (_gpgme_op_encrypt_sign_start):
* export.c (_gpgme_op_export_start): Likewise.
* genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* keylist.c (gpgme_op_keylist_ext_start): Likewise.
(gpgme_op_keylist_start):
Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.

* trustlist.c (gpgme_op_trustlist_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* engine-backend.h (struct engine_ops): Remove member start.

* engine.h (_gpgme_engine_start): Remove prototype.
* engine.c (_gpgme_engine_start): Remove function.

2003-01-19 Miguel Coca <mcoca@gnu.org>

* w32-io.c (_gpgme_io_select): Add missing argument in calls to
DEBUG_BEGIN.
* w32-util.c: Include "sema.h".
(find_program_in_registry): Change DEBUG1 to DEBUG2, fixes compilation
error.

2003-01-29 Marcus Brinkmann <marcus@g10code.de>

* types.h: Remove byte and ulong types.
* util.h (_gpgme_hextobyte): Change prototype to unsigned char
instead byte.
* conversion.c (_gpgme_hextobyte): Change argument to unsigned
char instead byte.
(_gpgme_decode_c_string): Likewise, and beautify. Also support a
few more escaped characters. Be more strict about buffer size.
(_gpgme_data_append_percentstring_for_xml): Change
type of SRC,
BUF and DST to unsigned char instead byte.
* progress.c (_gpgme_progress_status_handler): Use unsigned char
instead byte.
* debug.c (trim_spaces): Likewise.

* util.h (mk_error): Remove macro.
* conversion.c, data.c, data-compat.c, decrypt.c, delete.c,
edit.c, encrypt.c, encrypt-sign.c, engine.c, engine-gpgsm.c,
export.c, genkey.c, gpgme.c, import.c, key.c, keylist.c,
passphrase.c, progress.c, recipient.c, rungpg.c, sign.c,
signers.c, trustlist.c, verify.c, wait.c, wait-global.c,
wait-private (literally everywhere): Expand the mk_error macro.

* context.h (wait_on_request_or_fail): Remove macro.

* context.h (gpgme_context_s): Remove member ERROR.
* types.h (GpgmeStatusHandler): Change return type to GpgmeError.
(GpgmeCommandHandler): Change return type to GpgmeError and add
new argument RESULT.
* gpgme.h (GpgmeIOCb): Change return type to GpgmeError.
(GpgmeEventIO): New event GPGME_EVENT_START.

(GpgmeIdleFunc): Remove type.
(gpgme_register_idle): Remove
prototype.
* data.c: Include <assert.h>.
(_gpgme_data_inbound_handler): Change return type to GpgmeError.
Return any error instead ignoring it, don't close file descriptor
on error.
(_gpgme_data_outbound_handler): Likewise.
* decrypt.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(_gpgme_decrypt_status_handler): Change return type to GpgmeError.
Return error instead setting ctx->error. Return success at end of
function.
(gpgme_op_decrypt): Don't work around the old kludge anymore.
* decrypt-verify.c (decrypt_verify_status_handler): Change return
type to GpgmeError. Return possible errors.
* delete.c: Do not include <stdio.h>, <string.h>, <time.h> and
<assert.h>.
(delete_status_handler): Change return type to GpgmeError. Return
error instead setting ctx->error. Return success at end of
function.
* edit.c: Do not include <stdio.h> and <string.h>.
(_gpgme_edit_status_handler): Change type to GpgmeError,
make static and rename to ...
(edit_status_handler):
... this. Return error directly.
(command_handler): Change return type to GpgmeError, add result
argument. Return error directly.
* encrypt.c (status_handler_finish): Remove function.
(_gpgme_encrypt_status_handler): Change return type to GpgmeError.
Return error directly.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (close_notify_handler): Do not signal done event
anymore.
(status_handler): Change return type to GpgmeError. Diddle things
around a bit to return errors directly.
(start): Send start event.
* export.c: Do not include <stdio.h>, <string.h> and <assert.h>.
(export_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* genkey.c: Do not include <stdio.h> and <assert.h>.
(genkey_status_handler): Change return type to GpgmeError. Don't
check ctx->error. Return errors directly.
* gpgme.c (_gpgme_release_result): Do not initialize ctx->error.
(_gpgme_op_event_cb):
Function removed.
(_gpgme_op_event_cb_user): Likewise.
* import.c: Do not include <stdio.h>, <string.h> and <assert.h>.

(import_status_handler): Change return type to GpgmeError. Don't
check ctx->error.
* keylist.c (keylist_colon_handler, keylist_status_handler, finish_key):
Change return type to GpgmeError, return error directly.
* Makefile (libgpgme_la_SOURCES): Add wait-global.c,
wait-private.c and wait-user.c
* ops.h (test_and_allocate_result): Return error instead setting
ctx->error.
(_gpgme_data_inbound_handler, _gpgme_data_outbound_handler,
_gpgme_verify_status_handler, _gpgme_decrypt_status_handler,
_gpgme_sign_status_handler, _gpgme_encrypt_staus_handler,
_gpgme_passphrase_status_handler, _gpgme_progress_status_handler):
Change return type to GpgmeError.
(_gpgme_passphease_command_handler): Change return type to
GpgmeError and add new argument RESULT.
* op-support.c: Use new callback functions, and change private
data to ctx everywhere.
* passphrase.c
(_gpgme_passphrase_status_handler): Change return
type to GpgmeError, return error directly.
(_gpgme_passphrase_command_handler): Change return type to
GpgmeError, add result argument. Return results accordingly.
* progress.c (_gpgme_progress_status_handler): Change return type
to GpgmeError, return errors directly.
* rungpg.c (status_handler): Change return type to GpgmeError.
Return error directly.
(close_notify_handler): Don't send done event.
(colon_line_handler): Change return type to GpgmeError, return
errors directly.
* rungpg.c (start): Send start event.
* sign.c (_gpgme_sign_status_handler): Change return type to
GpgmeError, return errors directly.
* trustlist.c (trustlist_status_handler): Change return type to
GpgmeError. Return 0.
(trustlist_colon_handler): Change return type GpgmeError. Return
errors directly.
* verify.c (add_notation): Change return type to GpgmeError,
return errors directly.
(_gpgme_verify_status_handler): Likewise.
* wait.h
(struct fd_table): Remove lock member.
(struct wait_item_s): Moved here from wait.c.
(struct tag): New structure.
(_gpgme_wait_event_cb): Remove prototype.
(_gpgme_wait_private_event_cb, _gpgme_wait_global_event_cb,
_gpgme_wait_user_add_io_cb, _gpgme_wait_user_remove_io_cb,
_gpgme_wait_user_event_io_cb): New prototypes.
* wait.c: Don't include <stdio.h>.

(ftd_global, ctx_done_list, ctx_done_list_size,
ctx_done_list_length, ctx_done_list_lock, idle_function): Remove
global variable.
(gpgme_register_idle, do_select, _gpgme_wait_event_cb): Remove
function.
(gpgme_wait): Move to file wait-global.c.
(_gpgme_add_io_cb): Take ctx as private argument, initialize ctx
member in wait item and tag.
(_gpgme_remove_io_cb): Take ctx from tag. Don't use FDT lock.
(_gpgme_wait_one, _gpgme_wait_on_condition): Move to
wait-private.c.
(gpgme_fd_table_init): Don't initialize FDT->lock.
(gpgme_fd_table_deinit): Don't destroy FDT->lock.
(_gpgme_fd_table_put): Make static and rename to
...
(fd_table_put): ... this function. Don't use FDT->lock.
(struct wait_item_s): Move to wait.h.
* wait-global.c: New file.
* wait-private.c: New file.
* wait-user.c: New file.

* key.c (gpgme_key_sig_get_string_attr): Use validity_to_string
instead otrust_to_string to calculate validity.

2003-01-30 Marcus Brinkmann <marcus@g10code.de>

* types.h (EngineObject): Move typedef to ...
* engine.h: ... here.
* types.h (GpgObject): Move typedef to ...
* rungpg.c: ... here.
* types.h (GpgsmObject): Move typedef to ...
* engine-gpgsm.c: ... here.

* util.h (return_if_fail, return_null_if_fail,
return_val_if_fail): Remove macro.
* gpgme.c (gpgme_cancel): Don't use return_if_fail.
* key.c (gpgme_key_ref): Likewise.
* signers.c (gpgme_signers_enum): Likewise.
(gpgme_signers_clear): Likewise.

* engine-backend.h (struct engine_ops): Rename get_path to
get_file_name.
* gpgme.h (struct _gpgme_engine_info): Rename member path to
file_name.
* version.c: Do not include <stdio.h>,
<stdlib.h>, context.h and
util.h. Other clean ups.
(parse_version_number): Protect more seriously against

overflow.
(gpgme_get_engine_info): Move to ...
* engine.c (gpgme_get_engine_info): ... here.
(_gpgme_engine_get_info): Function removed.
(_gpgme_engine_get_path): Make static and rename to ...
(engine_get_file_name): .. this.
(_gpgme_engine_get_version): Make static and rename to ...
(engine_get_version): ... this.
(_gpgme_engine_get_req_version): Make static and rename to ...
(engine_get_req_version): ... this.
* engine.h (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_req_version, _gpgme_engine_get_info.): Remove
prototypes.

* gpgme.h (enum GpgmeProtocol): Remove GPGME_PROTOCOL_AUTO.
* gpgme.c (gpgme_set_protocol): Don't handle GPGME_PROTOCOL_AUTO.
(gpgme_get_protocol_name): New function.

* engine-backend.h (struct engine_ops): New member
get_req_version, remove member check_version.
* engine.h (_gpgme_Engine_get_version): New prototype.
*
rungpg.c (gpg_get_req_version): New function.
(gpg_check_version): Function removed.
(_gpgme_engine_ops_gpg): Add gpg_get_req_version, remove
gpg_check_version.
* engine-gpgsm.c (gpgsm_get_req_version): New function.
(gpgsm_check_version): Function removed.
(_gpgme_engine_ops_gpgsm): Add gpgsm_get_req_version, remove
gpgsm_check_version.
* engine.c: Include ops.h.
(_gpgme_engine_get_req_version): New function.
(gpgme_engine_check_version): Rewritten.
* version.c (gpgme_get_engine_info): Rewritten.
* gpgme.h (gpgme_engine_info): New structure.
(GpgmeEngineInfo): New type.

2003-01-06 Werner Koch <wk@gnupg.org>

* keylist.c (set_mainkey_capability): Handle 'd' and 'D' used
since gpg 1.3 to denote disabled keys.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c: Include <string.h>.
* engine.c: Likewise.

2003-01-06 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_DEPENDENCIES): Correct bug in last change.

2002-12-24 Marcus
Brinkmann <marcus@g10code.de>

* gpgme.h (gpgme_op_verify, gpgme_op_decrypt_verify): Drop R_STAT
argument.
* decrypt-verify.c (gpgme_op_decrypt_verify): Drop R_STAT
argument.
* verify.c (gpgme_op_verify): Drop R_STAT argument.
(_gpgme_intersect_stati): Function removed.
* ops.h (_gpgme_intersect_stati): Remove prototype.

2002-12-24 Marcus Brinkmann <marcus@g10code.de>

* libgpgme.vers: New file.
* Makefile.am (EXTRA_DIST): Add libgpgme.vers.
(libgpgme_version_script_cmd): New variable.
(libgpgme_la_LDFLAGS): Add libgpgme_version_script_cmd here.
(libgpgme_la_DEPENDENCIES): New variable.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* key.c (gpgme_key_get_string_attr): Don't accept GPGME_ATTR_IS_SECRET.
(otrust_to_string): New function.
(gpgme_key_get_as_xml): Use it.
(validity_to_string): New function.
(gpgme_key_get_string_attr): Beautify using above functions.
(gpgme_key_get_ulong_attr): Likewise.

2002-12-23 Marcus Brinkmann <marcus@g10code.de>

* data-mem.c
(mem_release): Fix gcc warning.
* data-user.c (user_release): Likewise.

2002-12-06 Marcus Brinkmann <marcus@g10code.de>

* data.h (gpgme_data_release_cb): Change return type to void.
(gpgme_data_read_cb): Change return type to ssize_t.
* data.c (gpgme_data_read): Likewise.
* data-stream.c (stream_read): Likewise.
* data-fd.c (fd_read): Likewise.
* data-mem.c (mem_read): Likewise.
(mem_release): Change return type to void.
* data-user.c (user_read): Change return type to ssize_t.
(user_release): Change return type to void.

* data-compat.c (old_user_read): Change return type to ssize_t.
* gpgme.h (GpgmeDataReadCb): Likewise.
(gpgme_data_read): Likewise.
(GpgmeDataSeekCb): Change return type to off_t.

2002-12-04 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_get_key.
* key.c (gpgme_get_key): New function.
* verify.c (gpgme_get_sig_key): Rewrite using gpgme_get_key.

* gpgme.h: Add prototypes for new interfaces
gpgme_key_sig_get_string_attr
and gpgme_key_get_ulong_attr.
(enum GpgmeAttr): New attribute GPGME_ATTR_SIG_CLASS.
* gpgme.c (gpgme_set_keylist_mode): Allow GPGME_KEYLIST_MODE_SIGS.
* key.h (struct certsig_s): New members ALGO, NAME_PART,
EMAIL_PART, COMMENT_PART, NAME, SIG_STAT and SIG_CLASS.

* conversion.c (_gpgme_decode_c_string): Add new parameter LEN.
Use that to determine if allocation is desired or not.
* util.h: Adjust prototype of _gpgme_decode_c_string.
* keylist.c (keylist_colon_handler): Adjust caller of
_gpgme_decode_c_string.

* key.h (struct gpgme_key_s): New member last_uid.
* key.c (_gpgme_key_append_name): Rewritten using
_gpgme_decode_c_string and the last_uid pointer.
(my_isdigit): Macro removed.
(ALLOC_CHUNK): Likewise.
* keylist.c (set_userid_flags): Use last_uid member of KEY.

* context.h (struct user_id_s): New member last_certsig.
* key.h: Add prototype for _gpgme_key_add_certsig.
* key.c (_gpgme_key_add_certsig): New function.
(set_user_id_part): Move function
before _gpgme_key_add_certsig.
(parse_user_id): Change first argument to SRC, add new arguments
NAME, EMAIL and COMMENT. Change code to use these arguments
instead going through UID. Move function before
_gpgme_add_certsig.
(parse_x509_user_id): Likewise.
(_gpgme_key_append_name): Adjust arguments to parse_x509_user_id
and parse_user_id invocation.
(one_certsig_as_xml): New function.
(one_uid_as_xml): Print signatures.
* context.h (struct gpgme_context_s): New member TMP_UID.
* keylist.c (keylist_colon_handler): Rewritten, implement "sig"

record entries.

* key.c (get_certsig): New function.
(gpgme_key_sig_get_string_attr): Likewise.
(gpgme_key_sig_get_ulong_attr): Likewise.

* keylist.c: Include <ctype.h>.
(my_isdigit): Macro removed.
(set_mainkey_trust_info): Use isdigit, not my_isdigit.
(set_userid_flags): Likewise.
(set_subkey_trust_info): Likewise.
(set_ownertrust): Likewise.
(finish_key): Move function up a bit and remove prototype.

* rungpg.c (gpg_keylist_ext):
Correct precedence of signature
listing mode.
(gpg_keylist_ext): Implement signature listing mode.

2002-11-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not set parent fds to -1.
* posix-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead close
for parent fds.
* w32-io.c (_gpgme_io_spawn): Call _gpgme_io_close instead
CloseHandle for parent fds.

2002-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h [_MSC_VER]: Define ssize_t as long.

2002-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Save the result of a first
setlocale before doing another setlocale.

2002-11-21 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c: Some beautyfication.

* verify.c (_gpgme_verify_status_handler): Treat
GPGME_STATUS_UNEXPECTED like GPGME_STATUS_NODATA.
Reported by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* genkey.c: Only include <config.h> if [HAVE_CONFIG_H].
(struct

genkey_result_s): Add new member FPR.
(_gpgme_release_genkey_result): Free RESULT->fpr if set.
(genkey_status_handler): Extract the fingerprint from the status
line.
(gpgme_op_genkey): Add new argument FPR and return the fingerprint
in it.
* gpgme.h: Adjust prototype of gpgme_op_genkey.

2002-11-19 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_keylist): Add --with-fingerprint to gpg invocation
twice, to get fingerprints on subkeys. Suggested by Timo Schulz
<twoaday@freakmail.de>.
(gpg_keylist_ext): Likewise.

2002-11-05 Marcus Brinkmann <marcus@g10code.de>

* import.c (append_xml_impinfo): Use
_gpgme_data_append_string_for_xml rather than
_gpgme_data_append_string for the field content.
Submitted by Miguel Coca <e970095@zipi.fi.upm.es>.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h, engine-gpgsm.h: File removed.
* engine-backend.h: New file.
* Makefile.am (gpgsm_components): New variable, set depending on
automake conditional HAVE_GPGSM.
(libgpgme_la_SOURCES):
Add engine-backend.h, remove rungpg.h and
engine-gpgsm.h. Replace engine-gpgsm.c with ${gpgsm_components}.
(status-table.h): Depend on gpgme.h, not rungpg.h.
* conversion.c: Include <stdlib.h>.
* engine-gpgsm.c: Do not set ENABLE_GPGSM here. Include
"engine-backend.h" instead "engine-gpgsm.h". Reorder some
functions and remove all function prototypes.
(_gpgme_gpgsm_get_version): Make static and rename to ...
(gpgsm_get_version): ... this.
(_gpgme_gpgsm_check_version): Make static and rename to ...
(gpgsm_check_version): ... this.
(_gpgme_gpgsm_new): Make static. Change argument type from
GpgsmObject * to void **. Call gpgsm_release instead
_gpgme_gpgsm_release.
(_gpgme_gpgsm_op_decrypt): Make static and rename to ...
(gpgsm_check_decrypt): ... this.
(_gpgme_gpgsm_op_delete): Make static and rename to ...
(gpgsm_check_delete): ... this.
(_gpgme_gpgsm_set_recipients): Make static and rename to ...

(gpgsm_check_set_recipients): ... this.
(_gpgme_gpgsm_op_encrypt):
Make static and rename to ...
(gpgsm_encrypt): ... this.
(_gpgme_gpgsm_op_export): Make static and rename to ...
(gpgsm_export): ... this.
(_gpgme_gpgsm_op_genkey): Make static and rename to ...
(gpgsm_genkey): ... this.
(_gpgme_gpgsm_op_import): Make static and rename to ...
(gpgsm_import): ... this.
(_gpgme_gpgsm_op_keylist): Make static and rename to ...
(gpgsm_keylist): ... this.
(_gpgme_gpgsm_op_keylist_ext): Make static and rename to ...
(gpgsm_keylist_ext): ... this.
(_gpgme_gpgsm_op_sign): Make static and rename to ...
(gpgsm_sign): ... this.
(_gpgme_gpgsm_op_trustlist): Make static and rename to ...
(gpgsm_trustlist): ... this.
(_gpgme_gpgsm_op_verify): Make static and rename to ...
(gpgsm_verify): ... this.
(gpgsm_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpgsm_set_status_handler): Make static and rename to ...
(gpgsm_set_status_handler): ... this.
(_gpgme_gpgsm_set_colon_line_handler): Make static
and rename to ...
(gpgsm_set_colon_line_handler): ... this.
(_gpgme_gpgsm_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpgsm_start): Make static and rename to ...
(gpgsm_start): ... this.
(_gpgme_gpgsm_set_io_cb): Make static and rename to ...
(gpgsm_set_io_cb): ... this.
(_gpgme_gpgsm_io_event): Make static and rename to ...
(gpgsm_io_event): ... this.
(struct _gpgme_engine_ops_gpgsm): New variable.
[!ENABLE_GPGSM]: Removed.
* engine.c: Do not include <time.h>, <sys/types.h>, <string.h>,
<assert.h>, "io.h", "rungpg.h" and "engine-gpgsm.h". Include
<stdlib.h> and "engine-backend.h".
(struct engine_object_s): Rewritten.
(engine_ops): New variable.
* engine.c (_gpgme_engine_get_path, _gpgme_engine_get_version,
_gpgme_engine_check_version, _gpgme_engine_new,
_gpgme_engine_release, _gpgme_engine_set_verbosity,
_gpgme_engine_set_status_handler,
_gpgme_engine_set_command_handler,
_gpgme_engine_set_colon_line_handler, _gpgme_engine_op_decrypt,

_gpgme_engine_op_delete,
_gpgme_engine_op_edit,
_gpgme_engine_op_encrypt, _gpgme_engine_op_encrypt_sign,
_gpgme_engine_op_export, _gpgme_engine_op_genkey,
_gpgme_engine_op_import, _gpgme_engine_op_keylist,
_gpgme_engine_op_keylist_ext, _gpgme_engine_op_sign,
_gpgme_engine_op_trustlist, _gpgme_engine_op_verify,
_gpgme_engine_start, _gpgme_engine_set_io_cbs,
_gpgme_engine_io_event): Reimplement.
* engine.h: Fix a few comments and a variable name in a prototype.
* ops.h: Do not include "rungpg.h".
* passphrase.c: Include config.h only if [HAVE_CONFIG_H]. Do not
include "rungpg.h".
* recipient.c: Likewise.
* signers.c: Likewise.
* version.c: Likewise.
* rungpg.c: Likewise. Include "engine-backend.h". Reorder
functions and remove prototypes.
(_gpgme_gpg_get_version): Make static and rename to ...
(gpg_get_version): ... this.
(_gpgme_gpg_check_version): Make static and rename to ...
(gpg_check_version): ... this.
(_gpgme_gpg_new): Make static. Change argument type from
GpgObject
* to void **. Call gpg_release instead
_gpgme_gpg_release.
(_gpgme_gpg_op_decrypt): Make static and rename to ...
(gpg_check_decrypt): ... this.
(_gpgme_gpg_op_delete): Make static and rename to ...
(gpg_check_delete): ... this.
(_gpgme_gpg_set_recipients): Make static and rename to ...
(gpg_check_set_recipients): ... this.
(_gpgme_gpg_op_encrypt): Make static and rename to ...
(gpg_encrypt): ... this.
(_gpgme_gpg_op_export): Make static and rename to ...
(gpg_export): ... this.
(_gpgme_gpg_op_genkey): Make static and rename to ...
(gpg_genkey): ... this.
(_gpgme_gpg_op_import): Make static and rename to ...
(gpg_import): ... this.
(_gpgme_gpg_op_keylist): Make static and rename to ...
(gpg_keylist): ... this.
(_gpgme_gpg_op_keylist_ext): Make static and rename to ...
(gpg_keylist_ext): ... this.
(_gpgme_gpg_op_sign): Make static and rename to ...
(gpg_sign): ... this.
(_gpgme_gpg_op_trustlist): Make static and rename to ...
(gpg_trustlist): ... this.

(_gpgme_gpg_op_verify):
Make static and rename to ...
(gpg_verify): ... this.
(gpg_status_handler): Rename to ...
(status_handler): ... this.
(_gpgme_gpg_set_status_handler): Make static and rename to ...
(gpg_set_status_handler): ... this.
(_gpgme_gpg_set_colon_line_handler): Make static and rename to ...
(gpg_set_colon_line_handler): ... this.
(gpgme_gpg_add_io_cb): Rename to ...
(add_io_cb): ... this.
(_gpgme_gpg_start): Make static and rename to ...
(gpg_start): ... this.
(_gpgme_gpg_set_io_cb): Make static and rename to ...
(gpg_set_io_cb): ... this.
(_gpgme_gpg_io_event): Make static and rename to ...
(gpg_io_event): ... this.
(struct _gpgme_engine_ops_gpg): New variable.

2002-10-10 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify) [!ENABLE_GPGSM]: Add
missing argument.

2002-10-09 Marcus Brinkmann <marcus@g10code.de>

* data.h, data-user.c, data-stream.c, data-mem.c, data-fd.c,
data-compat.c: New file. Really check them in this time,
completes
2002-10-08 change.

* rungpg.h (GpgStatusHandler): Rename type to GpgmeStatusHandler
and move to ...
* types.h (GpgmeStatusHandler): ... here.
* rungpg.h (GpgColonLineHandler): Rename type to GpgmeColonLineHandler.
and move to ...
* types.h (GpgmeColonLineHandler): ... here.
* rungpg.h (GpgCommandHandler): Rename type to GpgmeCommandHandler.
and move to ...
* types.h (GpgmeCommandHandler): ... here.
* engine.h: Don't include "rungpg.h".
(_gpgme_engine_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* engine-gpgsm.h: Don't include "rungpg.h".

(_gpgme_gpgsm_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_colon_line_handler): Change type
of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
* engine-gpgsm.c: Do not include "rungpg.h".
(struct gpgsm_object_s): Change type of
status.fnc to GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler.
(gpgsm_assuan_simple_command): Change type of argument from
GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpgsm_set_status_handler): Likewise.
(_gpgme_gpgsm_set_colon_line_handler): Change type of argument from
GpgColonLineHandler to GpgmeColonLineHandler.
* rungpg.h (_gpgme_gpg_set_status_handler): Change type of
argument from GpgStatusHandler to GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of
argument from GpgColonLineHandler to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of
argument from GpgCommandHandler to GpgmeCommandHandler.
* rungpg.c (struct gpg_object_s): Change type of status.fnc to
GpgmeStatusHandler. Change type of colon.fnc to
GpgmeColonLineHandler. Change type of cmd.fnc
to
GpgmeCommandLineHandler.
(_gpgme_gpg_set_status_handler): Change type of argument FNC to
GpgmeStatusHandler.
(_gpgme_gpg_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_gpg_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.
* engine.c (_gpgme_engine_set_status_handler): Change type of
argument FNC to GpgmeStatusHandler.
(_gpgme_engine_set_colon_line_handler): Change type of argument FNC
to GpgmeColonLineHandler.
(_gpgme_engine_set_command_handler): Change type of argument FNC to
GpgmeCommandHandler.

* rungpg.h (_gpgme_gpg_enable_pipemode): Remove prototype.
* rungpg.c (struct gpg_object_s): Remove PM.
(pipemode_cb): Prototype removed.
(add_pm_data): Function removed.
(_gpgme_gpg_enable_pipemode): Likewise.
(pipemode_copy): Likewise.
(pipemode_cb): Likewise.
(add_arg): Don't check for pipemode.
(add_data): Likewise.
(_gpgme_gpg_set_status_handler): Likewise.

(_gpgme_gpg_set_colon_line_handler):
Likewise.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_spawn): Likewise.
(_gpgme_gpg_spawn): Don't set PM.active.
(_gpgme_gpg_op_verify): Remove pipemode case.
* verify.c (_gpgme_op_verify_start): Remove pipemode case.

* rungpg.h (_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_add_pm_data, _gpgme_gpg_housecleaning,
_gpgme_gpg_set_simple_line_handler): Prototype removed.
(_gpgme_gpg_set_verbosity): New prototype.
* rungpg.c (_gpgme_gpg_add_data): Make static and rename to ...
(add_data): ... this.
(_gpgme_gpg_add_pm_data): Call add_data, not _gpgme_gpg_add_data.
(_gpgme_gpg_set_command_handler): Likewise.
(_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,
_gpgme_gpg_op_verify): Likewise.
(_gpgme_gpg_add_pm_data): Rename to ...
(add_pm_data): ... this.
(_gpgme_gpg_op_verify): Call add_pm_data, not
_gpgme_gpg_add_pm_data.
(_gpgme_gpg_add_arg):
Make static and rename to ...
(add_arg): ... this.
(_gpgme_gpg_set_command_handler, _gpgme_gpg_new,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_delete,
_gpgme_append_gpg_args_from_signers, _gpgme_gpg_op_edit,
_gpgme_append_gpg_args_from_recipients, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_keylist,
_gpgme_gpg_op_keylist_ext, _gpgme_gpg_op_trustlist,
_gpgme_gpg_op_sign, _gpgme_gpg_op_verify): Use add_arg, not
_gpgme_gpg_add_arg.
(_gpgme_gpg_set_verbosity): New function.
(struct gpg_object_s): Remove member simple from colon.
(_gpgme_gpg_set_colon_line_handler): Don't initialize simple.
(_gpgme_gpg_set_simple_line_handler): Removed function.
(read_colon_line): Don't check the GPG->colon.simple.
* engine.c (_gpgme_engine_set_verbosity): Call
_gpgme_gpg_set_verbosity instead _gpgme_gpg_add_arg.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

* util.h (_gpgme_malloc,

_gpgme_realloc, _gpgme_calloc,
_gpgme_strdup, _gpgme_free): Remove prototypes.
(xtrymalloc, xtrycalloc, xtryrealloc, xtrystrdup, xfree): Remove
macros.
* util.c: File removed.
* Makefile.am (libgpgme_la_SOURCES): Remove util.h.
* conversion.c (_gpgme_decode_c_string): Use malloc instead of
xtrymalloc, realloc instead of xtryrealloc, calloc instead of
xtrycalloc, free instead of xfree.
(_gpgme_data_append_percentstring_for_xml): Likewise.
* data.c (_gpgme_data_new, _gpgme_data_release): Likewise.
* data-compat.c (gpgme_data_new_from_filepart): Likewise.
* data-mem.c (mem_write, mem_release, gpgme_data_new_from_mem,
_gpgme_data_get_as_string): Likewise.
* debug.c (debug_init): Likewise.
* decrypt.c (_gpgme_release_decrypt_result): Likewise.
* delete.c (_gpgme_release_delete_result): Likewise.
* edit.c (_gpgme_release_edit_result, _gpgme_op_edit_start):
Likewise.
* encrypt.c (_gpgme_release_encrypt_result): Likewise.
* engine.c (_gpgme_engine_get_info, _gpgme_engine_new,
_gpgme_engine_release):
Likewise.
* engine-gpgsm.c (_gpgme_gpgsm_new, _gpgme_gpgsm_release,
_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,
gpgsm_set_recipients, _gpgme_gpgsm_op_encrypt,
_gpgme_gpgsm_op_export, _gpgme_gpgsm_op_genkey,
_gpgme_gpgsm_op_import, _gpgme_gpgsm_op_keylist,
_gpgme_gpgsm_op_keylist_ext, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_verify, gpgsm_status_handler): Likewise.
* genkey.c (_gpgme_release_genkey_result): Likewise.
* gpgme.c (gpgme_new, gpgme_release): Likewise.
* import.c (_gpgme_release_import_result): Likewise.
* key.c (_gpgme_key_cache_init, _gpgme_key_cache_add, key_new,
add_subkey, gpgme_key_release, _gpgme_key_append_name): Likewise.
* keylist.c (_gpgme_release_keylist_result, keylist_colon_handler,
_gpgme_op_keylist_event_cb, gpgme_op_keylist_next): Likewise.
* ops.h (test_and_allocate_result): Likewise.
* passphrase.c (_gpgme_release_passphrase_result,
_gpgme_passphrase_status_handler,
_gpgme_passphrase_command_handler): Likewise.
*
progress.c (_gpgme_progress_status_handler): Likewise.
* recipient.c (gpgme_recipients_new, gpgme_recipients_release,
gpgme_recipients_add_name_with_validity): Likewise.
* rungpg.c (_gpgme_gpg_new, _gpgme_gpg_release,
_gpgme_gpg_add_arg, _gpgme_gpg_add_data,
_gpgme_gpg_set_colon_line_handler, free_argv, free_fd_data_map,

build_argv, _gpgme_gpg_spawn, read_status, read_colon_line):
Likewise.
* sign.c (_gpgme_release_sign_result): Likewise.
* signers.c (_gpgme_signers_add): Likewise.
* trustlist.c (trust_item_new, trustlist_colon_handler,
_gpgme_op_trustlist_event_cb, gpgme_op_trustlist_next,
gpgme_trustitem_release): Likewise.
* verify.c (_gpgme_release_verify_result, finish_sig): Likewise.
* version.c (gpgme_get_engine_info, _gpgme_get_program_version):
Likewise.
* w32-io.c (create_reader, create_writer, destroy_reader,
destroy_writer, build_commandline, _gpgme_io_spawn): Likewise.
* w32-sema.c (critsect_init, _gpgme_sema_cs_destroy): Likewise.
* w32-util.c (read_w32_registry_string):
Likewise.
* wait.c (_gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_wait_event_cb, _gpgme_add_io_cb, _gpgme_remove_io_cb)
* data-compat.c: Include <stdlib.h>.

2002-10-08 Marcus Brinkmann <marcus@g10code.de>

New data object component:

* gpgme.h (GpgmeDataReadCb, GpgmeDataWriteCb, GpgmeDataSeekCb,
GpgmeDataReleaseCb): New types.
(struct GpgmeDataCbs): New structure.
(gpgme_data_read): Changed prototype to match that of read() closely.
(gpgme_data_write): Similar for write().
(gpgme_data_seek, gpgme_data_new_from_cbs, gpgme_data_new_from_fd,
gpgme_data_new_from_stream): New prototypes.
(gpgme_data_get_type, gpgme_check_engine): Prototype removed.

* Makefile.am (libgpgme_la_SOURCES): Add data.h, data-fd.c,
data-stream.c, data-mem.c, data-user.c and data-compat.c.
* data.c: Reimplemented from scratch.
* (data-compat.c, data-fd.c, data.h, data-mem.c, data-stream.c,
data-user.c): New file.
* context.h (struct gpgme_data_s): Removed.
* conversion.c:
Include <errno.h> and <sys/types.h>.
(_gpgme_data_append): New function.
* data.c (_gpgme_data_append_string): Move to ...
* conversion.c (_gpgme_data_append_string): ... here.
* data.c (_gpgme_data_append_for_xml): Move to ...
* conversion.c (_gpgme_data_append_for_xml): ... here.
* data.c (_gpgme_data_append_string_for_xml): Move to ...
* conversion.c (_gpgme_data_append_string_for_xml): ... here.
* data.c (_gpgme_data_append_percentstring_for_xml): Move to ...

* conversion.c (_gpgme_data_append_percentstring_for_xml): ... here.

* ops.h (_gpgme_data_get_mode, _gpgme_data_set_mode): Prototype
removed.
* types.h (GpgmeDataMode): Type removed.

* decrypt.c (_gpgme_decrypt_start): Don't check data type or mode.
* edit.c (_gpgme_op_edit_start): Likewise.
* encrypt.c (_gpgme_op_encrypt_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* encrypt-sign.c (_gpgme_op_encrypt_sign_start): Likewise.
* export.c (_gpgme_op_export_start): Likewise.
*
genkey.c (_gpgme_op_genkey_start): Likewise.
* import.c (_gpgme_op_import_start): Likewise.
* sign.c (_gpgme_op_sign_start): Likewise.
* verify.c (_gpgme_op_verify_start): Likewise.

* encrypt.c (gpgme_op_encrypt): Remove hack that returns invalid
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.
* encrypt-sign.c (gpgme_op_encrypt_sign): Remove hack that returns
no recipient if no data was returned.

* engine.c (_gpgme_engine_op_verify): Add new argument to
differentiate detached from normal signatures.
* engine.h (_gpgme_engine_op_verify): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise. Don't check
mode of data argument.
* engine-gpgsm.h (_gpgme_gpgsm_op_verify): Likewise for prototype.
* gpgme.h (gpgme_op_verify_start): Likewise for prototype.
(gpgme_op_verify): Likewise for prototype.
* rungpg.c (_gpgme_gpg_op_verify): Likewise.
* rungpg.h
(_gpgme_gpg_op_verify): Likewise for prototype.
* verify.c (_gpgme_op_verify_start): Likewise.
(gpgme_op_verify_start): Likewise.
(gpgme_op_verify): Likewise.

* rungpg.c (struct arg_and_data_s): New member INBOUND to hold
direction of data object.
(_gpgme_gpg_add_data): Add new argument INBOUND. Use it to
determine direction of data object.
(_gpgme_gpg_add_pm_data, _gpgme_gpg_set_command_handler,
_gpgme_gpg_op_decrypt, _gpgme_gpg_op_edit, _gpgme_gpg_op_encrypt,
_gpgme_gpg_op_encrypt_sign, _gpgme_gpg_op_export,
_gpgme_gpg_op_genkey, _gpgme_gpg_op_import, _gpgme_gpg_op_sign,

_gpgme_gpg_op_verify): Add new argument to _gpgme_gpg_add_data
invocation.
(build_argv): Use new member INBOUND to determine direction of
file descriptor. Don't check the data type.
* rungpg.h (_gpgme_gpg_add_data): Add new argument to prototype.

* gpgme.c (gpgme_get_op_info): Don't call
_gpgme_data_get_as_string if CTX->op_info is NULL.

* version.c (gpgme_check_engine): Function removed.

2002-09-30
Werner Koch <wk@gnupg.org>

* keylist.c (keylist_colon_handler): Take care when printing a
NULL with the DEBUG.

* engine-gpgsm.c (struct gpgsm_object_s): New member ANY.
(gpgsm_status_handler): Run the colon function to indicate EOF.
(_gpgme_gpgsm_set_colon_line_handler): Better reset ANY here.

2002-09-28 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_hextobyte): Prevent superfluous
multiplication with base. Reported by Stphane Corthsy.

* keylist.c (gpgme_op_keylist_ext_start): Use private asynchronous
operation type in invocation of _gpgme_op_reset.

2002-09-20 Werner Koch <wk@gnupg.org>

* ath.c: Include sys/time.h if sys/select.h is not available.

2002-09-13 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (keylist_status_handler): Do not call finish_key() here.
(gpgme_op_keylist_ext_start): Set CTX->tmp_key to NULL.

2002-09-03 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Remove @LTLIBOBJS@ as we link
them
into gpgme unconditionally.
(libgpgme_la_LIBADD): Change @LIBOBJS@ into @LTLIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (assuan_libobjs): Use @LTLIBOBJS@ instead @LIBOBJS@.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* debug.c (_gpgme_debug_add): Test *LINE, not LINE.
(_gpgme_debug_end): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_select): Don't use a non-constant struct
initializer.
* version.c (_gpgme_get_program_version): Likewise.
Reported by Dr. Stefan Dalibor <Dr.Stefan.Dalibor@bfa.de>.

2002-09-02 Marcus Brinkmann <marcus@g10code.de>

* conversion.c (_gpgme_decode_c_string): Set DESTP before
modifying DEST.

* conversion.c (_gpgme_decode_c_string): Fix off by one error in
last change.
* rungpg.c (_gpgme_append_gpg_args_from_signers): Move before
_gpgme_op_edit so its prototype is known early on.

* conversion.c: New
file.
* util.h: Add prototypes for _gpgme_decode_c_string and
_gpgme_hextobyte.
* keylist.c (keylist_colon_handler): Call _gpgme_decode_c_string
on issuer name.
* Makefile.am (libgpgme_la_SOURCES): Add conversion.c
* key.c (_gpgme_key_append_name): Replace calls to hextobyte by
calls to _gpgme_hextobyte.
(hash_key): Likewise.

2002-09-01 Marcus Brinkmann <marcus@g10code.de>

* op-support.c (_gpgme_op_reset): Set CTX->pending after calling
_gpgme_engine_release, as this will reset pending to zero in the
event done callback on cancelled operations.

2002-08-30 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Add args from signers.
Suggested by Miguel Coca <e970095@zipi.fi.upm.es>.

* rungpg.c (_gpgme_gpg_op_edit): Add bogus ctx argument.
* rungpg.h: Also to prototype.

* engine.c (_gpgme_engine_op_edit): Likewise.
* engine.h: Likewise.
* edit.c (_gpgme_op_edit_start): Likewise.

2002-08-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign):
Implement signer
selection.
* vasprintf.c (va_copy): Define macro if not yet defined.

2002-08-29 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Reset
CTX->result.passphrase->no_passphrase if passphrase is given (good
or bad). Submitted by Jean DIRAISON <jean.diraison@free.fr>.

2002-08-28 Marcus Brinkmann <marcus@g10code.de>

* posix-io.c (_gpgme_io_spawn): Use a double-fork approach.
Return 0 on success, -1 on error.
* version.c (_gpgme_get_program_version): Don't wait for the child.
* engine.c (_gpgme_engine_housecleaning): Function removed.
(do_reaping): Likewise.
(_gpgme_engine_add_child_to_reap_list): Likewise.
(struct reap_s): Removed.
(reap_list): Likewise.
(reap_list_lock): Likewise.
* engine.h (_gpgme_engine_io_event): Remove prototypes for
_gpgme_engine_housecleaning and
_gpgme_engine_add_child_to_reap_list.
* rungpg.c (_gpgme_gpg_release): Don't add child to reap list.
(struct gpg_object_s): Remove
PID member.
(_gpgme_gpg_new): Don't initialize GPG->pid.
(_gpgme_gpg_spawn): Don't set GPG->pid.
* wait.c (run_idle): Removed.
(gpgme_wait): Run idle_function directly.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* encrypt-sign.c (encrypt_sign_status_handler): Remove dead
variables encrypt_info and encrypt_info_len.
* trustlist.c (gpgme_op_trustlist_start): Set colon line handler.
* posix-sema.c (sema_fatal): Remove function.
All these reported by Stphane Corthsy.

2002-08-23 Werner Koch <wk@gnupg.org>

* gpgme-config.in: Made --prefix work for --libs.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Update list of symbols that get a prefix: Rename the
ath_mutex_*_available symbols to ath_*_available.

2002-08-21 Marcus Brinkmann <marcus@g10code.de>

* stpcpy.c: New file from gnulib.
* Makefile.am (assuan_libobjs): Remove jnlib.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add prototype for gpgme_op_import_ext.
* import.c
(struct import_result_s): New member `nr_considered'.
Rename `any_imported' to `nr_imported'.
(import_status_handler): Increment nr_imported. Set nr_considered
if appropriate.
(gpgme_op_import_ext): New function.
(gpgme_op_import): Implement in terms of gpgme_op_import_ext.

2002-08-20 Werner Koch <wk@gnupg.org>

* gpgme.m4: Replaced with a new and faster version. This does not
anymore try to build test programs. If we really need test
programs, we should add an option to gpgme-config to do so.

* vasprintf.c (int_vasprintf): Hack to handle NULL passed for %s.

2002-08-20 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_set_op_info): Append data on subsequent calls.
* encrypt-sign.c (encrypt_sign_status_handler): Remove op_info
handling.

2002-08-19 Werner Koch <wk@gnupg.org>

* decrypt.c (is_token,skip_token): Duplicated from verify.c
(gpgme_op_decrypt): Hack to properly return Decryption_Failed..
(_gpgme_decrypt_status_handler): Create an operation info.

2002-08-14
 Werner Koch <wk@gnupg.org>

* key.h (struct certsig_s): New. Use it in gpgme_key_s.

* key.c (gpgme_key_release): Release it. We need to add more code
of course.
(_gpgme_key_append_name): Use memset to initialize the struct.
* gpgme.h (GPGME_KEYLIST_MODE_SIGS): New.
* rungpg.c (_gpgme_gpg_op_keylist): Include sigs in listing depending
non the list mode.

* key.c (gpgme_key_get_string_attr): Use GPGME_ATTR_TYPE to return
information about the key type (PGP or X.509).
(gpgme_key_get_ulong_attr): Likewise.

* keylist.c (keylist_colon_handler): Include 1 in the check for
valid algorithms so that RSA is usable. Store the issuer name and
serial number also for "crs" records. Parse the expire date for
subkeys.
(set_userid_flags): Put them onto the last appended key.

2002-07-29 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_edit): Use --with-colons.

2002-07-28 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_read): For GPGME_DATA_TYPE_NONE,
return EOF
instead an error.

The following changes make it possible to flush an inbound data
pipe before invoking a command handler:

* posix-io.c (_gpgme_io_select): Accept new argument NONBLOCK to
_gpgme_io_select. Set timeout of 0 if this is set.
* w32-io.c (_gpgme_io_select): Likewise.
* io.h: Add new argument NONBLOCK to _gpgme_io_select prototype.
* wait.c (do_select): Add new argument to _gpgme_io_select
invocation.
* rungpg.h (_gpgme_gpg_set_command_handler): Add new argument
linked_data to prototype.
* engine.h (_gpgme_engine_set_command_handler): Likewise.
* engine.c (_gpgme_engine_set_command_handler): Likewise.
* passphrase.c (_gpgme_passphrase_start): Pass NULL as linked_data
argument to _gpgme_engine_set_command_handler.
* rungpg.c (struct gpg_object_s): New members linked_data and
linked_idx in CMD.
(_gpgme_gpg_new): Initialize those new members.
(_gpgme_gpg_set_command_handler): Accept new argument linked_data.
(build_argv): Handle linked_data

in the same hack as cb_data.
(read_status): If linked_data is in use, flush the pipe before
activating the command handler.
* gpgme.h: Add prototypes for gpgme_op_edit_start and
gpgme_op_edit.

The next changes export the status codes to the user:

* decrypt.c (_gpgme_decrypt_status_handler): Likewise, also prefix
all STATUS_ with GPGME_.
* delete.c (delete_status_handler): Likewise.
* decrypt-verify.c (decrypt_verify_status_handler): Likewise.
* encrypt.c (_gpgme_encrypt_status_handler): Likewise.
(_gpgme_encrypt_sym_status_handler): Likewise.
* encrypt-sign.c (encrypt_sign_status_handler): Likewise.
* engine-gpgsm.c (parse_status): Likewise.
(gpgsm_status_handler): Likewise.
(gpgsm_set_recipients): Likewise.
* export.c (export_status_handler): Likewise.
* genkey.c (genkey_status_handler): Likewise.
* import.c (append_xml_impinfo): Likewise.
(import_status_handler): Likewise.
* keylist.c (keylist_status_handler): Likewise.
* passphrase.c (_gpgme_passphrase_status_handler):
Likewise.
(command_handler): Likewise.
* progress.c (_gpgme_progress_status_handler): Likewise.
* sign.c (_gpgme_sign_status_handler): Likewise.
* trustlist.c (trustlist_status_handler): Likewise.
* verify.c (_gpgme_verify_status_handler): Likewise.
* gpgme.h (GpgmeEditCb): New type.
* rungpg.h (GpgStatusCode): Rename and move to ...
* gpgme.h (GpgmeStatusCode): ... this and here.
* Makefile.am (status-table.h): Run mkstatus on gpgme.h, not rungpg.h.
* mkstatus: Prefix STATUS with GPGME_.
* rungpg.h (GpgStatusHandler, GpgCommandHandler): Change type
accordingly.
* ops.h (_gpgme_verify_status_handler,
_gpgme_decrypt_status_handler, _gpgme_sign_status_handler,
_gpgme_encrypt_status_handler, _gpgme_passphrase_status_handler,
_gpgme_progress_status_handler): Likewise.
* rungpg.c (struct gpg_object_s): Likewise for CMD.code.

These changes add an edit operation to GPGME:

* context.h (struct gpgme_context_s): New member RESULT.edit. *
ops.h: Add prototype

for _gpgme_release_edit_result and
_gpgme_passphrase_command_handler.
* passphrase.c (command_handler): Make non-static and rename to ...
(_gpgme_passphrase_command_handler): ... this.
(_gpgme_passphrase_start): Use new name for command handler.
* types.h: Add EditResult type.
* gpgme.c (_gpgme_release_result): Release EDIT result.
* edit.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add edit.c.
(libgpgme_la_LDADD): Rename to libgpgme_la_LIBADD, and include
assuan_libobjs.
(assuan_libobjs): New variable, set this instead
libgpgme_la_LIBADD.
* engine.h (_gpgme_engine_op_edit): New prototype.
* engine.c (_gpgme_engine_op_edit): New function.
* rungpg.h (_gpgme_gpg_op_edit): New prototype.
* rungpg.c (_gpgme_gpg_op_edit): New function.

2002-07-27 Marcus Brinkmann <marcus@g10code.de>

* delete.c (delete_problem): New case ambiguous specification.
(delete_status_handler): Handle new case (poorly).

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c
(_gpgme_gpgsm_op_delete): Implement this.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_LDADD): Add @LIBOBJS@ for vasprintf and
fopencookie.
* vasprintf.c: Update to more recent libiberty version.
* debug.h: Replace #elsif with #elif.

Submitted by Stphane Corthsy:
* util.h (vasprintf): Correct prototype.
* encrypt-sign.c: Include <stddef.h>.
(encrypt_sign_status_handler): Change type of ENCRYPT_INFO_LEN to
size_t.
* ath-pthread.c: Include <stdlib.h>, not <malloc.h>.
* ath-pth.c: Likewise.

2002-07-25 Marcus Brinkmann <marcus@g10code.de>

* wait.c (fdt_global): Make static. Reported by Stphane
Corthsy.

* rungpg.c (_gpgme_gpg_op_keylist_ext): Skip empty string
patterns. Reported by Stphane Corthsy.

* key.c (gpgme_key_get_as_xml): Add OTRUST attribute. Requested
by Stphane Corthsy.
(gpgme_key_get_string_attr): Add GPGME_ATTR_SIG_SUMMARY case to
silence gcc warning.

* rungpg.c (_gpgme_gpg_new): Always set utf8 as charset.

2002-07-03
 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_io_cbs): Deal with CTX being NULL.

* gpgme.c (_gpgme_op_event_cb_user): New function.
* op-support.c (_gpgme_op_reset): Support a new mode of operation
for private or user event loop. Use new user event callback
wrapper.
* trustlist.c (gpgme_op_trustlist_start): Use this new mode.
* keylist.c (gpgme_op_keylist_start): Likewise.

* rungpg.c (_gpgme_gpg_io_event): New function.
* rungpg.h (_gpgme_gpg_io_event): New prototype.
* engine-gpgsm.c (_gpgme_gpg_io_event): New function.
* engine-gpgsm.h (_gpgme_gpgsm_io_event): New prototype.
* engine.c (_gpgme_engine_io_event): New function.
* engine.h (_gpgme_engine_io_event): New prototype.
* keylist.c (finish_key): Call _gpgme_engine_io_event, and move
the real work for the default IO callback routines to ...
(_gpgme_op_keylist_event_cb): ... here. New function.
* trustlist.c (trustlist_colon_handler): Signal
GPGME_EVENT_NEXT_TRUSTITEM. Move queue
manipulation to ...
(_gpgme_op_trustlist_event_cb): ... here. New function.
* gpgme.c (_gpgme_op_event_cb): Call _gpgme_op_keylist_event_cb
and _gpgme_op_trustlist_event_cb when appropriate.
* ops.h (_gpgme_op_keylist_event_cb): New prototype.
(_gpgme_op_trustlist_event_cb): Likewise.
* op-support.c (_gpgme_op_reset): Add comment why we don't use the
user provided event handler directly.
* gpgme.h (GpgmeRegisterIOCb): Return GpgmeError value, and TAG in
a pointer argument.
* wait.c (_gpgme_add_io_cb): Likewise.
* wait.h (_gpgme_add_io_cb): Likewise for prototype.
* rungpg.c (_gpgme_gpg_add_io_cb): Call IO_CBS->add with new
argument. Fix up error handling.
* engine-gpgsm.c (_gpgme_gpgsm_add_io_cb): Call IO_CBS->add with

new argument, fix up error handling.

2002-07-03 Werner Koch <wk@gnupg.org>

* encrypt.c (status_handler_finish): New.
(_gpgme_encrypt_status_handler): Moved some code out to the new
function and call this function also in case we get into the
status
handler with an error which might happen due to a kludge in
engine-gpgsm.c

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg use synchronous mode).

2002-06-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Fix documentation of key attribute retrieval functions.

2002-06-28 Marcus Brinkmann <marcus@g10code.de>

* ops.h (_gpgme_wait_on_condition): Remove HANG argument from
prototype and change return type to GpgmeError.
(_gpgme_wait_one): New prototype.
* wait.c (gpgme_wait): Replace with the meat from
_gpgme_wait_on_condition here, and remove the support for
conditions.
(_gpgme_wait_on_condition): Remove HANG argument from prototype
and change return type to GpgmeError. Replace with meat from
_gpgme_wait_one and add support for conditions.
(_gpgme_wait_one): Just call _gpgme_wait_on_condition without
condition.
* keylist.c (gpgme_op_keylist_ext_start): Always use our own FD
table (eg
use synchronous mode).
(gpgme_op_keylist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.
* trustlist.c (gpgme_op_trustlist_start): Always use our own FD
table (eg use synchronous mode).
(gpgme_op_trustlist_next): Remove HANG argument from
_gpgme_wait_on_condition. Check its return value.

2002-06-26 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (map_assuan_error): Map No_Data_Available to EOF.

* import.c (append_xml_impinfo): Kludge to print fingerprint

instead of keyid for use with gpgsm.
(import_status_handler): Set a flag to know whether any import
occurred.
(gpgme_op_import): Return -1 if no certificate ewas imported.

2002-06-25 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_io_cbs) [ENABLE_GPGSM]: Fixed
function arguments.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Only export the keys
listed in RECP.
* export.c (gpgme_op_export): If no data was returned,
return
GPGME_No_Recipients.

2002-06-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_export): Implement.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return ERR.
(parse_status): New function.
(gpgsm_status_handler): Use parse_status.
(gpgsm_assuan_simple_command): Accept new arguments STATUS_FNC and
STATUS_FNC_VALUE and process status messages.
(gpgsm_set_recipients): Pass new arguments to gpgsm_assuan_simple_command.
(gpgsm_set_fd): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.

2002-06-21 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_remove_io_cb): Unlock FDT->lock.

2002-06-20 Werner Koch <wk@gnupg.org>

* rungpg.c (build_argv): Ignore GPG_AGENT_INFO if set but empty.

* verify.c (calc_sig_summary): Set bad policy for wrong key usage.
(skip_token): New.
(_gpgme_verify_status_handler): Watch out
for wrong key usage.
(gpgme_get_sig_string_attr): Hack to return info on the key

usage. Does now make use of the former RESERVED argument which
has been renamed to WHATIDX.
(gpgme_get_sig_ulong_attr): Renamed RESERVED to WHATIDX.

2002-06-14 Marcus Brinkmann <marcus@g10code.de>

* wait.c (do_select): Return -1 on error, and 0 if nothing to run.
(_gpgme_wait_one): Only set HANG to zero if do_select returned an
error, or there are no more file descriptors to wait on.
(_gpgme_wait_on_condition): Ignore return value from do_select for
now.

2002-06-13 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify): Make sure that we never access an
uninitialized result structure.

2002-06-12 Werner Koch <wk@gnupg.org>

* keylist.c (struct keylist_result_s): New.
(_gpgme_release_keylist_result): Release it here
(keylist_status_handler): Handle truncated.
(append_xml_keylistinfo): New.
* gpgme.c (_gpgme_release_result): and use it here.
* types.h: Declare the new type here.
*
context.h (struct gpgme_context_s): Use it here.

2002-06-11 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Close status_cb.fd.
(_gpgme_gpgsm_new): Duplicate status file descriptor, so we can
use our own close notification mechanism without interfering with
assuan.

2002-06-11 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_SIG_SUMMARY and the GPGME_SIGSUM_
constants.
* verify.c (calc_sig_summary): New.
(gpgme_get_sig_ulong_attr): And use it here.

2002-06-10 Werner Koch <wk@gnupg.org>

* rungpg.h: Add new status codes TRUNCATED and ERROR.
* verify.c (is_token, copy_token): New.
(_gpgme_verify_status_handler): Use copy_token, handle the new
ERROR status and store the errorcode used withgpgsm and trust

status codes.
* gpgme.h: New attribute ERRTOK.
* key.c (gpgme_key_get_string_attr): Add dummy case for it.
(gpgme_get_sig_string_attr): Use it here to return the last error.

2002-06-10 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c (_gpgme_gpgsm_start): Move the code that sets the
close notification for the status fd to ...
(_gpgme_gpgsm_new): ... here.
* wait.h: Include "sema.h". Remove prototypes of
_gpgme_remove_proc_from_wait_queue and
_gpgme_register_pipe_handler. Add prototypes of
_gpgme_fd_table_init, _gpgme_fd_table_deinit, _gpgme_fd_table_put,
_gpgme_add_io_cb, _gpgme_remove_io_cb, _gpgme_wait_event_cb and
_gpgme_wait_one..
* wait.c: Remove global variables PROC_QUEUE, PROC_QUEUE_LOCK,
FD_TABLE_SIZE, FD_TABLE, FD_TABLE_LOCK. New global variables
FDT_GLOBAL, CTX_DONE_LIST, CTX_DONE_LIST_SIZE,
CTX_DONE_LIST_LENGTH and CTX_DONE_LIST_LOCK. Remove struct
proc_s. Replace struct wait_item_s.
(_gpgme_fd_table_init): New function.
(_gpgme_fd_table_deinit): Likewise.
(_gpgme_fd_table_put): Likewise.
(set_process_done): Remove function.
(do_select): Take argument FDT. Use that to decide which fds to
select on.
(_gpgme_remove_proc_from_wait_queue): Remove function.
(_gpgme_wait_event_cb):
New function.
(_gpgme_wait_one): Likewise.
(_gpgme_register_pipe_hanldler): Remove function.
(_gpgme_add_io_cb): New function.
(_gpgme_remove_io_cb): Likewise.
(_gpgme_freeze_fd): Remove function.
(_gpgme_thaw_fd): Remove function.
* rungpg.c (struct fd_data_map_s): Add new member TAG.
(struct gpg_object_s): Likewise for STATUS and COLON. Add member
IDX to CMD. Add new member IO_CBS.
(close_notify_handler): New variables POSSIBLY_DONE and NOT_DONE.
For each I/O callback, check if it should be unregistered. If all
callbacks have been unregistered, trigger GPGME_EVENT_DONE.
Remove member RUNNING.
(_gpgme_gpg_new): Initialize new members.
(_gpgme_gpg_release): Check PID not RUNNING. Don't call
_gpgme_remove_proc_from_wait_queue. Close GPG->CMD.FD if set.
(build_argv): Store away the index instead the file descriptor for

CMD.
(_gpgme_gpg_add_io_cb): New function.
(_gpgme_gpg_spawn): Use _gpgme_gpg_add_io_cb to register IO
callbacks.
(gpg_status_handler):
Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(read_status): Use _gpgme_gpg_add_io_cb instead _gpgme_thaw_fd.
Use IO_CBS->remove instead _gpgme_freeze_fd.
(gpg_colon_line_handler): Change return type to void, remove PID
argument, close filedescriptor if EOF or error occurs.
(command_cb): Use IO_CBS->remove instead _gpgme_freeze_fd.
(_gpgme_gpg_set_io_cbs): New function.
* rungpg.h (_gpgme_gpg_set_io_cbs): Prototype for
_gpgme_gpg_set_io_cbs.
* gpgme.h (GpgmeIOCb): New type.
(GpgmeRegisterIOCb): Likewise.
(GpgmeRemoveIOCb): Likewise.
(GpgmeEventIO): Likewise.
(GpgmeEventIOCb): Likewise.
(struct GpgmeIOCbs): New structure to hold I/O callbacks.
(gpgme_set_op_io_cbs): New prototype.
(gpgme_get_op_io_cbs): Likewise.
* ops.h: New prototype for _gpgme_op_event_cb. Remove prototypes
for _gpgme_freeze_fd and _gpgme_thaw_fd. Remove PID argument from
_gpgme_data_inbound_handler and _gpgme_data_outbound_handler
prototype.
Add prototype for _gpgme_op_reset.
Add synchronous argument to _gpgme_decrypt_start prototype.
* io.h: Beautification.
* gpgme.c: Include "wait.h".
(gpgme_new): Initialize FDT.
(gpgme_set_io_cbs): New function.
(gpgme_get_io_cbs): Likewise.
(_gpgme_op_event_cb): Likewise.
* data.c (_gpgme_data_inbound_handler): Change return type to
void. Drop PID argument. Close FD on error and EOF.
(write_mem_data): Don't close FD here ...
(write_cb_data): ... or here ...
(_gpgme_data_outbound_handler): ... but here. Change return type
to void. Drop PID argument.
* context.h: Include "wait.h".
(struct gpgme_context_s): New members FDT and IO_CBS.
* op-support.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add op-support.c.
* ops.h: Add prototype for _gpgme_op_reset().
* decrypt.c (_gpgme_decrypt_start): New argument SYNCHRONOUS. Use
_gpgme_op_reset.

(gpgme_op_decrypt_start): Add synchronous argument.
(gpgme_op_decrypt): Likewise. Use _gpgme_wait_one instead
gpgme_wait.
*
delete.c (gpgme_op_delete_start): Rename to ...
(_gpgme_op_delete_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_delete_start): Just a wrapper around
_gpgme_op_delete_start now.
(gpgme_op_delete): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt.c: Include "wait.h".
(ggpgme_op_encrypt_start): Rename to ...
(_gpgme_op_encrypt_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_start): Just a wrapper around
_gpgme_op_encrypt_start now.
(gpgme_op_encrypt): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* encrypt_sign.c (gpgme_op_encrypt_sign_start): Rename to ...
(_gpgme_op_encrypt_sign_start): ... this. New argument
SYNCHRONOUS. Use _gpgme_op_reset. Make function static.
(gpgme_op_encrypt_sign_start): Just a wrapper around
_gpgme_op_encrypt_sign_start now.
(gpgme_op_encrypt_sign): Add synchronous argument.
Use
_gpgme_wait_one instead gpgme_wait.
* export.c (gpgme_op_export_start): Rename to ...
(_gpgme_op_export_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_export_start): Just a wrapper around
_gpgme_op_export_start now.
(gpgme_op_export): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* genkey.c (gpgme_op_genkey_start): Rename to ...
(_gpgme_op_genkey_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_genkey_start): Just a wrapper around
_gpgme_op_genkey_start now.
(gpgme_op_genkey): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* import.c (gpgme_op_import_start): Rename to ...
(_gpgme_op_import_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_import_start): Just a wrapper around
_gpgme_op_import_start now.
(gpgme_op_import): Add synchronous argument. Use _gpgme_wait_one
instead

gpgme_wait.
* keylist.c (gpgme_op_keylist_start): Use _gpgme_op_reset.
(gpgme_op_keylist_ext_start): Likewise.
* sign.c (gpgme_op_sign_start): Rename to ...
(_gpgme_op_sign_start): ... this. New argument SYNCHRONOUS. Use
_gpgme_op_reset. Make function static.
(gpgme_op_sign_start): Just a wrapper around _gpgme_op_sign_start
now.
(gpgme_op_sign): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* trustlist.c (gpgme_op_trustlist_start): Use _gpgme_op_reset.
* verify.c (gpgme_op_verify_start): Rename to ...
(_gpgme_op_verify_start): ... this. New argument SYNCHRONOUS.
Use _gpgme_op_reset. Make function static.
(gpgme_op_verify_start): Just a wrapper around
_gpgme_op_verify_start now.
(gpgme_op_verify): Add synchronous argument. Use _gpgme_wait_one
instead gpgme_wait.
* engine-gpgsm.c (iocb_data_t): New type.
(struct gpgsm_object_s): New member status_cb. Replace input_fd
and input_data with input_cb. Replace output_fd and output_data
with
output_cb. Replace message_fd and message_data with
message_cb. New member io_cbs.
(_gpgme_gpgsm_new): Initialize all new members (and drop the old
ones).
(close_notify_handler): New variable POSSIBLY_DONE. For each I/O
callback, check if it should be unregistered. If all callbacks
have been unregistered, trigger GPGME_EVENT_DONE.
(_gpgme_gpgsm_release): Remove variable PID. Use new variable
names to close the file descriptors.
(_gpgme_gpgsm_op_decrypt): Use new variable names,
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_keylist_ext): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise.
(gpgsm_status_handler): Drop argument PID. Change return type to
void. Close status pipe before returning because of EOF or error.
(_gpgme_gpgsm_add_io_cb): New function.
(_gpgme_gpgsm_start): Use _gpgme_gpgsm_add_io_cb to register
callback
function.
(_gpgme_gpgsm_set_io_cbs): New function.
* engine-gpgsm.h: New prototype for _gpgme_gpgsm_set_io_cbs.
* engine.c (_gpgme_engine_set_io_cbs): New function.

* engine.h: New prototype for _gpgme_engine_set_io_cbs.

2002-06-04 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_SOURCES): Remove mutex.h.

2002-06-03 Marcus Brinkmann <marcus@g10code.de>

* key.c: Include <ctype.h>.
(_gpgme_key_append_name): Skip one more char when
processing escaped char. Submitted by Marc Mutz <mutz@kde.org>.
Handle hexadecimal encodings. Also reported by Marc. Thanks!

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* ath.h: Enable the _gpgme_ prefix. Fix all those prefix macros.
* posix-sema.c: Use that prefix here.
* posix-io.c: Include "ath.h".
(_gpgme_io_read): Use _gpgme_ath_read instead read.
(_gpgme_io_write): Use _gpgme_ath_write instead write.
(_gpgme_io_waitpid): Use _gpgme_ath_waitpid instead waitpid.
(_gpgme_io_select): Use _gpgme_ath_select
instead select.

2002-06-02 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (ath_components): New variable.
(ath_components_pthread): Likewise.
(ath_components_pth): Likewise.
(system_components): Add ath_componentes.

* ath.h: New file.
* ath.c: Likewise.
* ath-pthread.c: Likewise.
* ath-pth.c: Likewise.
* posix-sema.c (_gpgme_sema_cs_enter): Rework to use the ATH
interface.
* mutex.h: Remove file.

2002-05-30 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_string_attr): Return NULL when asking for
an issuer with IDX > 0. We don't support altIssuerNames for now.

2002-05-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Aehmm, added
missing variable definition. Oohh - Marcus was faster.

2002-05-22 Marcus Brinkmann <marcus@gnu.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): Fix last change.

2002-05-21 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist)
(_gpgme_gpgsm_op_keylist_ext):
Pass the keylist mode to gpgsm.

2002-05-10 Werner Koch <wk@gnupg.org>

* key.h (gpgme_key_s): Add OTRUST.
* keylist.c (set_ownertrust): New.
(keylist_colon_handler): Get the ownertrust value
* key.c (gpgme_key_get_string_attr,gpgme_key_get_ulong_attr):
Return that value.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* w32-util.c: New static variable GET_PATH_LOCK.
(_gpgme_get_gpg_path): Remove superfluous NULL initializer.
Take lock while determining path.
(_gpgme_get_gpgsm_path): Likewise.
* version.c (do_subsystem_inits): Set DONE to 1 after
initialization.
(gpgme_get_engine_info): New variable ENGINE_INFO_LOCK. Take lock
while determining engine info.
* rungpg.c (_gpgme_gpg_get_version): New variable
GPG_VERSION_LOCK. Take the lock while determining the program
version.
* posix-io.c: Include "sema.h".
(_gpgme_io_spawn): New variable FIXED_SIGNALS_LOCK. Take the lock
while fixing the signals.
(_gpgme_io_select): Make READFDS and WRITEFDS non-static.
*
key.c: Include "sema.h". New globals KEY_CACHE_LOCK and
KEY_REF_LOCK.
(capabilities_to_string): Make STRINGS very const.
(_gpgme_key_cache_add): Lock the key cache.
(_gpgme_key_cache_get): Likewise.
(gpgme_key_ref, gpgme_key_release): Lock the key_ref_lock.
* import.c (append_xml_impinfo): Make IMPORTED_FIELDS and
IMPORT_RES_FIELDS very const. Make FIELD and FIELD_NAME a little
const.
* engine.c (_gpgme_engine_get_info): New variable
ENGINE_INFO_LOCK. Take lock while determining engine info.

* engine-gpgsm.c: Include "sema.h".
(_gpgme_gpgsm_get_version): New variable GPGSM_VERSION_LOCK. Take
lock while getting program version.

2002-05-08 Marcus Brinkmann <marcus@g10code.de>

* debug.h: New file.
* Makefile.am (libgpgme_la_SOURCES): Add debug.h.
* util.h: Removed all prototypes and declarations related to
debugging. Include "debug.h".

* debug.c (debug_level): Comment variable and remove superfluous
zero initializer.
(errfp): Likewise.
(_gpgme_debug_enabled):
Function removed.
(struct debug_control_s): Definition removed.
(_gpgme_debug_level): Function removed.
(_gpgme_debug_begin): Rewritten to use vasprintf. Accept a
pritnf-style format specification and a variable number of
arguments.
(_gpgme_debug_add): Rewritten using vasprintf. Expect that format
starts out with "%s" for simplicity.
(_gpgme_debug_end): Rewritten using vasprintf. Do not accept a
TEXT argument anymore.

* posix-io.c (_gpgme_io_select): Use new level argument for
DEBUG_BEGIN instead explicit if construct.

* debug.c (debug_init): Remove superfluous zero initializer,
remove volatile flag of INITIALIZED. Do not use the
double-checked locking algorithm, it is fundamentally flawed and
will empty your fridge (on a more serious note, despite the
volatile flag it doesn't give you the guarantee you would expect,
for example on a DEC Alpha or an SMP machine. The volatile only
serializes accesses to the volatile variable, but not to the other
variables).

2002-05-03
Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_new): Redirect any gpgsm error
output to /dev/null.

* verify.c (gpgme_get_sig_key): Set the protocol of the listctx.
* gpgme.c (gpgme_get_protocol): New.

* data.c (gpgme_data_write): Changed type of BUFFER to void*.

(gpgme_data_read): Ditto.

* verify.c (_gpgme_verify_status_handler): Handle TRUST_* status
lines so that a claim can be made without looking up the key.
(gpgme_get_sig_string_attr): New.
(gpgme_get_sig_ulong_attr): New.

* gpgme.h (GpgmeAttr): Added GPGME_ATTR_SIG_STATUS.

* rungpg.h: Add new status codes from gpg 1.0.7 and formatted the
list to align with the status.h file from gnupg.

* gpgme.h (GpgmeSigStat): Add _GOOD_EXP and _GOOD_EXPKEY.
* verify.c (_gpgme_verify_status_handler, finish_sig): Handle
these new status codes. Store the expiration time

2002-04-27 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeData_Encoding): New.
* data.c (gpgme_data_get_encoding,gpgme_data_set_encoding):
New.
* engine-gpgsm.c (map_input_enc): New. Use it in all local
functions where the INPUT command gets send.

2002-04-27 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Close the output
descriptor only when we don't need it anymore. Close the message
descriptor if we don't need it.

2002-04-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_LIBADD): Use libtool libraries.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Call gpgme_data_release on
GPG->cmd.cb_data, not xfree.

2002-04-25 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set the display, ttyname,
ttytype, lc_ctype and lc_messages options in the server.

2002-04-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (map_assuan_error): Add new error codes.

2002-04-23 Werner Koch <wk@gnupg.org>

* key.c (gpgme_key_get_ulong_attr): Swapped use of can_encrypt and
can_certify to return
the requested values.

2002-04-23 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_progress_cb): Allow either return parameter
to be NULL.
(gpgme_get_passphrase_cb): Likewise.

2002-04-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_get_passphrase_cb): New function.
(gpgme_get_progress_cb): New function.
* gpgme.h: Add new prototypes for gpgme_get_passphrase_cb and
gpgme_get_progress_cb.

2002-03-28 Werner Koch <wk@gnupg.org>

* gpgme.h (GpgmeAttr): Add values for issuer and chaining.
* key.h (gpgme_key_s): Add issuer and chaining elements for X509.
* keylist.c (keylist_colon_handler): Store them.
* key.c (gpgme_key_release): Free them.
(gpgme_key_get_as_xml,gpgme_key_get_string_attr): Print them.

2002-03-26 Werner Koch <wk@gnupg.org>

* Makefile.am (libgpgme_la_SOURCES): Add mutex.h

2002-03-21 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Make sure off_t and ssize_t are
defined.

2002-03-18 Marcus Brinkmann <marcus@g10code.de>

*
Makefile.am (system_components): New variable, set depending on
HAVE_DOSISH_SYSTEM.
(libgpgme_la_SOURCES): Use system_components. Remove `syshdr.h'.
* syshdr.h: File removed.

* posix-io.c: Remove !HAVE_DOSISH_SYSTEM safeguard. Clean up source.
* posix-sema.c: Likewise.
* posix-util.c: Likewise.

* w32-io.c: Remove HAVE_DOSISH_SYSTEM safeguard.
* w32-sema.c: Likewise.
* w32-util.c: Likewise.

* posix-io.c: Include `unistd.h', do not include `syshdr.h'.
* posix-sema.c: Likewise.
* w32-io.c: Include `io.h', do not include `syshdr.h'
* w32-sema.c: Likewise.
* w32-util.c: Likewise.
* data.c: Do not include `syshdr.h'.
* wait.c: Likewise.
* wait.h: Code cleanup.

* mutex.h: New file.
* posix-sema.c: Implement.

2002-03-08 Werner Koch <wk@gnupg.org>

* util.h [!HAVE_FOPENCOOKIE]: Fixed type. Thanks to Frank Heckenbach.

2002-03-07 Werner Koch <wk@gnupg.org>

* gpgme.h (gpgme_op_keylist_ext_start): Add prototype.

2002-03-06 Marcus Brinkmann <marcus@g10code.de>

*
encrypt.c (_gpgme_encrypt_sym_status_handler): New function.
(gpgme_op_encrypt_start): New variable SYMMETRIC, set it if RECP
is null, and if it is set, use _gpgme_encrypt_sym_status_handler
as status handler and run _gpgme_passphrase_start.
* rungpg.c (_gpgme_gpg_op_encrypt): If RECP is zero, do symmetric
encryption.
* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): If RECP is zero,
return error value.

* rungpg.c (_gpgme_gpg_op_verify): Add "--" argument.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c (_gpgme_passphrase_status_handler): Also set the
error No_Passphrase if only a bad passphrase was provided.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_verify): If TEXT is of mode
GPGME_DATA_MODE_IN, construct a command line that stores the
plaintext in TEXT.

* verify.c (gpgme_op_verify_start): Accept TEXT being
uninitialized, and in this case interpret SIG as a normal or
cleartext signature and TEXT as a return
data object.
* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Likewise.

2002-03-03 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext) [!ENABLE_GPGSM]:
Add stub function.

2002-02-28 Werner Koch <wk@gnupg.org>

* key.h (subkey_s): New member expires_at.
* keylist.c (keylist_colon_handler): Set it here
* key.c (gpgme_key_get_as_xml,gpgme_key_get_ulong_attr): Return it.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h (_gpgme_gpg_op_keylist_ext): New prototype.
* rungpg.c (_gpgme_gpg_op_keylist_ext): New function.
* engine-gpgsm.h (_gpgme_gpgsm_op_keylist_ext): New prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_keylist_ext): New function.
* engine.h (_gpgme_engine_op_keylist_ext): New prototype.
* engine.c (_gpgme_engine_op_keylist_ext): New function.
* keylist.c (gpgme_op_keylist_ext_start): New function.

2002-02-27 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new error code GPGME_Invalid_Recipient.
* encrypt.c (struct
encrypt_result_s): New member invalid_recipients,
rename no_recipients to no_valid_recipients.
(_gpgme_encrypt_status_handler): Include error for invalid
recipients.
* engine-gpgsm.c (gpgsm_set_recipients): Change type of first
argument to GpgsmObject. Use that to report back the status about
the recipients.

2002-02-26 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Fix the last change.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_verify_status_handler): Parse the args line to
see if the problem is due to a missing key, and report that back
to the user.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* engine.c (_gpgme_engine_op_encrypt_sign): New function.
* engine.h (_gpgme_engine_op_encrypt_sign): New prototype.
* rungpg.c (_gpgme_append_gpg_args_from_signers): New function.
(_gpgme_gpg_op_sign): Use that new function.
(_gpgme_gpg_op_encrypt_sign): New function.
* rungpg.h (_gpgme_gpg_op_encrypt_sign):
New prototype.
* gpgme.h (gpgme_op_encrypt_sign_start): New prototype.
(gpgme_op_encrypt_sign): Likewise.
* Makefile.am (libgpgme_la_SOURCES): Add encrypt-sign.c.
* ops.h (_gpgme_encrypt_status_handler): Add prototype.
(_gpgme_sign_status_handler): Add prototype.
* sign.c (sign_status_handler): Rename to ...
(_gpgme_sign_status_handler): ... this and make non-static.
* encrypt.c (encrypt_status_handler): Rename to ...
(_gpgme_encrypt_status_handler): ... this and make non-static.
* encrypt.c (gpgme_op_encrypt_start): Use new status handler name.
* sign.c (gpgme_op_sign_start): Likewise.

2002-02-25 Marcus Brinkmann <marcus@g10code.de>

* context.h (struct gpgme_context_s): New member include_certs.
* gpgme.h (gpgme_set_include_certs): Add prototype.
(gpgme_get_include_certs): Likewise.
* gpgme.c (gpgme_set_include_certs): New function.
(gpgme_get_include_certs): Likewise.
(gpgme_new): Set include_certs to 1 (the default).
* engine.c (_gpgme_engine_op_sign): Accept
new argument include_certs,
and pass it to _gpgme_gpgsm_op_sign.
* engine.h (_gpgme_engine_op_sign): Likewise for prototype.
* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Accept new argument
include_certs and handle it.
* engine-gpgsm.h (_gpgme_gpgsm_start): Add new argument include_certs.
* sign.c (gpgme_op_sign_start): Add new argument to
_gpgme_engine_op_sign call.

2002-02-14 Werner Koch <wk@gnupg.org>

* keylist.c (gpgme_op_keylist_start): Do not use a verbose listing.

2002-02-13 Werner Koch <wk@gnupg.org>

* vasprintf.c, fopencookie.c: Add replacement functions.
* util.h: Add prototypes for them.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_assuan_simple_command): Return 0 if we
reach the end of the function.

2002-02-09 Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Fix logic in validity check.
(gpgme_op_genkey_start): Skip newlines after opening tag.

* engine-gpgsm.c (_gpgme_gpgsm_start): Remove cruft.

2002-02-08
Marcus Brinkmann <marcus@g10code.de>

* genkey.c (gpgme_op_genkey_start): Allow PUBKEY and SECKEY to be
set, and pass them down to the crypto engine.
* engine-gpgsm.h (_gpgme_gpgsm_start): New arguments PUBKEY and SECKEY.
* engine.h: Likewise.
* rungpg.h (_gpgme_gpg_spawn): Likewise.
* engine.c (_gpgme_engine_op_genkey): Likewise. Use those
arguments.
* rungpg.c (_gpgme_gpg_op_genkey): Likewise. Complain if those
arguments are set.
* engine-gpgsm.c (_gpgme_gpgsm_op_genkey): Likewise. Implement
function.

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Beautify comment.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_op_keylist): Remove handling of keylist
mode (for now).

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* wait.c (gpgme_wait): Add new argument STATUS, in which the
status of the returned context is returned.
(_gpgme_wait_on_condition): Rework the function a bit, to make it
aware of cancelled processes, and to
allow to use gpgme_wait with
CTX being NULL (as documented in the source).
(struct proc_s): New member REPORTED.
* gpgme.h: Fix prototype.
* verify.c (gpgme_op_verify): Fix use of gpgme_wait.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.

* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.
* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.

2002-02-06 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (gpgme_set_keylist_mode): Possibly return an error
value.
(gpgme_get_keylist_mode): New function.
(gpgme_new): Set the default for keylist_mode member of CTX.

* gpgme.h (gpgme_set_keylist_mode): Fix prototype.
(gpgme_get_keylist_mode): New prototype.
(GPGME_KEYLIST_MODE_LOCAL): New macro.
(GPGME_KEYLIST_MODE_EXTERN): Likewise..

2002-02-02 Marcus Brinkmann <marcus@g10code.de>

This patch has gotten a bit large... mmh. The
main thing that
happens here is that error values are now not determined in the
operation function after gpgme_wait completed, but in the status
handler when EOF is received. It should always be the case that
either an error is flagged or EOF is received, so that after a
gpgme_wait you should never have the situation that no error is
flagged and EOF is not received. One problem is that the engine
status handlers don't have access to the context, a horrible
kludge works around this for now. All errors that happen during a
pending operation should be caught and reported in ctx->error,
including out-of-core and cancellation. This rounds up neatly a
couple of loose ends, and makes it possible to pass up any errors
in the communication with the backend as well. As a bonus, there
will be a function to access gpgme->wait, so that the operations
can truly be implemented with their _start function.

* engine-gpgsm.c (gpgsm_status_handler): Horrible kludge to report
error back
to the context.
* rungpg.c (gpg_status_handler): Same horrible kludge applied here.

* engine-gpgsm.c (gpgsm_assuan_simple_command): Add error checking.

* wait.c (_gpgme_wait_on_condition): If canceled, set CTX->error
to a value indication that.

* verify.c (add_notation): Set error, not out_of_core.

(finish_sig): Likewise.
(gpgme_op_verify_start): Don't clear out_of_core.
(_gpgme_verify_status_handler): At EOF, clean up the notation data.
(gpgme_op_verify): And don't do it here.

* trustlist.c (trustlist_status_handler): Check error, not out_of_core.
(gpgme_op_trustlist_start): Don't clear out_of_core.
(gpgme_op_trustlist_next): Check error, not out_of_core.
(gpgme_op_trustlist_end): Likewise.

* ops.h (test_and_allocate_result): New macro.
(_gpgme_passphrase_result): Remove prototype.
* delete.c (gpgme_op_delete): Return error from context.
(delete_status_handler): Use macro test_and_allocate_result.
Perform error checking at EOF.
(gpgme_op_delete_start): Release
result.
* passphrase.c (_gpgme_passphrase_status_handler): Use macro
test_and_allocate_result, and perform error checking here.
(_gpgme_passphrase_result): Function removed.
* sign.c (gpgme_op_sign_start): Do not set out_of_core to zero.
(gpgme_op_sign): Just return the error value from the context.
(sign_status_handler): Only progress if no error is set yet. If
we process an EOF, set the resulting error value (if any).
* decrypt.c (_gpgme_decrypt_result): Function removed.
(create_result_struct): Function removed.
(_gpgme_decrypt_status_handler): Use macro test_and_allocate_result,
caclulate error on EOF, do not progress with errors.
(_gpgme_decrypt_start): Do not set out_of_core to zero.
(gpgme_op_decrypt): Just return the error value from the context.
* encrypt.c (encrypt_status_handler): Perform the error checking
here.
(gpgme_op_encrypt_start): Do not clear out_of_core.
* export.c (export_status_handler): Return if error is set in context.
(gpgme_op_export_start):
Release result.
(gpgme_op_export): Return error from context.
* decrypt-verify.c (gpgme_op_decrypt_verify): Return the error in
the context.
* genkey.c (genkey_status_handler): Use macro
test_and_allocate_result. Perform error checking at EOF.
(gpgme_op_genkey): Just return the error from context.
* import.c (gpgme_op_import): Return the error from context.
(import_status_handler): Use macro test_and_allocate_result.
* keylist.c (gpgme_op_keylist_start): Do not clear out_of_core.
(gpgme_op_keylist_next): Return error of context.
(keylist_colon_handler): Set error instead out_of_code.
(finish_key): Likewise.

* context.h: Remove member out_of_core, add member error.
* gpgme.c (_gpgme_release_result): Clear error flag.

* engine.h (_gpgme_engine_get_error): New prototype.
* engine.c (_gpgme_engine_get_error): New function.
* engine-gpgsm.c (_gpgme_gpgsm_get_error): New function.

* engine-gpgsm.c (map_assuan_error): New function.
(gpgsm_assuan_simple_command): Change
return type to GpgmeError,
use the new function to map error values.
(gpgsm_set_fd): Change return type tp GpgmeError.
(_gpgme_gpgsm_op_decrypt): Change type of ERR to GpgmeError.
(gpgsm_set_recipients): Likewise. Change type of return value
equivalently. Adjust error values.
(_gpgme_gpgsm_op_import): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(struct gpgsm_object_s): New member error.
(gpgsm_status_handler): Set error if error occurs. Determine
error number from ERR line received. If assuan_read_line fails,
terminate the connection.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (MOSTLYCLEANFILES): New variable.

2002-02-01 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): At error, terminate the
connection to the server.

2002-01-31 Marcus Brinkmann <marcus@g10code.de>

* rungpg.h: Add STATUS_KEY_CREATED.

* progress.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add progress.c.

* genkey.c (genkey_status_handler):
Use
_gpgme_progress_status_handler. Add check for status.
(struct genkey_result_s): New structure.
(_gpgme_release_genkey_result): New function.
(gpgme_op_genkey): Check for error.
* gpgme.c (_gpgme_release_result): Call
_gpgme_release_genkey_result.
* ops.h (_gpgme_release_genkey_result): Add prototype.

* types.h (GenKeyResult): New type.
* context.h (gpgme_context_s): Add GenKeyResult to member result.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c (_gpgme_release_result): Call
_gpgme_release_delete_result.
* ops.h (_gpgme_release_delete_result): Add prototype.
* types.h (DeleteResult): New type.
* context.h (gpgme_context_s): Add DeleteResult to member result.

* delete.c (enum delete_problem): New type.
(struct delete_result_s): New structure.
(_gpgme_release_delete_result): New function.
(delete_status_handler): Implement more status codes.
(gpgme_op_delete): Return error on failure.

* import.c (MAX_IMPORTED_FIELDS): Bump up to 14.

2002-01-30
Marcus Brinkmann <marcus@g10code.de>

* import.c (struct import_result_s): New structure.
(_gpgme_release_import_result): New function.
(append_xml_impinfo): Likewise.
(import_status_handler): Implement.
* gpgme.c (_gpgme_release_result): Add call to
_gpgme_release_import_result.
* ops.h (_gpgme_release_import_result): Add prototype.
* types.h (ImportResult): New type.
* context.h (gpgme_context_s): Add ImportResult to member result.

* encrypt.c (gpgme_op_encrypt): Code clean up.

2002-01-30 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add lots of comment and fix the formatting. Add
gpgme_trustlist_end prototype.

2002-01-29 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h: Add new type GpgmeIdleFunc. Change type of
gpgme_register_idle to return and accept this type.
* wait.c (gpgme_register_idle): Fix type.
Save and return old value of idle_function.

2002-01-29 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_op_keylist): Implement
secret only mode.

* keylist.c (keylist_colon_handler): Add support for the new "crs"
record type.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_release): Call assuan_disconnect,
not assuan_pipe_disconnect.

* Makefile.am (libgpgme_la_LIBADD): Change to link assuan and
jnlib (needed by assuan) statically into libgpgme. Linking a
static library into a shared library this way is not portable.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h (GpgmePassphraseCb): Change type of R_HD from void* to
void**.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (gpgme_data_new_from_filepart): Change type of LENGTH
from off_t to size_t.
* gpgme.h: Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* wait.c (_gpgme_wait_on_condition): If the process finished,
reset the pending flag. Also if the operation was cancelled.

(struct proc_s): Rename READY to DONE.
(wait_item_s): Likewise.
(set_process_ready): Rename
to ...
(set_process_done): ... this.
(_gpgme_remove_proc_from_wait_queue): Call set_process_done
instead set_process_ready.
(_gpgme_wait_on_condition): Likewise.
(do_select): Rename READY to DONE.

* verify.c (gpgme_op_verify): Do not set pending to zero here.
* sign.c (gpgme_op_sign): Likewise.
* import.c (gpgme_op_import): Likewise.
* genkey.c (gpgme_op_genkey): Likewise.
* export.c (gpgme_op_export): Likewise.
* encrypt.c (gpgme_op_encrypt): Likewise.
* delete.c (gpgme_op_delete): Likewise.

* decrypt-verify.c (gpgme_op_decrypt_verify): Likewise.
* decrypt.c (gpgme_op_decrypt): Likewise.

2002-01-22 Marcus Brinkmann <marcus@g10code.de>

* export.c: Cleanup.

2002-01-15 Marcus Brinkmann <marcus@g10code.de>

* trustlist.c: Various source clean ups.
(my_isdigit): Removed.
(gpgme_op_trustlist_end): New function.

2002-01-13 Marcus Brinkmann <marcus@g10code.de>

* gpgme.c: Various source clean ups, like renaming C to CTX where
appropriate.
(gpgme_new): Clear
R_CTX before starting the work.
(my_isdigit): Removed.
(my_isxdigit): Likewise.

* data.c: Various source clean ups.
(gpgme_data_new_from_mem): Check BUFFER after clearing R_DH.
(gpgme_data_new_with_read_cb): Similar for READ_CB.
(gpgme_data_new_from_file): Loop over fread while EINTR.
(gpgme_data_new_from_filepart): Rediddled a bit. Allow LENGTH to
be zero. Loop over fread while EINTR.

(my_isdigit): Removed.
(my_isxdigit): Likewise.

2001-12-21 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Replace General_Error with
Pipe_Error where appropriate.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine.c: Include `string.h'. Reported by Stphane Corthsy.

* version.c (get_engine_info): Remove prototype.

2001-12-19 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): New variable CHILD_FDS.
Fill it with the servers fds, and pass it to assuan_pipe_connect.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 *
 keylist.c (gpgme_op_keylist_end): New function.
 * gpgme.h (gpgme_op_keylist_end): New prototype.

 * engine.h (gpgme_engine_check_version): Move prototype to ...
 * gpgme.h (gpgme_engine_check_version): ... here.

 * genkey.c (gpgme_op_genkey_start): Remove unused variable.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * version.c (gpgme_get_engine_info): Reimplemented.
 (gpgme_check_engine): Reimplemented.
 (_gpgme_compare_versions): Return NULL if MY_VERSION is NULL.

 * engine.c: Include `io.h'.
 (gpgme_engine_get_info): New function.
 * engine.h (gpgme_engine_check_version, _gpgme_engine_get_info):
 Add prototype.

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * rungpg.c (struct reap_s, reap_list, reap_list_lock): Moved to ...
 * engine.c (struct reap_s, reap_list, reap_list_lock): ... here.
 Include `time.h', `sys/types.h', `assert.h', and `sema.h'.

 * rungpg.c (_gpgme_engine_add_child_to_reap_list): New function.
 (do_reaping, _gpgme_gpg_housecleaning): Moved to
 ...
 * engine.c (do_reaping, _gpgme_engine_housecleaning): ... here.
 * rungpg.c (_gpgme_gpg_release): Replace code that is now in its
 own function by call to _gpgme_engine_add_child_to_reap_list().

 * wait.c: Include `engine.h'.
 (run_idle): Call _gpgme_engine_housecleaning(), not
 _gpgme_gpg_housecleaning().

2001-12-18 Marcus Brinkmann <marcus@g10code.de>

 * key.c (_gpgme_key_append_name): Append, not prepend, the uid.
 Initialize the next field of the uid structure.
 (gpgme_key_get_as_xml): Do not list last uid first.

2001-12-17 Marcus Brinkmann <marcus@g10code.de>

 * engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New

function [!ENABLE_GPGSM].

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_verify): Put TEXT into
message_data, not SIG.
(_gpgme_gpgsm_op_sign): Use `--detached', not `--detach'.

* sign.c (sign_status_handler): Call
_gpgme_passphrase_status_handler early.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

*
engine-gpgsm.c: Revert last change.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Freeze the output file
handler when ending this operation, otherwise the wait function
will sit on it.

2001-12-14 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (struct gpgsm_object_s): New member colon.attic.
(_gpgme_gpgsm_new): Initialize some more members.
(_gpgme_gpgsm_release): Free the colon line handler's attic line.
(gpgsm_status_handler): Rework the inline-data processing.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_spawn): Do not add the fds to the child
list that are not dup'ed, for those the close-on-exec flag is set
now.
* version.c (_gpgme_get_program_version): Remove first entry in
CFD, as the close-on-exec flag is now set for this fd.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): Do not add `armor'
option to `ENCRYPT'.
* engine-gpgsm.c
(gpgsm_set_recipients): Free LINE when returning
successfully.

2001-12-13 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (close_notify_handler): New function.

(_gpgme_gpgsm_new): Manage the file descriptors a
bit differently. Do not set close-on-exec flags.
(_gpgme_gpgsm_op_decrypt): Do not set message_fd
to -1, this is done by the close handler.
(_gpgme_gpgsm_op_encrypt): Likewise.
(_gpgme_gpgsm_op_import): Likewise (also for output_fd).
(_gpgme_gpgsm_op_keylist): Likewise (also for input_fd and output_fd).
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_verify): Likewise, but for output_fd.

* posix-io.c (_gpgme_io_pipe): Set the close-on-exec flag for the
non-inherited file descriptor index of the pipe.

2001-12-13 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c (_gpgme_gpgsm_set_colon_line_handler): New.
(gpgsm_status_handler): Pass datalines to a colon handler
* engine.c (_gpgme_engine_set_colon_line_handler): Set the colon
handler for gpgsm.

* engine-gpgsm.c
(_gpgme_gpgsm_op_keylist): Allow NULL for
pattern.
(gpgsm_assuan_simple_command): Removed underscore from
assuan_write_line.
(_gpgme_gpgsm_start): Ditto.
(gpgsm_assuan_simple_command): Replaced internal Assuan read
function by the new assuan_read_line. Removed the use of the
internal header.
(gpgsm_status_handler): Ditto. Use the new assuan_pending_line.
(_gpgme_gpgsm_start): Use the documented way to get an fd from
assuan.

* keylist.c (keylist_colon_handler): Handle "crt" records
* key.h (gpgme_key_s): Add an x509 flag.
* key.c (parse_x509_user_id): New.
(_gpgme_key_append_name): Handle x.509 names.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Make it work with current
version of assuan.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_set_fd): Accept one more argument OPT.
(_gpgme_gpgsm_op_encrypt): Pass armor argument to gpgsm_set_fd for
output descriptor.

(_gpgme_gpgsm_op_sign):
Likewise.

2001-12-05 Marcus Brinkmann <marcus@g10code.de>

* keylist.c (gpgme_op_keylist_next): Set pending to 0 if EOF
occurs.

2001-11-26 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Fix stupid typo.

2001-11-24 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (gpgsm_status_handler): Don't break if bsearch fails.
Deal with assuan read line returning more than one line (for now).

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_sign): Implement it according to
the current protocol definition.

2001-11-23 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_new): Set CLOEXEC flag for parent
ends of the pipe.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Include stdlib.h and string.h. Also include,
for now, rungpg.h and status-table.h.
(gpgsm_status_handler): Implement more of the status handler.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

*
engine.c (_gpgme_engine_op_decrypt): Implement CMS case.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.

* engine-gpgsm.c (_gpgme_gpgsm_op_encrypt): New function.
(gpgsm_assuan_simple_command): Likewise.
(gpgsm_set_recipients): Likewise.

(gpgsm_set_fd): Reimplement using gpgsm_assuan_simple_command.
(_gpgme_gpgsm_op_delete): New function.
(_gpgme_gpgsm_op_export): Likewise.
(_gpgme_gpgsm_op_genkey): Likewise.
(_gpgme_gpgsm_op_sign): Likewise.
(_gpgme_gpgsm_op_keylist): Likewise.
(_gpgme_gpgsm_op_trustlist): Likewise.
(_gpgme_gpgsm_release): Release command.
(_gpgme_gpgsm_op_decrypt): Allocate command.
(_gpgme_gpgsm_op_import): Likewise.
(gpgsm_status_handler): Also treat `ERR' strings as EOF.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* gpgme.h
(gpgme_set_protocol): New prototype.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c (_gpgme_gpgsm_op_decrypt): New function.
(_gpgme_gpgsm_op_import): Likewise.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* engine-gpgsm.c: Shuffle around header inclusion a bit, to still
keep them separate.
(_gpgme_set_status_handler) [!ENABLE_GPGSM]: New function.

2001-11-22 Werner Koch <wk@gnupg.org>

* engine-gpgsm.c: Include more headers so that NULL and mk_error
is defined even with an undefined GPGSM_PATH.

2001-11-22 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (gpg_inbound_handler, write_mem_data, write_cb_data,
gpg_outbound_handler): Moved to ...
* data.c (_gpgme_data_inbound_handler, write_mem_data,
write_cb_data, _gpgme_data_outbound_handler): ... here. Make the
_gpgme_* ones non-static.
* data.c: Include io.h.

* ops.h (_gpgme_data_inbound_handler): New prototype.
(_gpgme_data_outbound_handler): Likewise.
(_gpgme_gpg_spawn): Use
these new functions.

* engine-gpgsm.h (_gpgme_gpgsm_op_decrypt, _gpgme_gpgsm_op_delete,

_gpgme_gpgsm_op_encrypt, _gpgme_gpgsm_op_export,
_gpgme_gpgsm_op_genkey, _gpgme_gpgsm_op_import,
_gpgme_gpgsm_op_keylist, _gpgme_gpgsm_op_sign,
_gpgme_gpgsm_op_trustlist, _gpgme_gpgsm_op_verify,
_gpgme_gpgsm_start, _gpgme_gpgsm_set_status_handler): New prototype.
Include <rungpg.h> for status handler function.

* engine-gpgsm.c (struct gpgsm_object_s): New members input_fd,
input_data, output_fd, output_data, message_fd, message_data, command
and status.
(_gpgme_gpgsm_new): Open input, output and message pipes before
connecting to the client. Close server's ends afterwards.
(_gpgme_gpgsm_release): Close open file descriptors. Remove
server process from wait queue.
(_gpgme_gpgsm_op_verify, _gpgme_gpgsm_start,
_gpgme_gpgsm_set_status_handler, gpgms_status_handler): New function.

* engine.c (_gpgme_engine_start): Implement for GPGME_PROTOCOL_CMS.
(_gpgme_engine_set_status_handler):
Likewise.
(_gpgme_engine_op_verify): Likewise.

2001-11-21 Marcus Brinkmann <marcus@g10code.de>

* context.h: Do not include rungpg.h, but engine.h.
(struct gpgme_context_s): Replace member gpg with engine.
* gpgme.c (gpgme_release): Release engine, not gpg.

* recipient.c (_gpgme_append_gpg_args_from_recifgpients): Function
moved ...
* rungpg.c (_gpgme_append_gpg_args_from_recipients): ... here.
Make static, change order of arguments, and return an error value.
* ops.h (_gpgme_append_gpg_args_from_recipients): Removed prototype.

* rungpg.h (_gpgme_gpg_op_verify): Add prototype.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt): Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.
* rungpg.c (_gpgme_gpg_op_verify): New function.
(_gpgme_gpg_op_encrypt): Likewise.
(_gpgme_gpg_op_decrypt):

Likewise.
(_gpgme_gpg_op_delete): Likewise.
(_gpgme_gpg_op_export): Likewise.
(_gpgme_gpg_op_genkey): Likewise.
(_gpgme_gpg_op_import): Likewise.
(_gpgme_gpg_op_keylist): Likewise.
(_gpgme_gpg_op_sign): Likewise.
(_gpgme_gpg_op_trustlist): Likewise.

* engine.h (_gpgme_engine_set_status_handler): Add prototype.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler): Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.
* engine.c (_gpgme_engine_set_status_handler): New function.
(_gpgme_engine_set_command_handler): Likewise.
(_gpgme_engine_set_colon_line_handler):
Likewise.
(_gpgme_engine_op_decrypt): Likewise.
(_gpgme_engine_op_delete): Likewise.
(_gpgme_engine_op_encrypt): Likewise.
(_gpgme_engine_op_export): Likewise.
(_gpgme_engine_op_genkey): Likewise.
(_gpgme_engine_op_import): Likewise.
(_gpgme_engine_op_keylist): Likewise.
(_gpgme_engine_op_sign): Likewise.
(_gpgme_engine_op_trustlist): Likewise.
(_gpgme_engine_op_verify): Likewise.
(_gpgme_engine_start): Likewise.

* verify.c (gpgme_op_verify_start): Reimplement in terms of above
functions.
* encrypt.c (gpgme_op_encrypt_start): Likewise.
* decrypt.c (_gpgme_decrypt_start): Likewise.
* passphrase.c (_gpgme_passphrase_start): Likewise.
* keylist.c (gpgme_op_keylist_start): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* types.h: Add types EngineObject and GpgsmObject.

* Makefile.am (libgpgme_la_SOURCES): Add engine-gpgsm.h,
engine-gpgsm.c, engine.h and engine.c.
* engine.h: New file.
* engine.c: Likewise.
* engine-gpgsm.h: Likewise.
*
engine-gpgsm.c: Likewise.

* rungpg.c (_gpgme_gpg_get_version): New function.
(_gpgme_gpg_check_version): Likewise.
* rungpg.h: Add prototypes for _gpgme_gpg_get_version and
_gpgme_gpg_check_version.

* version.c (compare_versions): Rename to ...
(_gpgme_compare_versions): ... this. Make non-static.
(gpgme_check_version): Use _gpgme_compare_versions rather than
compare_versions.
(gpgme_check_engine): Likewise.
* ops.h (_gpgme_get_program_version): Add prototype.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* Makefile.am (libgpgme_la_INCLUDES): Remove obsolete directive.
(AM_CPPFLAGS): New directive [BUILD_ASSUAN].
(libgpgme_la_LIBADD): Likewise.

2001-11-20 Marcus Brinkmann <marcus@g10code.de>

* version.c: Remove global variables lineno and
tmp_engine_version.
(version_handler): Removed.
(_gpgme_get_program_version): New function.
(get_engine_info): Don't use context and version_handler,
but _gpgme_get_program_version.
* ops.h (_gpgme_get_program_version):
Add prototype for
_gpgme_get_program_version (we expect to use it elsewhere soon).

2001-11-18 Marcus Brinkmann <marcus@g10code.de>

* version.c (get_engine_info): If GnuPG is not available, return
an error message.
* posix-util.c (_gpgme_get_gpg_path): Allow GPG_PATH to be
undefined.
(_gpgme_get_gpgsm_path): New function.
* w32-util.c (find_program_in_registry): New static function.

(_gpgme_get_gpg_path): Allow GPG_PATH to be undefined. Rework
to use find_program_in_registry.
(_gpgme_get_gpgsm_path): New function.
(util.h): Prototype _gpgme_get_gpgsm_path).
* rungpg.c (_gpgme_gpg_spawn): Verify that _gpgme_get_gpg_path()
returns non-null.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* decrypt-verify.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add decrypt-verify.c.
* types.h: Add decrypt-verify types.
* ops.h: Likewise.
* context.h: Add result type for decrypt-verify.
* gpgme.h: Add decrypt-verify prototypes.

* decrypt.c (decrypt_status_handler):
Renamed to ...
(_gpgme_decrypt_status_handler): ... this. Make non-static.
(_gpgme_decrypt_start): New function, derived from
gpgme_op_decrypt_start.
(gpgme_op_decrypt_start): Reimplement in terms of
_gpgme_decrypt_start.
(_gpgme_decrypt_result): New function to retrieve error value.
(gpgme_op_decrypt): Use _gpgme_decrypt_result.
* ops.h: Add prototypes for new functions.

* verify.c (verify_status_handler): Renamed to ...
(_gpgme_verify_status_handler): ... this. Make non-static.
(gpgme_op_verify_start): Use new function name.
(intersect_stati): Renamed to ...
(_gpgme_intersect_stati): ... this. Make non-static.
(gpgme_op_verify): Use new name.
* ops.h: Add prototypes for new functions.

2001-11-16 Marcus Brinkmann <marcus@g10code.de>

* passphrase.c: New file.
* Makefile.am (libgpgme_la_SOURCES): Add passphrase.c.
* ops.h (_gpgme_passphrase_result): Add prototypes from
passphrase.c.
* types.h: Likewise.
* context.h: Add member passphrase to result.
*
gpgme.c (_gpgme_release_result): Release passphrase member.

* decrypt.c: Some formatting and variable name changes (like
CTX instead C).

(struct decrypt_result_s): Remove members now found in
passphrase result.
(_gpgme_release_decrypt_result): Don't release removed members.
(decrypt_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_decrypt_start): Don't set command handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_decrypt): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

* sign.c Some formatting and variable name changes (like
CTX instead C).
(struct sign_result_s): Remove members now found in
passphrase result.
(_gpgme_release_sign_result): Don't release removed members.
(sign_status_handler): Call _gpgme_passphrase_status_handler,
and don't handle the cases caught there.
(command_handler): Removed.
(gpgme_op_sign_start): Don't set command
handler, but invoke
_gpgme_passphrase_start which does it.
(gpgme_op_sign): Invoke _gpgme_passphrase_result and drop the
cases covered by it.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* decrypt.c (command_handler): Fix last change.

2001-11-15 Marcus Brinkmann <marcus@g10code.de>

* verify.c (_gpgme_release_verify_result): Rename RES to RESULT.
Rename R2 to NEXT_RESULT.
(intersect_stati): Rename RES to RESULT.
(gpgme_get_sig_status): Likewise. Do not check return_type, but
the member verify of result.
(gpgme_get_sig_key): Likewise.

* sign.c (_gpgme_release_sign_result): Rename RES to RESULT. If
RESULT is zero, return.
(sign_status_handler, command_handler): Do not check return_type,
but the member sign of result.
(gpgme_op_sign): Likewise. Drop assertion.

* encrypt.c (_gpgme_release_encrypt_result): Rename RES to RESULT.
If RESULT is zero, return.
(encrypt_status_handler): Do not check return_type, but the member
encrypt of result.

(gpgme_op_encrypt):
Likewise. Drop assertion.

* decrypt.c (_gpgme_release_decrypt_result): Rename RES to RESULT.
(create_result_struct): Do not set result_type.
(command_handler, decrypt_status_handler): Do not check
return_type, but the member decrypt of result.
(gpgme_op_decrypt): Likewise. Drop assertion.

* context.h (enum ResultType): Removed.
(struct gpgme_context_s): Remove member result_type.
(struct result): Replaces union result.
* gpgme.c: Include string.h.
(_gpgme_release_result): Release all members of c->result, which
is now a struct. Zero out all members of the struct afterwards.

2001-11-11 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (_gpgme_gpg_release): Release GPG->cmd.cb_data.
Release all members of the list GPG->arglist.
Reported by Michael Schmidt <mschmidt@cs.uni-sb.de>.

2001-11-02 Marcus Brinkmann <marcus@g10code.de>

* rungpg.c (pipemode_copy): Change type of NBYTES to size_t.

* key.c: Include string.h.
* data.c: Likewise.
* recipient.c: Likewise.

2001-10-29
Marcus Brinkmann <marcus@g10code.de>

* context.h: New member signers_len.
* signers.c (gpgme_signers_clear): Require that signers are
non-NULL with assertion. Use signers_len to determine how much
keys to release. Add documentation.
(gpgme_signers_add): Use signers_len to determine if the buffer is
large enough. Use xtryrealloc rather than xtrymalloc and copying.
Add documentation.
(gpgme_signers_enum): Use signers_len to determine if key is
available. Add documentation.

2001-10-22 Marcus Brinkmann <marcus@g10code.de>

* data.c (_gpgme_data_append): Check if LENGTH is smaller than
ALLOC_CHUNK, not DH->length.

2001-10-17 Marcus Brinkmann <marcus@g10code.de>

 * gpgme.c (gpgme_set_protocol): Fix last change.

2001-10-15 Werner Koch <wk@gnupg.org>

 * gpgme.h (GpgmeProtocol): New.
 * gpgme.c (gpgme_set_protocol): New.

2001-09-26 Werner Koch <wk@gnupg.org>

 * gpgme.c (gpgme_set_passphrase_cb): Ignore a NULL context.
 (gpgme_set_progress_cb): Ditto.
 Suggested by Mark Mutz.

2001-09-17 Werner Koch <wk@gnupg.org>

 * keylist.c (finish_key): Shortcut for no tmp_key. Changed all
 callers to use this function without a check for tmp_key.

 * keylist.c (gpgme_op_keylist_next): Reset the key_cond after
 emptying the queue. Bug reported by Stphane Corthsy.

2001-09-12 Werner Koch <wk@gnupg.org>

 * data.c (gpgme_data_rewind): Allow rewind for callbacks.

2001-09-07 Werner Koch <wk@gnupg.org>

 * rungpg.h: Add NO_RECP.
 * encrypt.c (encrypt_status_handler): Take on No_RECP.
 (gpgme_op_encrypt): Better error return.

 * verify.c (verify_status_handler): Take on NODATA.

2001-09-03 Werner Koch <wk@gnupg.org>

 * rungpg.h: Added STATUS_INV_RECP.
 * gpgme.c (_gpgme_release_result): Add support for new
 EncryptResult object.
 * encrypt.c (append_xml_encinfo): New.
 (encrypt_status_handler): Add some status parsing.
 (_gpgme_release_encrypt_result): New.

2001-08-29 Werner Koch <wk@gnupg.org>

 * recipient.c (gpgme_recipients_release):

Free the list. By Timo.

* keylist.c (keylist_colon_handler): Do a finish key if we receive
an EOF here. This is probably the reason for a lot of bugs
related to keylisting. It is so obvious. Kudos to Enno Cramer
for pointing that out.

2001-08-28 Werner Koch <wk@gnupg.org>

* gpgme.c, gpgme.h (gpgme_get_op_info): New.
(_gpgme_set_op_info): New.
(_gpgme_release_result): Reset the op_info here.
* sign.c (append_xml_siginfo): New.
(sign_status_handler): Store the sig create information.

2001-07-31 Werner Koch <wk@gnupg.org>

* encrypt.c (gpgme_op_encrypt): Hack to detect no valid recipients.

2001-07-30 Werner Koch <wk@gnupg.org>

* gpgme.c (gpgme_get_armor,gpgme_get_textmode): New.

* rungpg.c (build_argv): Disable armor comments
* w32-io.c (build_commandline): Need to add quotes here

2001-07-24 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_read): Add a a way to return the available bytes.

2001-07-23 Werner Koch <wk@gnupg.org>

* util.c: Removed
stpcpy() because we use the version from jnlib.

2001-07-19 Werner Koch <wk@gnupg.org>

* mkstatus: Define the collating sequence for sort.

2001-06-26 Werner Koch <wk@gnupg.org>

* rungpg.h: Add STATUS_UNEXPECTED as suggested by Timo.

2001-06-15 Werner Koch <wk@gnupg.org>

* keylist.c (set_userid_flags): Fixed the assigned values. Kudos
to Timo for pointing this out.

2001-06-01 Werner Koch <wk@gnupg.org>

* debug.c (_gpgme_debug_begin): Fixed a /tmp race. Noted by
Johannes Poehlmann.

2001-05-28 Werner Koch <wk@gnupg.org>

* version.c (gpgme_check_engine): Stop version number parsing at
the opening angle and not the closing one. By Tommy Reynolds.

2001-05-01 Jos Carlos Garca Sogo <jose@jaimedelamo.eu.org>

* encrypt.c (gpgme_op_encrypt_start): Deleted the assert (!c->gpg)
line, because it gave an error if another operation had been made
before using the same context.

* decrypt.c (gpgme_op_decrypt_start): The same as above. Also added
one line to release
the gpg object in the context (if any).

2001-04-26 Werner Koch <wk@gnupg.org>

* key.c, key.h (_gpgme_key_cache_init): New.
(_gpgme_key_cache_add): New.
(_gpgme_key_cache_get): New.
* version.c (do_subsystem_inits): Init the cache.
* keylist.c (finish_key): Put key into the cache
* verify.c (gpgme_get_sig_key): First look into the cache.

2001-04-19 Werner Koch <wk@gnupg.org>

* keylist.c (parse_timestamp): Adjusted for the changed
--fixed-list-mode of gpg 1.0.4h.

2001-04-05 Werner Koch <wk@gnupg.org>

* verify.c (gpgme_op_verify_start): Enabled pipemode for detached sigs.

2001-04-04 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_select): Don't select on the writer if there
are still bytes pending. Timo found this not easy to track down
race condition.

2001-04-02 Werner Koch <wk@gnupg.org>

* gpgme.h: Add GPGME_ATTR_KEY_{EXPIRED,DISABLED}.
* key.c (gpgme_key_get_ulong_attr): And return those attribs.

* verify.c (gpgme_get_sig_key): Set keyliosting mode
depending on
the mode set in the current context. Suggested by Timo.

* key.c (gpgme_key_get_ulong_attr): Return can_certify and not
can_encrypt. By Timo.

2001-03-30 Werner Koch <wk@gnupg.org>

* debug.c (debug_init): Allow to specify a debug file.
(_gpgme_debug_level): New.

* posix-io.c (_gpgme_io_read, _gpgme_io_write): Print output.
(_gpgme_io_select): Debug only with level > 2.

2001-03-15 Werner Koch <wk@gnupg.org>

* rungpg.c: Included time.h.

* key.h: New keyflags for capabilities.
* keylist.c (set_mainkey_capability, set_subkey_capability): New.
(keylist_colon_handler): Parse them.
* gpgme.h: New attribute values for capabilities.
* key.c (gpgme_key_get_string_attr): Return them.
(capabilities_to_string): New.
(gpgme_key_get_ulong_attr): Return the global caps.

2001-03-14 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,destroy_writer): Fixed syntax error.
Thanks to Jan Oliver Wagner.

2001-03-13 Werner Koch <wk@gnupg.org>

* context.h: Add
invalid and revoke flags to user_id structure.
* keylist.c (gpgme_op_keylist_start): Use --fixed-list-mode.
(keylist_colon_handler): Adjust for that.
(set_userid_flags): New.
(set_mainkey_trust_info): Handle new key invalid flag
(set_subkey_trust_info): Ditto.
* gpgme.h: Add new attributes for key and user ID flags.
* key.c (_gpgme_key_append_name): Init these flags
(gpgme_key_get_as_xml): Print them.
(one_uid_as_xml): New helper for above.
(gpgme_key_get_string_attr, gpgme_key_get_ulong_attr):
Return the new attributes. Enhanced, so that subkey information

can be returned now.

2001-02-28 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader): Set stop_me flag.
(writer,create_writer,destroy_writer,find_writer,kill_writer): New.
(_gpgme_io_write): Use a writer thread to avoid blocking.
(_gpgme_io_close): Cleanup a writer thread
(_gpgme_io_select): Repalce the faked wait on writing by a real
waiting which is now possible due to the use of a writer thread.

2001-02-20
 Werner Koch <wk@gnupg.org>

* w32-io.c (destroy_reader,kill_reader): New.
(create_reader, reader): Add a new event to stop the thread.
(_gpgme_io_close): Kill the reader thread.

* posix-io.c (_gpgme_io_select): Handle frozen fds here.
* 32-io.c (_gpgme_io_select): Ditto. Removed a bunch of unused code.

* wait.c: Reworked the whole thing.
* rungpg.c (_gpgme_gpg_new): Init pid to -1.
(_gpgme_gpg_release): Remove the process from the wait queue.

2001-02-19 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close): Do the notification.

* posix-io.c (_gpgme_io_select): Use a 1 sec timeout and not 200
microseconds.

* wait.c (remove_process): Don't close the fd here.
(do_select): Set the fd to -1 and remove the is_closed flag everywhere.
(_gpgme_wait_on_condition): Remove the assert on the queue and
break out if we could not find the queue. The whole thing should
be reworked.

* posix-io.c (_gpgme_io_set_close_notify): New.
(_gpgme_io_close):
Do the notification.

* rungpg.c (close_notify_handler): New.
(_gpgme_gpg_new): Register a callback for the fd.
(_gpgme_gpg_set_colon_line_handler): Ditto.
(build_argv): Ditto

2001-02-13 Werner Koch <wk@gnupg.org>

* rungpg.c (struct reap_s): Replaced pid_t by int.

* types.h: Add ulong typedef.

* rungpg.c (do_reaping, _gpgme_gpg_housecleaning): New.
(_gpgme_gpg_release): Reap children.
* io.h, posix-io.c (_gpgme_io_kill): New.
* w32-io.c (_gpgme_io_kill): New (dummy).

* keylist.c (gpgme_op_keylist_start): Cancel a pending request.

* posix-io.c (_gpgme_io_read): Add some debug output.
(_gpgme_io_write): Ditto.
(_gpgme_io_select): Increased the timeout.

2001-02-12 Werner Koch <wk@gnupg.org>

Enhanced the signature verification, so that it can how handle
more than one signature and is able to return more information on
the signatures.
* verify.c (gpgme_get_sig_key): New.
(gpgme_get_sig_status): New.

* gpgme.h: Add stdio.h.
(GpgmeSigStat):
New status DIFF.

2001-02-01 Werner Koch <wk@gnupg.org>

* w32-io.c (set_synchronize): Add EVENT_MODIFY_STATE. Add Debug
code to all Set/ResetEvent().

* rungpg.c (read_status): Check for end of stream only if we have
an r. By Timo.

2001-01-31 Werner Koch <wk@gnupg.org>

* wait.c (_gpgme_wait_on_condition): Removed all exit code processing.
(propagate_term_results,clear_active_fds): Removed.
(count_active_fds): Renamed to ..
(count_active_and_thawed_fds): .. this and count only thawed fds.

* rungpg.c (gpg_colon_line_handler): Return colon.eof and not
status.eof ;-)

2001-01-30 Werner Koch <wk@gnupg.org>

* w32-io.c (_gpgme_io_spawn): Use the supplied path arg.

* version.c (get_engine_info): Return better error information.

* posix-util.c, w32-util.c: New.
(_gpgme_get_gpg_path): New, suggested by Jan-Oliver.
* rungpg.c (_gpgme_gpg_spawn): Use new function to get GPG's path.

* signers.c (gpgme_signers_add): Ooops, one should test code and
not just write it;
the newarr was not assigned. Thanks to Jos
for pointing this out. Hmmm, still not tested, why should a coder
test his fix :-)

* w32-io.c: Does now use reader threads, so that we can use
WaitForMultipleObjects.
* sema.h, posix-sema.c, w32-sema.c: Support for Critical sections.
Does currently only work for W32.

* debug.c, util.h : New. Changed all fprintfs to use this new
set of debugging functions.

2001-01-23 Werner Koch <wk@gnupg.org>

* data.c (_gpgme_data_release_and_return_string): Fixed string
termination.

2001-01-22 Werner Koch <wk@gnupg.org>

* delete.c: New.

* signers.c: New.
* key.c (gpgme_key_ref, gpgme_key_unref): New.
* sign.c (gpgme_op_sign_start): Allow the use of other keys.

* version.c (gpgme_get_engine_info,gpgme_check_engine): New.
* rungpg.c (_gpgme_gpg_set_simple_line_handler): New.

2001-01-05 Werner Koch <wk@gnupg.org>

* data.c (gpgme_data_rewind): Allow to rewind data_type_none.

Copyright (C) 2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,
2011 g10 Code GmbH

This file is free software; as a special exception the author gives

unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
Just GNU it!
Just GNU it!
Just GNU it!

```
;;; -*- Mode: lisp -*-

;;; Copyright (C) 2006 g10 Code GmbH
;;;
;;; This file is part of GPGME.
;;;
;;; GPGME is free software; you can redistribute it and/or
;;; modify it under the terms of the GNU Lesser General Public License
;;; as published by the Free Software Foundation; either version 2.1 of
;;; the License, or (at your option) any later version.
;;;
;;; GPGME is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU Lesser General Public
;;; License along with GPGME; if not, write to the Free
;;; Software Foundation, Inc., 59 Temple Place - Suite 330, Boston, MA
;;; 02111-1307, USA.

(defpackage #:gpgme-system
 (:use #:common-lisp #:asdf))

(in-package #:gpgme-system)

(defsystem gpgme
 :description "GnuPG Made Easy."
 :author "g10 Code GmbH"
  :version "1.15.1"
 :licence "GPL"
 :defsystem-depends-on ("cffi-grovel")
 :depends-on ("cffi" "gpg-error" "trivial-garbage")
 :components ((:file "gpgme-package")
              (:cffi-grovel-file "gpgme-grovel"
               :depends-on ("gpgme-package"))
       (:file "gpgme"
  :depends-on ("gpgme-package" "gpgme-grovel"))))
```

```
# -*- mode: org -*-
#+TITLE: GNU Privacy Guard (GnuPG) Made Easy Python Bindings
#+AUTHOR: Ben McGinnes
#+LATEX_COMPILER: xelatex
#+LATEX_CLASS: article
#+LATEX_CLASS_OPTIONS: [12pt]
#+LATEX_HEADER: \usepackage{xltxtra}
#+LATEX_HEADER: \usepackage[margin=1in]{geometry}
#+LATEX_HEADER: \setmainfont[Ligatures={Common}]{Times New Roman}
#+LATEX_HEADER: \author{Ben McGinnes <ben@gnupg.org>}


* GPGME Python Bindings
 :PROPERTIES:
 :CUSTOM_ID: top
 :END:


** Contents
  :PROPERTIES:
  :CUSTOM_ID: contents
  :END:


- [[file:short-history][A short history of the project]]
- [[file:what-is-new][What's New]]
 - [[file:maintenance-mode][Maintenance Mode]] (from January, 2019)
- [[file:what-was-new][What Was New]]
- [[file:gpgme-python-howto][GPGME Python Bindings HOWTO]]
{
  "components":   [{
     "name": "gpg",
        "description":  "OpenPGP",
        "options":     [{
           "name": "Monitor",
           "flags":       1,
           "level":       0,
           "type": 0,
           "alt_type":    0
        }, {
           "name": "verbose",
           "description":  "verbose",
           "level":       0,
           "type": 0,
           "alt_type":    0
        }]
  }]
}
```

```
{
  "keys": [{
    "revoked":      false,
      "expired":      false,
      "disabled":     false,
      "invalid":      false,
      "can_encrypt":  true,
      "can_sign":     true,
      "can_certify":  true,
      "can_authenticate":     true,
      "secret":       false,
      "is_qualified": false,
      "protocol":     "OpenPGP",
      "fingerprint":  "23FD347A419429BACCD5E72D6BC4778054ACD246",
      "subkeys":      [{
        "revoked":      false,
        "expired":      false,
        "disabled":     false,
        "invalid":      false,
        "can_encrypt":  false,
        "can_sign":     true,
        "can_certify":  true,
        "can_authenticate":     true,
        "secret":       false,
        "is_qualified": false,
        "is_cardkey":   false,
        "is_de_vs":     false,
        "pubkey_algo_name":
    "DSA",
        "pubkey_algo_string":   "dsa1024",
        "pubkey_algo":  17,
        "length":       1024,
        "timestamp":    920892875,
        "expires":      0
      }, {
        "revoked":      false,
          "expired":      false,
          "disabled":     false,
          "invalid":      false,
          "can_encrypt":  true,
          "can_sign":     false,
          "can_certify":  false,
          "can_authenticate":     false,
          "secret":       false,
          "is_qualified": false,
          "is_cardkey":   false,
          "is_de_vs":     false,
          "pubkey_algo_name":     "ELG-E",
```

```
            "pubkey_algo_string":   "elg1024",
            "pubkey_algo":  16,
            "length":       1024,
            "timestamp":    920892914,
             "expires":      0
        }],
        "userids":      [{
           "revoked":      false,
           "invalid":      false,
           "validity":     "unknown",
           "uid":  "Zulu Test (demo key) <zulu@example.net>",
           "name": "Zulu Test",
           "email":        "zulu@example.net",
           "comment":      "demo key",
           "address":      "zulu@example.net"
        }]
  }]
}
{
  "op": "verify",
  "data": "Hello world",
  "signature": "-----BEGIN PGP SIGNATURE-----
\n\niHAEABECADAWIQSg/0WQu2Ei7e9uPFQtcnzHaGl3NAUCW+we3RIcYWxwaGFAZXhh\nbXBsZS5uZXQ
ACgkQLXJ8x2hpdzSwIgCfdfk+n6SsYwa9SYfBwr/o4FmWsa8Anj3V\n8p3ahr3rxNbK7cDbSk/p1zD0\n=oS5d\n---
--END PGP SIGNATURE-----"
}
{
  "env": {
     "browser": true,
     "es6": true
  },
  "extends": "eslint:recommended",
  "parserOptions": {
     "sourceType": "module"
  },
  "rules": {
     "indent": [
        "warn",
        4
     ],
     "linebreak-style": [
        "error",
        "unix"
     ],
     "quotes": [
        "error",
        "single"
     ],
```

```
    "semi": [
      "error",
      "always"
    ],
    "no-var": [
      "warn"
    ],
    "max-len": 1,
    "default-case": 2,
    "no-invalid-this": 2,
    "no-lone-blocks": 1,
    "no-self-compare": 2,
    "radix": 2,
    "no-use-before-define": ["error", {
      "functions": false,
      "classes": false,
      "variables": true
    }],
    "no-useless-constructor": 1,
    "space-before-function-paren": ["error", "always"],
    "keyword-spacing": 2,
    "spaced-comment": 1,
    "space-unary-ops":
2,
    "object-curly-spacing": ["error", "always"],
    "array-bracket-spacing": ["error", "never"]
  }
}
{
 "result":      {
        "considered":   1,
        "no_user_id":   0,
        "imported_rsa": 0,
        "new_user_ids": 0,
        "new_sub_keys": 0,
        "new_signatures":      0,
        "new_revocations":     0,
        "secret_read":  0,
        "secret_imported":     0,
        "secret_unchanged":    0,
        "skipped_new_keys":    0,
        "not_imported": 0,
        "skipped_v3_keys":     0,
        "imports":     [{
                "fingerprint":  "E8143C489C8D41124DC40D0B47AF4B6961F04784",
                "error_string": "Success",
                "status":      1
            }]
```

```
  }
}
```

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free

software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion

of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of

Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or

distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to

be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,

INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it

under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.


```
{
  "keys": [{
     "revoked":      false,
        "expired":      false,
        "disabled":     false,
        "invalid":      false,
        "can_encrypt":  true,
        "can_sign":     true,
        "can_certify":  true,
        "can_authenticate":     true,
        "secret":       true,
        "is_qualified": false,
        "protocol":     "OpenPGP",
        "fingerprint":  "A0FF4590BB6122EDEF6E3C542D727CC768697734",
        "subkeys":      [{
           "revoked":      false,
           "expired":      false,
           "disabled":     false,
           "invalid":      false,
           "can_encrypt":  false,
           "can_sign":     true,
           "can_certify":  true,
           "can_authenticate":     true,
           "is_qualified": false,
           "is_cardkey":   false,
```

```
        "is_de_vs":     false,
        "pubkey_algo_name":     "DSA",

"pubkey_algo_string":   "dsa1024",
        "keyid":        "2D727CC768697734",
        "keygrip":      "76F7E2B35832976B50A27A282D9B87E44577EB66",
        "pubkey_algo":  17,
        "length":       1024,
        "timestamp":    920882846,
        "expires":      0
    }, {
        "revoked":      false,
          "expired":      false,
          "disabled":     false,
          "invalid":      false,
          "can_encrypt":  true,
          "can_sign":     false,
          "can_certify":  false,
          "can_authenticate":     false,
          "is_qualified": false,
          "is_cardkey":   false,
          "is_de_vs":     false,
          "pubkey_algo_name":     "ELG-E",
          "pubkey_algo_string":   "elg1024",
          "keyid":        "6AE6D7EE46A871F8",
          "keygrip":
 "A0747D5F9425E6664F4FFBEED20FBCA79FDED2BD",
          "pubkey_algo":  16,
          "length":       1024,
          "timestamp":    920882959,
          "expires":      0
    }],
    "userids":      [{
        "revoked":      false,
        "invalid":      false,
        "validity":     "unknown",
        "uid":  "Alfa Test (demo key) <alfa@example.net>",
        "name": "Alfa Test",
        "email":        "alfa@example.net",
        "comment":      "demo key",
        "address":      "alfa@example.net"
    }, {
        "revoked":      false,
        "invalid":      false,
        "validity":     "unknown",
        "uid":  "Alpha Test (demo key) <alpha@example.net>",
        "name": "Alpha Test",
        "email":        "alpha@example.net",
```

```
            "comment":      "demo key",
            "address":
    "alpha@example.net"
        }, {
            "revoked":      false,
              "invalid":      false,
              "validity":     "unknown",
              "uid":  "Alice (demo key)",
              "name": "Alice",
              "email":        "",
              "comment":      "demo key",
              "origin":       0,
              "last_update":  0
        }]
},  {
    "revoked":      false,
        "expired":      false,
        "disabled":     false,
        "invalid":      false,
        "can_encrypt":  true,
        "can_sign":     true,
        "can_certify":  true,
        "can_authenticate":     true,
        "is_qualified": false,
        "protocol":     "OpenPGP",
        "fingerprint":  "D695676BDCEDCC2CDD6152BCFE180B1DA9E3B0B2",
        "owner_trust":  "unknown",
        "origin":       0,
        "last_update":  0,
        "subkeys":
    [{
            "revoked":      false,
            "expired":      false,
            "disabled":     false,
            "invalid":      false,
            "can_encrypt":  false,
            "can_sign":     true,
            "can_certify":  true,
            "can_authenticate":     true,
            "secret":       false,
            "is_qualified": false,
            "is_cardkey":   false,
            "is_de_vs":     false,
            "pubkey_algo_name":     "DSA",
            "pubkey_algo_string":   "dsa1024",
            "keyid":        "FE180B1DA9E3B0B2",
            "pubkey_algo":  17,
            "length":       1024,
```

```
            "timestamp":    920888034,
            "expires":      0
         }, {
            "revoked":      false,
               "expired":      false,
               "disabled":     false,
               "invalid":      false,
               "can_encrypt":
 true,
               "can_sign":     false,
               "can_certify":  false,
               "can_authenticate":     false,
               "secret":       false,
               "is_qualified": false,
               "is_cardkey":   false,
               "is_de_vs":     false,
               "pubkey_algo_name":     "ELG-E",
               "pubkey_algo_string":   "elg1024",
               "keyid":        "5381EA4EE29BA37F",
               "pubkey_algo":  16,
               "length":       1024,
               "timestamp":    920888071,
               "expires":      0
         }],
         "userids":      [{
            "revoked":      false,
            "invalid":      false,
            "validity":     "unknown",
            "uid":  "Bob (demo key)",
            "name": "Bob",
            "email":        "",
            "comment":      "demo key"
         }, {

       "revoked":      false,
            "invalid":      false,
            "validity":     "unknown",
            "uid":  "Bravo Test (demo key) <bravo@example.net>",
            "name": "Bravo Test",
            "email":        "bravo@example.net",
            "comment":      "demo key",
            "address":      "bravo@example.net"
         }]
   }]
}
{
   "name": "gpgmejson",
   "description": "Integration with GnuPG",
```

```
  "path": "/usr/bin/gpgme-json",
  "type": "stdio",
  "allowed_origins": [
     "chrome-extension://kajibbejlbohfaggdiogboambcijhkke/"
  ]
}
{
  "op": "export",
  "keys": "alpha@example.net",
  "armor": true,
  "with-sec-fprs":true
}
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQENBFrsKEkBCADKw4Wt8J6M/88qD8PO6lSMCxH1cpwH8iK0uPaFFYsJkkXo7kWf
PTAtrV+REqF/o80dvYcdLvRsV21pvncZz/HXLu1yQ18mC3XObrKokbdgrTTKA5XE
BZkNsqyaMMJauT18H4hYkSg62/tTdO1cu/zWv/LFf7Xyn6+uA74ovXCJlO1s0N2c
PShtr98QRzPMf2owgVk37JnDNp4gGVDGHxSZOuUwxgYAZYnA8SFc+c+3ZrQfY870
+O4j3Mz4p7yD13AwP4buQLBsb/icxekeQCqpRJhLH9f7MdEcGXa1x36RcEkHdu+M
yJ392eMgD+dKNfRCtyTPhjZTxvbNELIBYICfABEBAAG0EHRlc3RAZXhhbXBsZS5v
cmeJAVQEEwEIAD4WIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbAwUJA8Jn
AAULCQgHAgYVCgkICwIEFgIDAQIeAQIXgAAKCRAjAWNe7/DLBf9kB/wOQ/S60HGw
Fq07W9N01HWULyhHKoMmcHL6rfZ64oDqLxolPSasz7WAMW1jN4qtWJ0mFzwO83V6
kaBe+wF6Kqir6udFSBW9rPcFg6/VZXPltT0a6uacIHq6DyQ5iMW4YQWbVy9OR2rN
GkYo1JCBR0XdRJYCSX3yB4TWv/eXnZ37/WjmiTOIZh35rjs+NuU/S5JPDfAp2/k7
0DevQeBsv+UjVXjWpNTZmPbvDnd995uSmC6UY4hzyP84ORYMYn9n1QAR0goxDN6U
unOf9Rlp1oMzdxMool/d1MlCxg2h3jheuhv7lgUF4KpvHOuEPXQ7UO417E0TYcDZ
1J8Nsv87SZeEuQENBFrsKEkBCADjoEBhG/QPqZHg8VyoD1xYRAWGxyDJkX/GrSs6
yE+x2hk5FoQCajxKa/d4AVxOnJpdwhAfeXeSNaql5Ejgzax+Tdj9BV6vtGVJVv0p
O7bgAiZxkA6RHxtNqhpPnPQoXvUzkzpRgpuL+Nj4yIg7z1ITH6KQH4u5SI9vd+j/
8i9Taz67pdZwuJjac8qBuJHjzAo1bjYctFYUSG5pbmMQyNLySzgiNkFa4DajODlt
3RuqVGP316Fk+Sy2+60tC/HlX8jgMyMONfOGBQx6jk8tvAphS/LAqrrNepnagIyL
UGKU+L8cB2g1PGGp2biBFWqZbudZoyRBet/0yH/zirBdQJw1ABEBAAGJATwEGAEI
ACYWIQTUFzW5Ejb9uIIEjFojAWNe7/DLBQUCWuwoSQIbDAUJA8JnAAAKCRAjAWNe
7/DLBf0pCACPp5hBuUWngu2Hqvg+tNiujfsiYzId3MffFxEk3CbXeHcJ5F32NDJ9
PYCnra4L8wSv+NZt9gIa8lFwoFSFQCjzH7KE86XcV3MhfdJTNb/+9CR7Jq3e/4Iy
0N5ip7PNYMCyakcAsxvsNCJKrSaDuYe/OAoTXRBtgRWE2uyT315em02Lkr+2Cc/Q
k6H+vlNOHGRgnpI/OZZjnUuUfBUvMGHr1phW+y7aeymC9PnUGdViRdJe23nntMSD
A+0/I7ESO9JsWvJbyBmuiZpu9JjScOjYH9xpQLqRNyw4WHpZriN69F0t9Mmd7bM1
+UyPgbPEr0iWMeyctYsuOLeUyQKMscDT
=QyY6
-----END
 PGP PUBLIC KEY BLOCK-----
{
  "op": "decrypt",
  "data":
"hQEOA2rm1+5GqHH4EAQAhzzu7VYpE9vFVdqkAALRHSyz8698b8MES7j5ldzXGVnGSWmN0+YXGyWyeB
5tnAXAvUiV10tzoiNaPXoNeOFrHQOWrDsQ1vYukdtblDc3FW/Ywf7aelcFIGh9qydmkPX/EPeULsbgdZp6sybGo
```

PpEuxzb4CYeRjogB9VvPCRAPb4D/1hRdpoVgWI78JvaeI+xwrP71RuHggZEsM8FSYFBD8c5dY+iAHbPSBI6Q
SZMvMHCu8YVlV40rHFjjoKQ1ox9DHHyvaZkwAZbI/U7+CYZoPoXMAARjCCCW4TIB3VrM70QLjnLSVfW
aCtTnYp2KWaRae0Ze7yPt/h1dYe4ofn/O3UH0kEBqJ99Srtrmr9UWdgikgrWCz5TAV27g2vsZubfMe8vC1QnqAS
azyBy74ibvrXrIvHnhHQvPCkZFRdbgYhV/+KQIQ==",
  "base64": true
}
Using gpgme.js

At first, make sure that the environment you want to use gpgme.js in has access
and permissions for nativeMessaging, and gpgme-json installed. For details,
see the README.

The library itself is started via the {@link init} method. This will test the
nativeMessaging connection, and then resolve into an Object offering
the top level API:

* [encrypt]{@link GpgME#encrypt}
* [decrypt]{@link GpgME#decrypt}
* [sign]{@link GpgME#sign}
* [verify]{@link GpgME#verify}
* [Keyring]{@link GPGME_Keyring}

```
gpgmejs.init()
  .then(function(GPGME) {
    // using GPGME
  }, function(error){
    // error handling;
  })
```

All methods that require communication with nativeMessaging are asynchronous,
using Promises. Rejections will be instances of {@link GPGME_Error}.

An exaeption are Keys, which can be initialized in a 'sync' mode, allowing them
to be cached and used synchronously until manually refreshed.

Keyring and Keys

The gnupg keys
 can be accessed via the [Keyring]{@link GPGME_Keyring}.

The Keyring offers the methods for accessing information on all Keys known to
gnupg.

**Due to security constraints, the javascript-binding currently only offers
limited support for secret-Key interaction.**

The existence of secret Keys is not secret, and those secret Keys can be used
for signing, but Operations that may expose, modify or delete secret Keys are
not supported.

* [getKeysArmored]{@link GPGME_Keyring#getKeysArmored}
* [getKeys]{@link GPGME_Keyring#getKeys}
* [getDefaultKey]{@link GPGME_Keyring#getDefaultKey}
* [generateKey]{@link GPGME_Keyring#generateKey}
* [deleteKey]{@link GPGME_Keyring#deleteKey}
;;;; gpgme-grovel.lisp

;;; This file is part of GPGME-CL.
;;;
;;; GPGME-CL is free software; you can redistribute it and/or modify it
;;; under the terms of the GNU General Public License as published by
;;; the Free Software Foundation; either version 2 of the License, or
;;; (at your option) any later version.
;;;
;;; GPGME-CL is distributed in the hope that it will be useful, but
;;; WITHOUT ANY WARRANTY; without even the implied warranty of
;;; MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
;;; Lesser General Public License for more details.
;;;
;;; You should have received a copy of the GNU General Public License
;;; along with GPGME; if not, write to the Free Software Foundation,
;;; Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

(in-package :gpgme)

(include "errno.h" "sys/types.h")

(constant (+ebadf+ "EBADF"))

(ctype off-t "off_t")
(ctype size-t "size_t")
(ctype ssize-t "ssize_t")

(cvar ("errno" *errno*) :int)
{
  "op": "version"
}
(21:protected-private-key(3:dsa(1:p129:_d8|po3s@!WGUOAXRC$_[8SN:y|o?2[.pVxn(kOc\Bk0zu&FnK)(1:q21:
vBeOP\P)(1:g129:fU/e(2hp@hjc2uE=Sg GO;ZkIyFnGM!GsG@
= _SZklI)(1:y128:K:9tA]4SU1 }sG`nZpx/imV^>A;V%?5!!sS{!=-6@|
=d
)(9:protected25:openpgp-s2k3-sha1-aes-cbc((4:sha18:Li7:6452224)16:,kO{,)80:z7OCG/sB48(H9%*ojSO

OGSma`YUs1h<_)(12:protected-at15:20130812T105134)))
For a list of the authors of the source code of GPGME, please see the
file AUTHORS. The following people supported GPGME development in
various ways (for example by finding bugs or giving advice), and we
want to thank them for their help. If we forgot you, please let us
know.

Adriaan de Groot adridg@cs.kun.nl
Albrecht Dre albrecht.dress@arcor.de
Alfons Hoogervorst alfons@proteus.demon.nl
Daniel Mueller daniel@danm.de
Enno Cramer uebergeek@web.de
Frank Heckenbach frank@g-n-u.de
Igor Belyi gpgme@katehok.ac93.org
Jan-Oliver Wagner jan@intevation.de
Johannes Poehlmann jhp@caldera.de
Jose C. Garca Sogo jose@jaimedelamo.eu.org
Leo Gaspard ekleog@gmail.com
Mark Mutz mutz@kde.org
Miguel Coca mcoca@gnu.org
Noel Torres envite@rolamasao.org
Patrick Spendrin patrick.spendrin@kdab.com
Stphane Corthsy stephane@sente.ch
Timo Schulz twoaday@freakmail.de
Tommy Reynolds reynolds@redhat.com
W.
Trevor King wking@tremily.us

Copyright 2001, 2002, 2004, 2010, 2012 g10 Code GmbH

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
% Created 2019-01-18 Fri 10:10
% Intended LaTeX compiler: xelatex
\documentclass[12pt]{article}
\usepackage{graphicx}
\usepackage{grffile}
\usepackage{longtable}
\usepackage{wrapfig}
\usepackage{rotating}
\usepackage[normalem]{ulem}
\usepackage{amsmath}
\usepackage{textcomp}

```
\usepackage{amssymb}
\usepackage{capt-of}
\usepackage{hyperref}
\usepackage{xltxtra}
\usepackage[margin=1in]{geometry}
\setmainfont[Ligatures={Common}]{Times New Roman}
\author{Ben McGinnes <ben@gnupg.org>}
\author{Ben McGinnes}
\date{\today}
\title{GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)}
\hypersetup{
pdfauthor={Ben McGinnes},
pdftitle={GNU Privacy Guard (GnuPG) Made Easy Python Bindings HOWTO (English)},
pdfkeywords={},
pdfsubject={},
pdfcreator={Emacs 26.1 (Org mode 9.1.14)},
pdflang={English}}
\begin{document}

\maketitle
\tableofcontents



\section{Introduction}
\label{sec:org8e5fa02}
\begin{center}
\begin{tabular}{ll}
Version: & 0.1.4\\
GPGME Version: & 1.12.1\\
Author: & Ben
 McGinnes <ben@gnupg.org>\\
Author GPG Key: & DB4724E6FA4286C92B4E55C4321E4E2373590E5D\\
Language: & Australian English, British English\\
Language codes: & en-AU, en-GB, en\\
\end{tabular}
\end{center}

This document provides basic instruction in how to use the GPGME
Python bindings to programmatically leverage the GPGME library.



\subsection{Python 2 versus Python 3}
\label{sec:org517cbf4}
Though the GPGME Python bindings themselves provide support for both
Python 2 and 3, the focus is unequivocally on Python 3 and
specifically from Python 3.4 and above.  As a consequence all the
examples and instructions in this guide use Python 3 code.
```

Much of it will work with Python 2, but much of it also deals with
Python 3 byte literals, particularly when reading and writing data.
Developers concentrating on Python 2.7, and possibly even 2.6, will
need to make the appropriate modifications to support the older string
and unicode types as opposed to bytes.

There are multiple reasons for concentrating
on Python 3; some of
which relate to the immediate integration of these bindings, some of
which relate to longer term plans for both GPGME and the python
bindings and some of which relate to the impending EOL period for
Python 2.7. Essentially, though, there is little value in tying the
bindings to a version of the language which is a dead end and the
advantages offered by Python 3 over Python 2 make handling the data
types with which GPGME deals considerably easier.

\subsection{Examples}
\label{sec:org2c08d53}
All of the examples found in this document can be found as Python 3
scripts in the \texttt{lang/python/examples/howto} directory.

\subsection{Unofficial Drafts}
\label{sec:orgceb2216}
In addition to shipping with each release of GPGME, there is a section
on locations to read or download \hyperref[sec:org080a94a]{draft editions} of this document from
at the end of it. These are unofficial versions produced in between
major releases.

\subsection{What's New}
\label{sec:orga79ddc2}
Full
details of what is new are now available in the \href{what-is-new.org}{What's New} file
and archives of the preceding \emph{What's New} sections are available in
the \href{what-was-new}{What Was New} file.

\subsubsection{New in GPGME 1130}
\label{sec:org746b75d}
See the \href{what-is-new\#new-stuff-1-13-0}{What's New} document for what is new in version 1.13.0.

\subsubsection{New in GPGME 1120}
\label{sec:org7adcade}
See the \href{what-was-new\#new-stuff-1-12-0}{What Was New} document for what was new in version 1.12.0.

\section{GPGME Concepts}
\label{sec:orgb257fc1}
\subsection{A C API}
\label{sec:org4fe1dfa}
Unlike many modern APIs with which programmers will be more familiar
with these days, the GPGME API is a C API. The API is intended for
use by C coders who would be able to access its features by including
the \texttt{gpgme.h} header file with their own C source code and then access
its functions just as they would any other C headers.

This is a very
 effective method of gaining complete access to the API
and in the most efficient manner possible. It does, however, have the
drawback that it cannot be directly used by other languages without
some means of providing an interface to those languages. This is
where the need for bindings in various languages stems.

\subsection{Python bindings}
\label{sec:org0e49e52}
The Python bindings for GPGME provide a higher level means of
accessing the complete feature set of GPGME itself. It also provides
a more pythonic means of calling these API functions.

The bindings are generated dynamically with SWIG and the copy of
\texttt{gpgme.h} generated when GPGME is compiled.

This means that a version of the Python bindings is fundamentally tied
to the exact same version of GPGME used to generate that copy of
\texttt{gpgme.h}.

\subsection{Difference between the Python bindings and other GnuPG Python packages}
\label{sec:org97acfd7}
There have been numerous attempts to add GnuPG support to Python
 over
the years. Some of the most well known are listed here, along with
what differentiates them.

\subsubsection{The python-gnupg package maintained by Vinay Sajip}
\label{sec:org0136847}
This is arguably the most popular means of integrating GPG with
Python. The package utilises the \texttt{subprocess} module to implement
wrappers for the \texttt{gpg} and \texttt{gpg2} executables normally invoked on the
command line (\texttt{gpg.exe} and \texttt{gpg2.exe} on Windows).

The popularity of this package stemmed from its ease of use and capability in providing the most commonly required features.

Unfortunately it has been beset by a number of security issues in the past; most of which stemmed from using unsafe methods of accessing the command line via the \texttt{subprocess} calls. While some effort has been made over the last two to three years (as of 2018) to mitigate this, particularly by no longer providing shell access through those subprocess calls, the wrapper is still somewhat limited in the scope of its GnuPG features coverage.

The python-gnupg package is available under the MIT license.

\subsubsection{The gnupg package created and maintained by Isis Lovecruft}
\label{sec:orgdc03987}
In 2015 Isis Lovecruft from the Tor Project forked and then re-implemented the python-gnupg package as just gnupg. This new package also relied on subprocess to call the \texttt{gpg} or \texttt{gpg2} binaries, but did so somewhat more securely.

The naming and version numbering selected for this package, however, resulted in conflicts with the original python-gnupg and since its functions were called in a different manner to python-gnupg, the release of this package also resulted in a great deal of consternation when people installed what they thought was an upgrade that subsequently broke the code relying on it.

The gnupg package is available under the GNU General Public License version 3.0 (or any later version).

\subsubsection{The PyME package maintained by Martin Albrecht}
\label{sec:org715600b}
This package is the origin of these bindings, though they are somewhat different now. For details of when and how the PyME package was folded back into GPGME itself see the \href{short-history.org}{Short History} document.\footnote{\texttt{short-history} and/or \texttt{short-history.html}.}

The PyME package was first released in 2002 and was also the first attempt to implement a low level binding to GPGME. In doing so it provided access to considerably more functionality than either the \texttt{python-gnupg} or \texttt{gnupg} packages.

The PyME package is only available for Python 2.6 and 2.7.

Porting the PyME package to Python 3.4 in 2015 is what resulted in it
being folded into the GPGME project and the current bindings are the
end result of that effort.

The PyME package is available under the same dual licensing as GPGME
itself: the GNU General Public License version 2.0 (or any later
version) and the GNU Lesser General Public License version
 2.1 (or any
later version).

\section{GPGME Python bindings installation}
\label{sec:org73d8d6f}
\subsection{No PyPI}
\label{sec:orgec9a038}
Most third-party Python packages and modules are available and
distributed through the Python Package Installer, known as PyPI.

Due to the nature of what these bindings are and how they work, it is
infeasible to install the GPGME Python bindings in the same way.

This is because the bindings use SWIG to dynamically generate C
bindings against \texttt{gpgme.h} and \texttt{gpgme.h} is generated from
\texttt{gpgme.h.in} at compile time when GPGME is built from source. Thus to
include a package in PyPI which actually built correctly would require
either statically built libraries for every architecture bundled with
it or a full implementation of C for each architecture.

See the additional notes regarding \hyperref[sec:org645735a]{CFFI and SWIG} at the end of this
section for further details.

\subsection{Requirements}
\label{sec:org2f7f06c}
The
 GPGME Python bindings only have three requirements:

\begin{enumerate}
\item A suitable version of Python 2 or Python 3. With Python 2 that
means CPython 2.7 and with Python 3 that means CPython 3.4 or
higher.
\item \href{https://www.swig.org}{SWIG}.
\item GPGME itself. Which also means that all of GPGME's dependencies
must be installed too.
\end{enumerate}

\subsubsection{Recommended Additions}
\label{sec:org25bd7d4}
Though none of the following are absolute requirements, they are all
recommended for use with the Python bindings. In some cases these
recommendations refer to which version(s) of CPython to use the
bindings with, while others refer to third party modules which provide
a significant advantage in some way.

\begin{enumerate}
\item If possible, use Python 3 instead of 2.
\item Favour a more recent version of Python since even 3.4 is due to
reach EOL soon. In production systems and services, Python 3.6
should be robust enough to be relied on.
\item If possible add the
 following Python modules which are not part of
the standard library: \href{http://docs.python-requests.org/en/latest/index.html}{Requests},
\href{https://cython.org/}{Cython}, \href{https://pendulum.eustace.io/}{Pendulum} and
\href{https://github.com/Selfnet/hkp4py}{hkp4py}.
\end{enumerate}

Chances are quite high that at least the first one and maybe two of
those will already be installed.

Note that, as with Cython, some of advanced use case scenarios will
bring with them additional requirements. Most of these will be fairly
well known and commonly installed ones, however, which are in many
cases likely to have already been installed on many systems or be
familiar to Python programmers.

\subsection{Installation}
\label{sec:orgf1c7587}
Installing the Python bindings is effectively achieved by compiling
and installing GPGME itself.

Once SWIG is installed with Python and all the dependencies for GPGME
are installed you only need to confirm that the version(s) of Python
you want the
 bindings installed for are in your \texttt{\$PATH}.

By default GPGME will attempt to install the bindings for the most
recent or highest version number of Python 2 and Python 3 it detects
in \texttt{\$PATH}. It specifically checks for the \texttt{python} and \texttt{python3}
executables first and then checks for specific version numbers.

For Python 2 it checks for these executables in this order: \texttt{python},
\texttt{python2} and \texttt{python2.7}.

For Python 3 it checks for these executables in this order: \texttt{python3}, \texttt{python3.7}, \texttt{python3.6}, \texttt{python3.5} and \texttt{python3.4}.\footnote{With no issues reported specific to Python 3.7, the release of
Python 3.7.1 at around the same time as GPGME 1.12.0 and the testing with Python 3.7.1rc1, there is no reason to delay moving 3.7 ahead of 3.6 now. Production environments with more conservative requirements will always enforce their own policies anyway and installation to each supported minor release
is quite possible too.}

On systems where \texttt{python} is actually \texttt{python3} and not \texttt{python2} it may be possible that \texttt{python2} may be overlooked, but there have been no reports of that actually occurring as yet.

In the three months or so since the release of Python 3.7.0 there has been extensive testing and work with these bindings with no issues specifically relating to the new version of Python or any of the new features of either the language or the bindings. This has also been the case with Python 3.7.1rc1. With that in mind and given the release of Python 3.7.1 is scheduled for around the same time as GPGME 1.12.0, the order of preferred Python versions has been changed to move Python 3.7 ahead of Python 3.6.

\subsubsection{Installing GPGME}
\label{sec:org903bd67}
See the GPGME \texttt{README} file for details of how to install GPGME from source.

\subsection{Known Issues}
\label{sec:org0d2a332}
There are a few known issues with the current build process
and the
Python bindings. For the most part these are easily addressed should they be encountered.

\subsubsection{Breaking Builds}
\label{sec:orgbac75f3}
Occasionally when installing GPGME with the Python bindings included it may be observed that the \texttt{make} portion of that process induces a large very number of warnings and, eventually errors which end that part of the build process. Yet following that with \texttt{make check} and \texttt{make install} appears to work seamlessly.

The cause of this is related to the way SWIG needs to be called to dynamically generate the C bindings for GPGME in the first place. So

the entire process will always produce \texttt{lang/python/python2-gpg/} and
\texttt{lang/python/python3-gpg/} directories. These should contain the
build output generated during compilation, including the complete
bindings and module installed into \texttt{site-packages}.

Occasionally the errors in the early part or some other conflict
(e.g. not installing
 as \textbf{\emph{root}} or \textbf{\emph{su}}) may result in nothing
being installed to the relevant \texttt{site-packages} directory and the
build directory missing a lot of expected files. Even when this
occurs, the solution is actually quite simple and will always work.

That solution is simply to run the following commands as either the
\textbf{root} user or prepended with \texttt{sudo -H}\footnote{Yes, even if you use virtualenv with everything you do in
Python. If you want to install this module as just your user account
then you will need to manually configure, compile and install the
\emph{entire} GnuPG stack as that user as well. This includes libraries
which are not often installed that way. It can be done and there are
circumstances under which it is worthwhile, but generally only on
POSIX systems which utilise single user mode (some even require it).} in the \texttt{lang/python/}
directory:

\begin{verbatim}
/path/to/pythonX.Y setup.py build
/path/to/pythonX.Y setup.py
 build
/path/to/pythonX.Y setup.py install
\end{verbatim}

Yes, the build command does need to be run twice. Yes, you still need
to run the potentially failing or incomplete steps during the
\texttt{configure}, \texttt{make} and \texttt{make install} steps with installing GPGME.
This is because those steps generate a lot of essential files needed,
both by and in order to create, the bindings (including both the
\texttt{setup.py} and \texttt{gpgme.h} files).

\begin{enumerate}
\item IMPORTANT Note
\label{sec:org37f3d4a}
If specifying a selected number of languages to create bindings for,
try to leave Python last. Currently the majority of the other
language bindings are also preceding Python of either version when
listed alphabetically (not counting the Qt bindings).

If Python is set to precede one of the other languages then it is
possible that the errors described here may interrupt the build

process before generating bindings for those other languages. In
these cases it may be preferable
 to configure all preferred language
bindings separately with alternative \texttt{configure} steps for GPGME using
the \texttt{-{}-enable-languages=\$LANGUAGE} option.

Alternatively \texttt{make} (or \texttt{gmake}, depending on your platform) may be
run with the the \texttt{-k} option, which tells make to keep going even if
errors are encountered. In that case the failure of one language's
set of bindings to build should not hamper another language's bindings
to build.
\end{enumerate}

\subsubsection{Reinstalling Responsibly}
\label{sec:org21e4dec}
Regardless of whether you're installing for one version of Python or
several, there will come a point where reinstallation is required.
With most Python module installations, the installed files go into the
relevant site-packages directory and are then forgotten about. Then
the module is upgraded, the new files are copied over the old and
that's the end of the matter.

While the same is true of these bindings, there have been intermittent
issues
 observed on some platforms which have benefited significantly
from removing all the previous installations of the bindings before
installing the updated versions.

Removing the previous version(s) is simply a matter of changing to the
relevant \texttt{site-packages} directory for the version of Python in
question and removing the \texttt{gpg/} directory and any accompanying
egg-info files for that module.

In most cases this will require root or administration privileges on
the system, but the same is true of installing the module in the first
place.

\subsubsection{Multiple installations}
\label{sec:org30b18bd}
For a variety of reasons it may be either necessary or just preferable
to install the bindings to alternative installed Python versions which
meet the requirements of these bindings.

On POSIX systems this will generally be most simply achieved by
running the manual installation commands (build, build, install) as
described in the previous section for each Python

installation the
bindings need to be installed to.

As per the SWIG documentation: the compilers, libraries and runtime
used to build GPGME and the Python Bindings \textbf{must} match those used to
compile Python itself, including the version number(s) (at least going
by major version numbers and probably minor numbers too).

On most POSIX systems, including OS X, this will very likely be the
case in most, if not all, cases.

Note that from GPGME \href{https://dev.gnupg.org/rMff6ff616aea6f59b7f2ce1176492850ecdf3851e}{1.12.1} the
default installation installs to each
version of Python it can find first. That is that it will currently
install for the first copies of Python versions 2.7, 3.4, 3.5, 3.6,
3.7 and 3.8 (dev branch) that it finds. Usually this will be in the
same prefix as GPGME itself, but is dictated by the \texttt{\$PATH} when the
installation is performed. The above instructions can still be
performed on other python installations which the installer does not
find,
including alternative prefixes.

\subsubsection{Won't Work With Windows}
\label{sec:org0ebae3a}
There are semi-regular reports of Windows users having considerable
difficulty in installing and using the Python bindings at all. Very
often, possibly even always, these reports come from Cygwin users
and/or MinGW users and/or Msys2 users. Though not all of them have
been confirmed, it appears that these reports have also come from
people who installed Python using the Windows installer files from the
\href{https://python.org}{Python website} (i.e. mostly MSI installers, sometimes self-extracting
\texttt{.exe} files).

The Windows versions of Python are not built using Cygwin, MinGW or
Msys2; they're built using Microsoft Visual Studio. Furthermore the
version used is \emph{considerably} more advanced than the version which
MinGW obtained a small number of files from many years ago in order to
be able to compile anything at all. Not only that, but there are
changes to the version of
Visual Studio between some micro releases,
though that is is particularly the case with Python 2.7, since it has
been kept around far longer than it should have been.

There are two theoretical solutions to this issue:

\begin{enumerate}

\item Compile and install the GnuPG stack, including GPGME and the
Python bindings using the same version of Microsoft Visual Studio
used by the Python Foundation to compile the version of Python
installed.

If there are multiple versions of Python then this will need to be
done with each different version of Visual Studio used for those
versions of Python.

\item Compile and install Python using the same tools used by choice,
such as MinGW or Msys2.
\end{enumerate}

Do \textbf{not} use the official Windows installer for Python unless
following the first method.

In this type of situation it may even be for the best to accept that
there are less limitations on permissive software than free software
and simply opt to use a recent version of the Community
 Edition of
Microsoft Visual Studio to compile and build all of it, no matter
what.

Investigations into the extent or the limitations of this issue are
ongoing.

The following table lists the version of Microsoft Visual Studio which
needs to be used when compiling GPGME and the Python bindings with
each version of the CPython binary released \href{https://www.python.org/downloads/windows/}{for Windows}:

\begin{center}
\begin{tabular}{rll}
CPython & Microsoft product name & runtime filename\\
2.7.6 & Visual Studio 2008 & MSVCR90.DLL\\
3.4.0 & Visual Studio 2010 & MSVCR100.DLL\\
3.5.0 & Visual Studio 2015 & \textbf{see below}\\
3.6.0 & Visual Studio 2015 & \textbf{see below}\\
3.7.0 & Visual Studio 2017* & \textbf{see below}\\
\end{tabular}
\end{center}

It is important to note that MingW and Msys2 ship with the Visual C
runtime from Microsoft Visual Studio 2005 and are thus \textbf{incompatible}
with all the versions of CPython which can be used with the GPGME
Python bindings.

It is

also important to note that from CPython 3.5 onwards, the Python Foundation has adopted the reworking of the Visual C runtime which was performed for Visual Studio 2015 and aimed at resolving many of these kinds of issues. Much greater detail on these issues and the correct file(s) to link to are available from Matthew Brett's invaluable page, \href{https://matthew-brett.github.io/pydagogue/python_msvc.html}{Using Microsoft Visual C with Python}. It is also worth reading the Microsoft Developer Network blog post on \href{http://blogs.msdn.com/b/vcblog/archive/2015/03/03/introducing-the-universal-crt.aspx}{the universal CRT} and Steve Dower's blog posts on Python extensions (\href{http://stevedower.id.au/blog/building-for-python-3-5}{part 1} and \href{http://stevedower.id.au/blog/building-for-python-3-5-part-two}{part 2}).

The second of those two posts by Steve Dower contains the details of specific configuration options required for compiling anything to be used with official CPython releases. In addition to those configuration and compiler settings to use, the versions of Visual Studio prior to Visual Studio 2015 did not support 64-bit systems by default. So compiling a 64-bit version of these bindings for a 64-bit version of CPython 2.7 or 3.4 requires additional work.

In addition to the blog posts, the \href{https://wiki.python.org/moin/WindowsCompilers}{Windows compilers} wiki page on the CPython wiki is another essential reference on the relevant versions of Visual Studio to use and the degree of compatibility with CPython releases.

Eventually someone will ask why there isn't an installable binary for Windows, which the GPGME of the licenses do not preclude as long as the source code is available in conjunction with such a release.

The sheer number of versions of Visual Studio in conjunction with differing configuration options depending on the target Windows version and whether the architecture is 64-bit or 32-bit makes it difficult to provide a correct binary installer for Windows users. At the bare minimum doing so would require the GnuPG project compile ten different versions of the bindings with each release; both 32-bit and 64-bit versions for CPython 2.7 and 3.4, with 64-bit versions for both x86-64 (i.e. Intel and AMD) and ARM architectures for CPython 3.5, 3.6, 3.7 and later releases. That's the bare \textbf{minimum}, it'd probably be higher.

Additionally, with only a binary installation used in conjunction with the CPython installer from \texttt{python.org} the advanced options available which utilise \hyperref[sec:org3b53926]{Cython} will not be able to be used at all. Cython depends on being able to compile the C code it generates and that too would need to utilise a matching runtime to both the installed version

of CPython and these bindings in order to work with the bindings.

Considering all of that, what do we recommend?

\begin{enumerate}
\item Use a recent version of CPython; at least 3.5, but ideally 3.6 or
later.

\item
Use Visual Studio 2015 or the standalone build tools for Visual
Studio 2017 (or later).

\item Compile both CPython and GPGME with these bindings using the tools
selected in step 2.

\item Ignore MingW, Msys2 and the official CPython binary installers.

\item Be thankful the answer to this question wasn't simply to say
something like, install Linux or install FreeBSD (or even
Apple's OS X).
\end{enumerate}

\subsubsection{CFFI is the Best and GPGME should use it instead of SWIG}
\label{sec:org645735a}
There are many reasons for favouring \href{https://cffi.readthedocs.io/en/latest/overview.html}{CFFI} and proponents of it are
quite happy to repeat these things as if all it would take to switch
from SWIG to CFFI is repeating that list as if it were a new concept.

The fact is that there are things which Python's CFFI implementation
cannot handle in the GPGME C code. Beyond that there are features of
SWIG which are simply not available with CFFI at all. SWIG generates
the
bindings to Python using the \texttt{gpgme.h} file, but that file is not
a single version shipped with each release, it too is generated when
GPGME is compiled.

CFFI is currently unable to adapt to such a potentially mutable
codebase. If there were some means of applying SWIG's dynamic code
generation to produce the Python/CFFI API modes of accessing the GPGME
libraries (or the source source code directly), but such a thing does
not exist yet either and it currently appears that work is needed in
at least one of CFFI's dependencies before any of this can be
addressed.

So if you're a massive fan of CFFI; that's great, but if you want this
project to switch to CFFI then rather than just insisting that it

should, I'd suggest you volunteer to bring CFFI up to the level this
project needs.

If you're actually seriously considering doing so, then I'd suggest
taking the \texttt{gpgme-tool.c} file in the GPGME \texttt{src/} directory and
getting that to work with any of the CFFI API methods
 (not the ABI
methods, they'll work with pretty much anything). When you start
running into trouble with "ifdefs" then you'll know what sort of
things are lacking. That doesn't even take into account the amount of
work saved via SWIG's code generation techniques either.

\subsubsection{Virtualised Environments}
\label{sec:orgb0d56f5}
It is fairly common practice amongst Python developers to, as much as
possible, use packages like virtualenv to keep various things that are
to be installed from interfering with each other. Given how much of
the GPGME bindings is often at odds with the usual pythonic way of
doing things, it stands to reason that this would be called into
question too.

As it happens the answer as to whether or not the bindings can be used
with virtualenv, the answer is both yes and no.

In general we recommend installing to the relevant path and matching
prefix of GPGME itself. Which means that when GPGME, and ideally the
rest of the GnuPG stack, is installed to a prefix
 like \texttt{/usr/local} or
\texttt{/opt/local} then the bindings would need to be installed to the main
Python installation and not a virtualised abstraction. Attempts to
separate the two in the past have been known to cause weird and
intermittent errors ranging from minor annoyances to complete failures
in the build process.

As a consequence we only recommend building with and installing to the
main Python installations within the same prefix as GPGME is installed
to or which are found by GPGME's configuration stage immediately prior
to running the make commands. Which is exactly what the compiling and
installing process of GPGME does by default.

Once that is done, however, it appears that a copy of the compiled
module may be installed into a virtualenv of the same major and minor
version matching the build. Alternatively it is possible to utilise a
\texttt{sites.pth} file in the \texttt{site-packages/} directory of a virtualenv
installation, which links back to the system
 installations
corresponding directory in order to import anything installed system

wide. This may or may not be appropriate on a case by case basis.

Though extensive testing of either of these options is not yet
complete, preliminary testing of them indicates that both are viable
as long as the main installation is complete. Which means that
certain other options normally restricted to virtual environments are
also available, including integration with pythonic test suites
(e.g. \href{https://docs.pytest.org/en/latest/index.html}{pytest}) and other large projects.

That said, it is worth reiterating the warning regarding non-standard
installations. If one were to attempt to install the bindings only to
a virtual environment without somehow also including the full GnuPG
stack (or enough of it as to include GPGME) then it is highly likely
that errors would be encountered at some point and more than a little
likely that the build process itself would break.

If a degree of separation
 from the main operating system is still
required in spite of these warnings, then consider other forms of
virtualisation. Either a virtual machine (e.g. \href{https://www.virtualbox.org/}{VirtualBox}), a
hardware emulation layer (e.g. \href{https://www.qemu.org/}{QEMU}) or an application container
(e.g. \href{https://www.docker.com/why-docker}{Docker}).

Finally it should be noted that the limited tests conducted thus far
have been using the \texttt{virtualenv} command in a new directory to create
the virtual python environment. As opposed to the standard \texttt{python3
-m venv} and it is possible that this will make a difference depending
on the system and version of Python in use. Another option is to run
the command \texttt{python3 -m virtualenv /path/to/install/virtual/thingy}
instead.

\section{Fundamentals}
\label{sec:org832642e}
Before we can get to the fun stuff, there are a few matters regarding
GPGME's design which hold true whether you're dealing with the C code
directly
 or these Python bindings.

\subsection{No REST}
\label{sec:org3d694ba}
The first part of which is or will be fairly blatantly obvious upon
viewing the first example, but it's worth reiterating anyway. That
being that this API is \emph{\textbf{not}} a REST API. Nor indeed could it ever
be one.

Most, if not all, Python programmers (and not just Python programmers)

know how easy it is to work with a RESTful API. In fact they've become so popular that many other APIs attempt to emulate REST-like behaviour as much as they are able. Right down to the use of JSON formatted output to facilitate the use of their API without having to retrain developers.

This API does not do that. It would not be able to do that and also provide access to the entire C API on which it's built. It does, however, provide a very pythonic interface on top of the direct bindings and it's this pythonic layer that this HOWTO deals with.

\subsection{Context}
\label{sec:org10e4004}
One of the reasons which prevents
 this API from being RESTful is that
most operations require more than one instruction to the API to perform the task. Sure, there are certain functions which can be performed simultaneously, particularly if the result known or strongly anticipated (e.g. selecting and encrypting to a key known to be in the public keybox).

There are many more, however, which cannot be manipulated so readily: they must be performed in a specific sequence and the result of one operation has a direct bearing on the outcome of subsequent operations. Not merely by generating an error either.

When dealing with this type of persistent state on the web, full of both the RESTful and REST-like, it's most commonly referred to as a session. In GPGME, however, it is called a context and every operation type has one.

\section{Working with keys}
\label{sec:orgff114ca}
\subsection{Key selection}
\label{sec:org6589217}
Selecting keys to encrypt to or to sign with will be a common occurrence when working with
 GPGMe and the means available for doing
so are quite simple.

They do depend on utilising a Context; however once the data is recorded in another variable, that Context does not need to be the same one which subsequent operations are performed.

The easiest way to select a specific key is by searching for that key's key ID or fingerprint, preferably the full fingerprint without

any spaces in it. A long key ID will probably be okay, but is not
advised and short key IDs are already a problem with some being
generated to match specific patterns. It does not matter whether the
pattern is upper or lower case.

So this is the best method:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="258E88DCBD3CD44D8E7AB43F6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

This is passable and very likely to be common:

\begin{verbatim}
import gpg

k = gpg.Context().keylist(pattern="0x6ECB6AF0DEADBEEF")
keys = list(k)
\end{verbatim}

And this is a really bad idea:

\begin{verbatim}
import
 gpg

k = gpg.Context().keylist(pattern="0xDEADBEEF")
keys = list(k)
\end{verbatim}

Alternatively it may be that the intention is to create a list of keys
which all match a particular search string. For instance all the
addresses at a particular domain, like this:

\begin{verbatim}
import gpg

ncsc = gpg.Context().keylist(pattern="ncsc.mil")
nsa = list(ncsc)
\end{verbatim}

\subsubsection{Counting keys}
\label{sec:org63a3d62}
Counting the number of keys in your public keybox (\texttt{pubring.kbx}), the

format which has superseded the old keyring format (\texttt{pubring.gpg} and
\texttt{secring.gpg}), or the number of secret keys is a very simple task.

\begin{verbatim}
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
 Number of secret keys: {0}
 Number of public keys: {1}
""".format(secnum, pubnum))
\end{verbatim}

NOTE:
 The \hyperref[sec:org3b53926]{Cython} introduction in the \hyperref[sec:org944cc00]{Advanced and Experimental}
section uses this same key counting code with Cython to demonstrate
some areas where Cython can improve performance even with the
bindings. Users with large public keyrings or keyboxes, for instance,
should consider these options if they are comfortable with using
Cython.

\subsection{Get key}
\label{sec:org26adb2e}
An alternative method of getting a single key via its fingerprint is
available directly within a Context with \texttt{Context().get_key}. This is
the preferred method of selecting a key in order to modify it, sign or
certify it and for obtaining relevant data about a single key as a
part of other functions; when verifying a signature made by that key,
for instance.

By default this method will select public keys, but it can select
secret keys as well.

This first example demonstrates selecting the current key of Werner
Koch, which is due
 to expire at the end of 2018:

\begin{verbatim}
import gpg

fingerprint = "80615870F5BAD690333686D0F2AD85AC1E42B367"
key = gpg.Context().get_key(fingerprint)
\end{verbatim}

Whereas this example demonstrates selecting the author's current key
with the \texttt{secret} key word argument set to \texttt{True}:

\begin{verbatim}
import gpg

fingerprint = "DB4724E6FA4286C92B4E55C4321E4E2373590E5D"
key = gpg.Context().get_key(fingerprint, secret=True)
\end{verbatim}

It is, of course, quite possible to select expired, disabled and
revoked keys with this function, but only to effectively display
information about those keys.

It is also possible to use both unicode or string literals and byte
literals with the fingerprint when getting a key in this way.

\subsection{Importing keys}
\label{sec:org1ad598a}
Importing keys is possible with the \texttt{key_import()} method and takes
one argument which is a bytes literal object containing either the
binary or ASCII armoured key data for one or more
 keys.

The following example retrieves one or more keys from the SKS
keyservers via the web using the requests module. Since requests
returns the content as a bytes literal object, we can then use that
directly to import the resulting data into our keybox.

\begin{verbatim}
import gpg
import os.path
import requests

c = gpg.Context()
url = "https://sks-keyservers.net/pks/lookup"
pattern = input("Enter the pattern to search for key or user IDs: ")
payload = {"op": "get", "search": pattern}

r = requests.get(url, verify=True, params=payload)

```
result = c.key_import(r.content)

if result is not None and hasattr(result, "considered") is False:
  print(result)
elif result is not None and hasattr(result, "considered") is True:
  num_keys = len(result.imports)
  new_revs = result.new_revocations
  new_sigs = result.new_signatures
  new_subs = result.new_sub_keys
  new_uids = result.new_user_ids
  new_scrt = result.secret_imported
  nochange = result.unchanged
  print("""
 The total number of keys considered for import was:  {0}

   Number of keys revoked:  {1}
  Number of new signatures:  {2}
    Number of new subkeys:  {3}
   Number of new user IDs:  {4}
 Number of new secret keys:  {5}
  Number of unchanged keys:  {6}

 The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
  for i in range(num_keys):
     print("{0}\n".format(result.imports[i].fpr))
else:
  pass
\end{verbatim}
```

NOTE: When searching for a key ID of any length or a fingerprint (without spaces), the SKS servers require the the leading \texttt{0x} indicative of hexadecimal be included. Also note that the old short key IDs (e.g. \texttt{0xDEADBEEF}) should no longer be used due to the relative ease by which such key IDs can be reproduced, as demonstrated by the Evil32 Project in 2014 (which was subsequently exploited in 2016).

Testing for whether a string in any given search is or may be a hexadecimal
 value which may be missing the leading \texttt{0x} is a simple matter of using a try/except statement which attempts to convert the string as hex to an integer and then back to hex; then using that to search with. Raising a ValueError simply results in treating the string as a string. This is the method and logic utilised in the \texttt{import-keys-hkp.py} script (see below).

\subsubsection{Working with ProtonMail}
\label{sec:org27b0d6f}
Here is a variation on the example above which checks the constrained
ProtonMail keyserver for ProtonMail public keys.

\begin{verbatim}
```
import gpg
import requests
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.
""")

c = gpg.Context(armor=True)
url = "https://api.protonmail.ch/pks/lookup"
ksearch = []

if len(sys.argv) >= 2:
  keyterm = sys.argv[1]
else:
  keyterm = input("Enter the key ID, UID or search string: ")

if keyterm.count("@") == 2 and keyterm.startswith("@") is
 True:
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
  ksearch.append(keyterm[1:])
elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
  ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
  ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
  ksearch.append("{0}@pm.me".format(keyterm[1:]))
elif keyterm.count("@") == 0:
  ksearch.append("{0}@protonmail.com".format(keyterm))
  ksearch.append("{0}@protonmail.ch".format(keyterm))
  ksearch.append("{0}@pm.me".format(keyterm))
elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
  uidlist = keyterm.split("@")
  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
      ksearch.append("{0}@protonmail.ch".format(uid))
      ksearch.append("{0}@pm.me".format(uid))
elif keyterm.count("@") > 2:
  uidlist = keyterm.split("@")
  for uid in uidlist:
      ksearch.append("{0}@protonmail.com".format(uid))
```

```
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
else:
    ksearch.append(keyterm)

for k in ksearch:
    payload = {"op": "get", "search": k}
    try:
        r = requests.get(url, verify=True, params=payload)
        if r.ok is True:
            result = c.key_import(r.content)
        elif r.ok is False:
            result = r.content
    except Exception as e:
        result = None

    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the
 following string:

        {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}
  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    elif result is None:
```

```
      print(e)
\end{verbatim}
```

Both the above example, \href{../examples/howto/pmkey-import.py}{pmkey-import.py}, and a version which prompts
for an alternative GnuPG home directory, \href{../examples/howto/pmkey-import-alt.py}{pmkey-import-alt.py}, are available with the other examples and are executable scripts.

Note that while the ProtonMail servers are based on the SKS servers,
their server is related more to their API and is not feature complete
by comparison to the servers in the SKS pool. One notable difference
being
 that the ProtonMail server does not permit non ProtonMail users
to update their own keys, which could be a vector for attacking
ProtonMail users who may not receive a key's revocation if it had been
compromised.

\subsubsection{Importing with HKP for Python}
\label{sec:org592d7ab}
Performing the same tasks with the \href{https://github.com/Selfnet/hkp4py}{hkp4py module} (available via PyPI) is not too much different, but does provide a number of options of
benefit to end users. Not least of which being the ability to perform
some checks on a key before importing it or not. For instance it may
be the policy of a site or project to only import keys which have not
been revoked. The hkp4py module permits such checks prior to the
importing of the keys found.

```
\begin{verbatim}
import gpg
import hkp4py
import sys

c = gpg.Context()
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")
results = []
keys = []

if len(sys.argv) > 2:
   pattern = " ".join(sys.argv[1:])
elif
 len(sys.argv) == 2:
   pattern = sys.argv[1]
else:
   pattern = input("Enter the pattern to search for keys or user IDs: ")


if pattern is not None:
```

```
  try:
     key = server.search(hex(int(pattern, 16)))
     keyed = True
  except ValueError as ve:
     key = server.search(pattern)
     keyed = False

  if key is not None:
     keys.append(key[0])
     if keyed is True:
        try:
           fob = server.search(pattern)
        except:
           fob = None
        if fob is not None:
           keys.append(fob[0])
     else:
        pass
  else:
     pass

  for logrus in pattern.split():
     try:
        key = server.search(hex(int(logrus, 16)))
        hexed = True
     except ValueError as ve:
        key = server.search(logrus)
        hexed = False

     if key is not None:
        keys.append(key[0])
        if hexed is True:
           try:

fob = server.search(logrus)
           except:
              fob = None
           if fob is not None:
              keys.append(fob[0])
        else:
           pass
     else:
        pass


if len(keys) > 0:
  for key in keys:
     import_result = c.key_import(key.key_blob)
```

```
        results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print(result)
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
        nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

  Number of keys revoked:  {1}
Number of new signatures:  {2}
   Number of new subkeys:  {3}
  Number
 of new user IDs:  {4}
Number of new secret keys:  {5}
Number of unchanged keys:  {6}

The key IDs for all considered keys were:
""".format(num_keys, new_revs, new_sigs, new_subs, new_uids, new_scrt,
           nochange))
        for i in range(num_keys):
            print(result.imports[i].fpr)
        print("")
    else:
        pass
\end{verbatim}

Since the hkp4py module handles multiple keys just as effectively as
one (\texttt{keys} is a list of responses per matching key), the example
above is able to do a little bit more with the returned data before
anything is actually imported.


\subsubsection{Importing from ProtonMail with HKP for Python}
\label{sec:org3966a76}
Though this can provide certain benefits even when working with
ProtonMail, the scope is somewhat constrained there due to the
limitations of the ProtonMail keyserver.

For instance, searching the SKS keyserver pool for the term "gnupg"
produces hundreds of results from any time the word appears in any
```

part of
 a user ID. Performing the same search on the ProtonMail
keyserver returns zero results, even though there are at least two
test accounts which include it as part of the username.

The cause of this discrepancy is the deliberate configuration of that
server by ProtonMail to require an exact match of the full email
address of the ProtonMail user whose key is being requested.
Presumably this is intended to reduce breaches of privacy of their
users as an email address must already be known before a key for that
address can be obtained.

\begin{enumerate}
\item Import from ProtonMail via HKP for Python Example no. 1
\label{sec:org6cd15c3}
The following script is available with the rest of the examples under
the somewhat less than original name, \texttt{pmkey-import-hkp.py}.

\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server for the specified key and
imports it.

Usage: pmkey-import-hkp.py [search strings]
""")

c
 = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 2:
   keyterms = sys.argv[1:]
elif len(sys.argv) == 2:
   keyterm = sys.argv[1]
   keyterms.append(keyterm)
else:

```
  key_term = input("Enter the key ID, UID or search string: ")
  keyterms = key_term.split()

for keyterm in keyterms:
  if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
     ksearch.append(keyterm[1:])
  elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
     ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
     ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
     ksearch.append("{0}@pm.me".format(keyterm[1:]))
  elif keyterm.count("@") == 0:
     ksearch.append("{0}@protonmail.com".format(keyterm))
     ksearch.append("{0}@protonmail.ch".format(keyterm))
      ksearch.append("{0}@pm.me".format(keyterm))
  elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  elif keyterm.count("@") > 2:
     uidlist = keyterm.split("@")
     for uid in uidlist:
        ksearch.append("{0}@protonmail.com".format(uid))
        ksearch.append("{0}@protonmail.ch".format(uid))
        ksearch.append("{0}@pm.me".format(uid))
  else:
     ksearch.append(keyterm)

for k in ksearch:
  print("Checking for key for: {0}".format(k))
  try:
     keys = server.search(k)
     if isinstance(keys, list) is True:
        for key in keys:
           allkeys.append(key)
           try:
              import_result = c.key_import(key.key_blob)

 except Exception as e:
              import_result = c.key_import(key.key)
     else:
        paradox.append(keys)
        import_result = None
  except Exception as e:
     import_result = None
```

```
  results.append(import_result)

for result in results:
  if result is not None and hasattr(result, "considered") is False:
     print("{0} for {1}".format(result.decode(), k))
  elif result is not None and hasattr(result, "considered") is True:
     num_keys = len(result.imports)
     new_revs = result.new_revocations
     new_sigs = result.new_signatures
     new_subs = result.new_sub_keys
     new_uids = result.new_user_ids
     new_scrt = result.secret_imported
     nochange = result.unchanged
     print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

     {1}

  Number of keys revoked:  {2}
Number of new signatures:  {3}
   Number of new subkeys:  {4}

  Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}

The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
        nochange))
     for i in range(num_keys):
        print(result.imports[i].fpr)
     print("")
  elif result is None:
     pass
\end{verbatim}


\item Import from ProtonMail via HKP for Python Example no. 2
\label{sec:org3b674e5}
Like its counterpart above, this script can also be found with the
rest of the examples, by the name pmkey-import-hkp-alt.py.

With this script a modicum of effort has been made to treat anything
passed as a \texttt{homedir} which either does not exist or which is not a
directory, as also being a pssible user ID to check for.  It's not
guaranteed to pick up on all such cases, but it should cover most of
```

them.

\begin{verbatim}
```
import gpg
import hkp4py
import os.path
import sys

print("""
This script searches the ProtonMail key server
 for the specified key and
imports it.  Optionally enables specifying a different GnuPG home directory.

Usage:  pmkey-import-hkp.py [homedir] [search string]
  or:  pmkey-import-hkp.py [search string]
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://api.protonmail.ch")
keyterms = []
ksearch = []
allkeys = []
results = []
paradox = []
homeless = None

if len(sys.argv) > 3:
   homedir = sys.argv[1]
   keyterms = sys.argv[2:]
elif len(sys.argv) == 3:
   homedir = sys.argv[1]
   keyterm = sys.argv[2]
   keyterms.append(keyterm)
elif len(sys.argv) == 2:
   homedir = ""
   keyterm = sys.argv[1]
   keyterms.append(keyterm)
else:
   keyterm = input("Enter the key ID, UID or search string: ")
   homedir = input("Enter the GPG configuration directory path (optional): ")
   keyterms.append(keyterm)

if len(homedir) == 0:
   homedir = None
   homeless = False

if homedir is not None:
   if homedir.startswith("~"):
```

```
        if os.path.exists(os.path.expanduser(homedir))
 is True:
            if os.path.isdir(os.path.expanduser(homedir)) is True:
                c.home_dir = os.path.realpath(os.path.expanduser(homedir))
            else:
                homeless = True
        else:
            homeless = True
    elif os.path.exists(os.path.realpath(homedir)) is True:
        if os.path.isdir(os.path.realpath(homedir)) is True:
            c.home_dir = os.path.realpath(homedir)
        else:
            homeless = True
    else:
        homeless = True

# First check to see if the homedir really is a homedir and if not, treat it as
# a search string.
if homeless is True:
    keyterms.append(homedir)
    c.home_dir = None
else:
    pass

for keyterm in keyterms:
    if keyterm.count("@") == 2 and keyterm.startswith("@") is True:
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
        ksearch.append(keyterm[1:])
    elif keyterm.count("@") == 1 and keyterm.startswith("@") is True:
        ksearch.append("{0}@protonmail.com".format(keyterm[1:]))
         ksearch.append("{0}@protonmail.ch".format(keyterm[1:]))
        ksearch.append("{0}@pm.me".format(keyterm[1:]))
    elif keyterm.count("@") == 0:
        ksearch.append("{0}@protonmail.com".format(keyterm))
        ksearch.append("{0}@protonmail.ch".format(keyterm))
        ksearch.append("{0}@pm.me".format(keyterm))
    elif keyterm.count("@") == 2 and keyterm.startswith("@") is False:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
            ksearch.append("{0}@pm.me".format(uid))
    elif keyterm.count("@") > 2:
        uidlist = keyterm.split("@")
        for uid in uidlist:
            ksearch.append("{0}@protonmail.com".format(uid))
            ksearch.append("{0}@protonmail.ch".format(uid))
```

```
        ksearch.append("{0}@pm.me".format(uid))
    else:
        ksearch.append(keyterm)

for k in ksearch:
    print("Checking
 for key for: {0}".format(k))
    try:
        keys = server.search(k)
        if isinstance(keys, list) is True:
            for key in keys:
                allkeys.append(key)
                try:
                    import_result = c.key_import(key.key_blob)
                except Exception as e:
                    import_result = c.key_import(key.key)
        else:
            paradox.append(keys)
            import_result = None
    except Exception as e:
        import_result = None
    results.append(import_result)

for result in results:
    if result is not None and hasattr(result, "considered") is False:
        print("{0} for {1}".format(result.decode(), k))
    elif result is not None and hasattr(result, "considered") is True:
        num_keys = len(result.imports)
        new_revs = result.new_revocations
        new_sigs = result.new_signatures
        new_subs = result.new_sub_keys
        new_uids = result.new_user_ids
        new_scrt = result.secret_imported
         nochange = result.unchanged
        print("""
The total number of keys considered for import was:  {0}

With UIDs wholely or partially matching the following string:

        {1}

    Number of keys revoked:  {2}
Number of new signatures:  {3}
     Number of new subkeys:  {4}
    Number of new user IDs:  {5}
Number of new secret keys:  {6}
Number of unchanged keys:  {7}
```

```
The key IDs for all considered keys were:
""".format(num_keys, k, new_revs, new_sigs, new_subs, new_uids, new_scrt,
          nochange))
       for i in range(num_keys):
           print(result.imports[i].fpr)
       print("")
   elif result is None:
       pass
\end{verbatim}
\end{enumerate}


\subsection{Exporting keys}
\label{sec:org4596a77}
Exporting keys remains a reasonably simple task, but has been
separated into three different functions for the OpenPGP cryptographic
engine.  Two of those functions are for exporting public keys and the
third is for exporting secret keys.


\subsubsection{Exporting
 public keys}
\label{sec:org873704f}
There are two methods of exporting public keys, both of which are very
similar to the other.  The default method, \texttt{key\_export()}, will export
a public key or keys matching a specified pattern as normal.  The
alternative, the \texttt{key\_export\_minimal()} method, will do the same thing
except producing a minimised output with extra signatures and third
party signatures or certifications removed.

\begin{verbatim}
import gpg
import os.path
import sys

print("""
This script exports one or more public keys.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
   homedir = sys.argv[3]
elif len(sys.argv) == 3:
   keyfile = sys.argv[1]
   logrus = sys.argv[2]
```

```
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the
 GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir) is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export(pattern=logrus)
except:
  result = c.key_export(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
else:
  pass
\end{verbatim}

It should be noted that the result will only return \texttt{None} when a
search pattern has been entered, but has not matched any keys.  When
the search pattern itself is set to \texttt{None} this triggers the exporting
of the entire public keybox.

\begin{verbatim}
import
 gpg
import os.path
import sys

print("""
This script exports one or more public keys in minimised form.
""")
```

```
c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if homedir.startswith("~"):
  if os.path.exists(os.path.expanduser(homedir)) is True:
    c.home_dir = os.path.expanduser(homedir)
  else:
    pass
elif os.path.exists(homedir)
 is True:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_minimal(pattern=logrus)
except:
  result = c.key_export_minimal(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
    f.write(result)
else:
  pass
\end{verbatim}


\subsubsection{Exporting secret keys}
\label{sec:org6c28d3d}
Exporting secret keys is, functionally, very similar to exporting
public keys; save for the invocation of \texttt{pinentry} via \texttt{gpg-agent} in
order to securely enter the key's passphrase and authorise the export.
```

The following example exports the secret key to a file which is then
set with the same permissions as the output files created by the
command line secret key export options.

\begin{verbatim}
import gpg
import os
import os.path
import sys

print("""
This script exports one or more secret keys.

The gpg-agent and pinentry are invoked to authorise the export.
""")

c = gpg.Context(armor=True)

if len(sys.argv) >= 4:
  keyfile
 = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the path and filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir) == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
    homedir = os.path.realpath(userdir)
  else:
    homedir = None
else:
  homedir = os.path.realpath(homedir)

```
if os.path.exists(homedir) is False:
  homedir =
 None
else:
  if os.path.isdir(homedir) is False:
     homedir = None
  else:
     pass

if homedir is not None:
  c.home_dir = homedir
else:
  pass

try:
  result = c.key_export_secret(pattern=logrus)
except:
  result = c.key_export_secret(pattern=None)

if result is not None:
  with open(keyfile, "wb") as f:
     f.write(result)
  os.chmod(keyfile, 0o600)
else:
  pass
\end{verbatim}
```

Alternatively the approach of the following script can be used. This
longer example saves the exported secret key(s) in files in the GnuPG
home directory, in addition to setting the file permissions as only
readable and writable by the user. It also exports the secret key(s)
twice in order to output both GPG binary (\texttt{.gpg}) and ASCII armoured
(\texttt{.asc}) files.

```
\begin{verbatim}
import gpg
import os
import os.path
import subprocess
import sys

print("""
This script exports one or more secret keys as both ASCII armored and binary
file formats, saved in files within the
 user's GPG home directory.

The gpg-agent and pinentry are invoked to authorise the export.
""")
```

```
if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-dirs homedir"
else:
  gpgconfcmd = "gpgconf --list-dirs homedir"

a = gpg.Context(armor=True)
b = gpg.Context()
c = gpg.Context()

if len(sys.argv) >= 4:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = sys.argv[3]
elif len(sys.argv) == 3:
  keyfile = sys.argv[1]
  logrus = sys.argv[2]
  homedir = input("Enter the GPG configuration directory path (optional): ")
elif len(sys.argv) == 2:
  keyfile = sys.argv[1]
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")
else:
  keyfile = input("Enter the filename to save the secret key to: ")
  logrus = input("Enter the UID matching the secret key(s) to export: ")
  homedir = input("Enter the GPG configuration directory path (optional): ")

if len(homedir)
 == 0:
  homedir = None
elif homedir.startswith("~"):
  userdir = os.path.expanduser(homedir)
  if os.path.exists(userdir) is True:
    homedir = os.path.realpath(userdir)
  else:
    homedir = None
else:
  homedir = os.path.realpath(homedir)

if os.path.exists(homedir) is False:
  homedir = None
else:
  if os.path.isdir(homedir) is False:
    homedir = None
  else:
    pass

if homedir is not None:
```

```
  c.home_dir = homedir
else:
  pass

if c.home_dir is not None:
  if c.home_dir.endswith("/"):
    gpgfile = "{0}{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}{1}.asc".format(c.home_dir, keyfile)
  else:
    gpgfile = "{0}/{1}.gpg".format(c.home_dir, keyfile)
    ascfile = "{0}/{1}.asc".format(c.home_dir, keyfile)
else:
  if os.path.exists(os.environ["GNUPGHOME"]) is True:
    hd = os.environ["GNUPGHOME"]
  else:
    try:
      hd = subprocess.getoutput(gpgconfcmd)
    except:
      process = subprocess.Popen(gpgconfcmd.split(),
                                 stdout=subprocess.PIPE)
      procom = process.communicate()
      if sys.version_info[0] == 2:
        hd = procom[0].strip()
      else:
        hd = procom[0].decode().strip()
  gpgfile = "{0}/{1}.gpg".format(hd, keyfile)
  ascfile = "{0}/{1}.asc".format(hd, keyfile)

try:
  a_result = a.key_export_secret(pattern=logrus)
  b_result = b.key_export_secret(pattern=logrus)
except:
  a_result = a.key_export_secret(pattern=None)
  b_result = b.key_export_secret(pattern=None)

if a_result is not None:
  with open(ascfile, "wb") as f:
    f.write(a_result)
  os.chmod(ascfile, 0o600)
else:
  pass

if b_result is not None:
  with open(gpgfile, "wb") as f:
    f.write(b_result)
  os.chmod(gpgfile, 0o600)
else:
  pass
```

\end{verbatim}

\subsubsection{Sending public keys to the SKS Keyservers}
\label{sec:org82d4958}
As with the previous section on importing
 keys, the \texttt{hkp4py} module
adds another option with exporting keys in order to send them to the
public keyservers.

The following example demonstrates how this may be done.

\begin{verbatim}
import gpg
import hkp4py
import os.path
import sys

print("""
This script sends one or more public keys to the SKS keyservers and is
essentially a slight variation on the export-key.py script.
""")

c = gpg.Context(armor=True)
server = hkp4py.KeyServer("hkps://hkps.pool.sks-keyservers.net")

if len(sys.argv) > 2:
  logrus = " ".join(sys.argv[1:])
elif len(sys.argv) == 2:
  logrus = sys.argv[1]
else:
  logrus = input("Enter the UID matching the key(s) to send: ")

if len(logrus) > 0:
  try:
    export_result = c.key_export(pattern=logrus)
  except Exception as e:
    print(e)
    export_result = None
else:
  export_result = c.key_export(pattern=None)

if export_result is not None:
  try:
    try:
      send_result = server.add(export_result)
    except:

```
            send_result = server.add(export_result.decode())
        if send_result is not None:
            print(send_result)
        else:
            pass
    except Exception as e:
        print(e)
else:
    pass
```

An expanded version of this script with additional functions for specifying an alternative homedir location is in the examples directory as `send-key-to-keyserver.py`.

The `hkp4py` module appears to handle both string and byte literal text data equally well, but the GPGME bindings deal primarily with byte literal data only and so this script sends in that format first, then tries the string literal form.

Basic Functions

The most frequently called features of any cryptographic library will be the most fundamental tasks for encryption software. In this section we will look at how to programmatically encrypt data, decrypt it, sign it and verify signatures.

Encryption

Encrypting is very straight forward. In the first example below the message, `text`, is encrypted to a single recipient's key. In the second example the message will be encrypted to multiple recipients.

Encrypting to one key

Once the the Context is set the main issues with encrypting data is essentially reduced to key selection and the keyword arguments specified in the `gpg.Context().encrypt()` method.

Those keyword arguments are: `recipients`, a list of keys encrypted to (covered in greater detail in the following section); `sign`, whether or not to sign the plaintext data, see subsequent sections on signing and verifying signatures below (defaults to `True`); `sink`, to write results or partial results to a secure sink instead of returning it

(defaults to \texttt{None}); \texttt{passphrase}, only used when utilising symmetric
encryption (defaults to \texttt{None}); \texttt{always_trust}, used to override
 the
trust model settings for recipient keys (defaults to \texttt{False});
\texttt{add_encrypt_to}, utilises any preconfigured \texttt{encrypt-to} or
\texttt{default-key} settings in the user's \texttt{gpg.conf} file (defaults to
\texttt{False}); \texttt{prepare}, prepare for encryption (defaults to \texttt{False});
\texttt{expect_sign}, prepare for signing (defaults to \texttt{False}); \texttt{compress},
compresses the plaintext prior to encryption (defaults to \texttt{True}).

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"
text = b"""Some text to test with.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data format.
"""

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=False)

with open("secret_plans.txt.asc", "wb") as afile:
   afile.write(ciphertext)
\end{verbatim}

Though this is even more likely to be used like this; with the
plaintext input read from a file, the recipient keys used for
encryption regardless of key trust status and the encrypted output
also encrypted to any preconfigured keys set in the \texttt{gpg.conf} file:

\begin{verbatim}
import gpg

a_key = "0x12345678DEADBEEF"

with open("secret_plans.txt", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rkey = list(c.keylist(pattern=a_key, secret=False))
ciphertext, result, sign_result = c.encrypt(text, recipients=rkey, sign=True,
                                  always_trust=True,
                                  add_encrypt_to=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
\end{verbatim}

If the \texttt{recipients} parameter is empty then the plaintext is encrypted
symmetrically. If no \texttt{passphrase} is supplied as a parameter or via a
callback registered with
 the \texttt{Context()} then an out-of-band prompt
for the passphrase via pinentry will be invoked.

\subsubsection{Encrypting to multiple keys}
\label{sec:orgdcf6e47}
Encrypting to multiple keys essentially just expands upon the key
selection process and the recipients from the previous examples.

The following example encrypts a message (\texttt{text}) to everyone with an
email address on the \texttt{gnupg.org} domain,\footnote{You probably don't really want to do this. Searching the
keyservers for "gnupg.org" produces over 400 results, the majority of
which aren't actually at the gnupg.org domain, but just included a
comment regarding the project in their key somewhere.} but does \emph{not} encrypt
to a default key or other key which is configured to normally encrypt
to.

\begin{verbatim}
import gpg

text = b"""Oh look, another test message.

The same rules apply as with the previous example and more likely
than not, the message will actually be drawn from reading the
contents
 of a file or, maybe, from entering data at an input()
prompt.

Since the text in this case must be bytes, it is most likely that
the input form will be a separate file which is opened with "rb"
as this is the simplest method of obtaining the correct data
format.
"""

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

```
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,
                                    sign=False, always_trust=True)

with open("secret_plans.txt.asc", "wb") as afile:
  afile.write(ciphertext)
\end{verbatim}
```

All it would take to change the above example to sign the message
and also encrypt the message to any configured default keys would
be to change the \texttt{c.encrypt} line to this:

```
\begin{verbatim}
ciphertext, result, sign_result = c.encrypt(text, recipients=logrus,

                          always_trust=True,
                                    add_encrypt_to=True)
\end{verbatim}
```

The only keyword arguments requiring modification are those for which
the default values are changing. The default value of \texttt{sign} is
\texttt{True}, the default of \texttt{always_trust} is \texttt{False}, the default of
\texttt{add_encrypt_to} is \texttt{False}.

If \texttt{always_trust} is not set to \texttt{True} and any of the recipient keys
are not trusted (e.g. not signed or locally signed) then the
encryption will raise an error. It is possible to mitigate this
somewhat with something more like this:

```
\begin{verbatim}
import gpg

with open("secret_plans.txt.asc", "rb") as afile:
  text = afile.read()

c = gpg.Context(armor=True)
rpattern = list(c.keylist(pattern="@gnupg.org", secret=False))
logrus = []

for i in range(len(rpattern)):
  if rpattern[i].can_encrypt == 1:
    logrus.append(rpattern[i])

  try:
    ciphertext, result,
 sign_result = c.encrypt(text, recipients=logrus,
                                     add_encrypt_to=True)
  except gpg.errors.InvalidRecipients as e:
```

```
    for i in range(len(e.recipients)):
        for n in range(len(logrus)):
            if logrus[n].fpr == e.recipients[i].fpr:
                logrus.remove(logrus[n])
            else:
                pass
    try:
        ciphertext, result, sign_result = c.encrypt(text,
                                            recipients=logrus,
                                            add_encrypt_to=True)
        with open("secret_plans.txt.asc", "wb") as afile:
            afile.write(ciphertext)
    except:
        pass
\end{verbatim}

This will attempt to encrypt to all the keys searched for, then remove
invalid recipients if it fails and try again.


\subsection{Decryption}
\label{sec:org1282b3d}
Decrypting something encrypted to a key in one's secret
 keyring is
fairly straight forward.

In this example code, however, preconfiguring either \texttt{gpg.Context()}
or \texttt{gpg.core.Context()} as \texttt{c} is unnecessary because there is no need
to modify the Context prior to conducting the decryption and since the
Context is only used once, setting it to \texttt{c} simply adds lines for no
gain.

\begin{verbatim}
import gpg

ciphertext = input("Enter path and filename of encrypted file: ")
newfile = input("Enter path and filename of file to save decrypted data to: ")

with open(ciphertext, "rb") as cfile:
  try:
      plaintext, result, verify_result = gpg.Context().decrypt(cfile)
  except gpg.errors.GPGMEError as e:
      plaintext = None
      print(e)

if plaintext is not None:
  with open(newfile, "wb") as nfile:
    nfile.write(plaintext)
```

```
  else:
      pass
\end{verbatim}

The data available in \texttt{plaintext} in this example is the decrypted
content as a byte object, the recipient key IDs and algorithms
 in
\texttt{result} and the results of verifying any signatures of the data in
\texttt{verify\_result}.

If \texttt{gpg.Context().decrypt(cfile, verify=False)} is called instead,
then \texttt{verify\_result} will be returned as \texttt{None} and the rest remains
as described here.


\subsection{Signing text and files}
\label{sec:org59f1262}
The following sections demonstrate how to specify keys to sign with.


\subsubsection{Signing key selection}
\label{sec:org909cb3c}
By default GPGME and the Python bindings will use the default key
configured for the user invoking the GPGME API.  If there is no
default key specified and there is more than one secret key available
it may be necessary to specify the key or keys with which to sign
messages and files.

\begin{verbatim}
import gpg

logrus = input("Enter the email address or string to match signing keys to: ")
hancock = gpg.Context().keylist(pattern=logrus, secret=True)
sig_src = list(hancock)
\end{verbatim}

The signing examples in the
 following sections include the explicitly
designated \texttt{signers} parameter in two of the five examples; once where
the resulting signature would be ASCII armoured and once where it
would not be armoured.

While it would be possible to enter a key ID or fingerprint here to
match a specific key, it is not possible to enter two fingerprints and
match two keys since the patten expects a string, bytes or None and
not a list.  A string with two fingerprints won't match any single
key.
```

\subsubsection{Normal or default signing messages or files}
\label{sec:org6ee259d}
The normal or default signing process is essentially the same as is
most often invoked when also encrypting a message or file. So when
the encryption component is not utilised, the result is to produce an
encoded and signed output which may or may not be ASCII armoured and
which may or may not also be compressed.

By default compression will be used unless GnuPG detects that the
plaintext is already compressed. ASCII armouring
 will be determined
according to the value of \texttt{gpg.Context().armor}.

The compression algorithm is selected in much the same way as the
symmetric encryption algorithm or the hash digest algorithm is when
multiple keys are involved; from the preferences saved into the key
itself or by comparison with the preferences with all other keys
involved.

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True, signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.asc", "w") as afile:
   afile.write(signed_data.decode())
\end{verbatim}

Though everything in this example is accurate, it is more likely that
reading the input data from another file and writing the result to a
new file will be performed more like the way it is done in the next
example. Even if the output format is ASCII armoured.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
   text = tfile.read()

c = gpg.Context()

```
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.NORMAL)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}



\subsubsection{Detached signing messages and files}
\label{sec:org51049d4}
Detached signatures will often be needed in programmatic uses of
GPGME, either for signing files (e.g. tarballs of code releases) or as
a component of message signing (e.g. PGP/MIME encoded email).

\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context(armor=True)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}

As with normal signatures, detached signatures are best handled as
byte literals, even when the output is ASCII armoured.

\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context(signers=sig_src)
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.DETACH)

with open("/path/to/statement.txt.sig", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}



\subsubsection{Clearsigning messages or text}
\label{sec:orgf528a20}
```

Though PGP/in-line messages are no longer encouraged in favour of
PGP/MIME, there is still sometimes value in utilising in-line
signatures. This is where clear-signed messages or text is of value.

```
\begin{verbatim}
import gpg

text0 = """Declaration of ... something.

"""
text = text0.encode()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "w") as afile:
  afile.write(signed_data.decode())
\end{verbatim}
```

In spite of the appearance of a clear-signed message, the data handled
by GPGME in signing it must still be byte literals.

```
\begin{verbatim}
import gpg

with open("/path/to/statement.txt",
 "rb") as tfile:
  text = tfile.read()

c = gpg.Context()
signed_data, result = c.sign(text, mode=gpg.constants.sig.mode.CLEAR)

with open("/path/to/statement.txt.asc", "wb") as afile:
  afile.write(signed_data)
\end{verbatim}
```

```
\subsection{Signature verification}
\label{sec:org6cd81af}
```

Essentially there are two principal methods of verification of a
signature. The first of these is for use with the normal or default
signing method and for clear-signed messages. The second is for use
with files and data with detached signatures.

The following example is intended for use with the default signing
method where the file was not ASCII armoured:

```
\begin{verbatim}
```

```
import gpg
import time

filename = "statement.txt"
gpg_file = "statement.txt.gpg"

c = gpg.Context()

try:
  data, result = c.verify(open(gpg_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):

    sign = result.signatures[i]
     print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
        time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

Whereas this next example, which is almost identical would work with
normal ASCII armoured files and with clear-signed files:

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)
```

```
if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
      time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

In both of the previous examples it is also possible to compare the
original data that was signed
 against the signed data in \texttt{data} to see
if it matches with something like this:

\begin{verbatim}
with open(filename, "rb") as afile:
  text = afile.read()

if text == data:
  print("Good signature.")
else:
  pass
\end{verbatim}

The following two examples, however, deal with detached signatures.
With his method of verification the data that was signed does not get
returned since it is already being explicitly referenced in the first
argument of \texttt{c.verify}.  So \texttt{data} is \texttt{None} and only the information
in \texttt{result} is available.

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
sig_file = "statement.txt.sig"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(sig_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
```

```
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with
 key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
      time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}

\begin{verbatim}
import gpg
import time

filename = "statement.txt"
asc_file = "statement.txt.asc"

c = gpg.Context()

try:
  data, result = c.verify(open(filename), open(asc_file))
  verified = True
except gpg.errors.BadSignatures as e:
  verified = False
  print(e)

if verified is True:
  for i in range(len(result.signatures)):
    sign = result.signatures[i]
    print("""Good signature from:
{0}
with key {1}
made at {2}
""".format(c.get_key(sign.fpr).uids[0].uid, sign.fpr,
      time.ctime(sign.timestamp)))
else:
  pass
\end{verbatim}


\section{Creating keys and subkeys}
\label{sec:org754c6df}
```

The one thing, aside from GnuPG itself, that GPGME depends on, of course, is the keys themselves. So it is necessary to be able to generate them and modify them by adding subkeys, revoking or disabling them, sometimes
deleting them and doing the same for user IDs.

In the following examples a key will be created for the world's greatest secret agent, Danger Mouse. Since Danger Mouse is a secret agent he needs to be able to protect information to \texttt{SECRET} level clearance, so his keys will be 3072-bit keys.

The pre-configured \texttt{gpg.conf} file which sets cipher, digest and other preferences contains the following configuration parameters:

\begin{verbatim}
expert
allow-freeform-uid
allow-secret-key-import
trust-model tofu+pgp
tofu-default-policy unknown
enable-large-rsa
enable-dsa2
cert-digest-algo SHA512
default-preference-list TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES BLOWFISH IDEA CAST5 3DES SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1 ZLIB BZIP2 ZIP Uncompressed
personal-cipher-preferences TWOFISH CAMELLIA256 AES256 CAMELLIA192 AES192 CAMELLIA128 AES BLOWFISH IDEA CAST5 3DES
personal-digest-preferences SHA512 SHA384 SHA256 SHA224 RIPEMD160 SHA1
personal-compress-preferences
ZLIB BZIP2 ZIP Uncompressed
\end{verbatim}

\subsection{Primary key}
\label{sec:org0185c23}
Generating a primary key uses the \texttt{create_key} method in a Context.
It contains multiple arguments and keyword arguments, including:
\texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires}, \texttt{sign}, \texttt{encrypt}, \texttt{certify}, \texttt{authenticate}, \texttt{passphrase} and \texttt{force}. The defaults for all of those except \texttt{userid}, \texttt{algorithm}, \texttt{expires_in}, \texttt{expires} and \texttt{passphrase} is \texttt{False}. The defaults for \texttt{algorithm} and \texttt{passphrase} is \texttt{None}. The default for \texttt{expires_in} is \texttt{0}. The default for \texttt{expires} is \texttt{True}. There is no default for \texttt{userid}.

If \texttt{passphrase} is left as \texttt{None} then the key will not be generated with a passphrase, if \texttt{passphrase} is set to a string then that will be the passphrase and if

\texttt{passphrase} is set to \texttt{True} then gpg-agent
will launch pinentry to prompt for a passphrase. For the sake of
convenience, these examples will keep \texttt{passphrase} set to \texttt{None}.

\begin{verbatim}
import gpg

c = gpg.Context()

c.home_dir = "~/.gnupg-dm"
userid = "Danger Mouse <dm@secret.example.net>"

dmkey = c.create_key(userid, algorithm="rsa3072", expires_in=31536000,
                     sign=True, certify=True)
\end{verbatim}

One thing to note here is the use of setting the \texttt{c.home_dir}
parameter. This enables generating the key or keys in a different
location. In this case to keep the new key data created for this
example in a separate location rather than adding it to existing and
active key store data. As with the default directory, \texttt{\textasciitilde{}/.gnupg}, any
temporary or separate directory needs the permissions set to only
permit access by the directory owner. On posix systems this means
setting the directory permissions to
700.

The \texttt{temp-homedir-config.py} script in the HOWTO examples directory
will create an alternative homedir with these configuration options
already set and the correct directory and file permissions.

The successful generation of the key can be confirmed via the returned
\texttt{GenkeyResult} object, which includes the following data:

\begin{verbatim}
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmkey.fpr, dmkey.primary, dmkey.pubkey, dmkey.seckey, dmkey.sub,
           dmkey.uid))
\end{verbatim}

Alternatively the information can be confirmed using the command line
program:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid   [ultimate] Danger Mouse <dm@secret.example.net>

bash-4.4$
\end{verbatim}

As with generating keys manually,
 to preconfigure expanded preferences
for the cipher, digest and compression algorithms, the \texttt{gpg.conf} file
must contain those details in the home directory in which the new key
is being generated. I used a cut down version of my own \texttt{gpg.conf}
file in order to be able to generate this:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm --edit-key 177B7C25DB99745EE2EE13ED026D2F19E99E63AA showpref
quit
Secret key is available.

sec rsa3072/026D2F19E99E63AA
   created: 2018-03-15 expires: 2019-03-15 usage: SC
   trust: ultimate   validity: ultimate
[ultimate] (1). Danger Mouse <dm@secret.example.net>

[ultimate] (1). Danger Mouse <dm@secret.example.net>
   Cipher: TWOFISH, CAMELLIA256, AES256, CAMELLIA192, AES192, CAMELLIA128, AES, BLOWFISH,
IDEA, CAST5, 3DES
   Digest: SHA512, SHA384, SHA256, SHA224, RIPEMD160, SHA1
   Compression: ZLIB, BZIP2, ZIP, Uncompressed
   Features: MDC, Keyserver no-modify

bash-4.4$
\end{verbatim}

\subsection{Subkeys}
\label{sec:org5e2acbc}
Adding
 subkeys to a primary key is fairly similar to creating the
primary key with the \texttt{create_subkey} method. Most of the arguments
are the same, but not quite all. Instead of the \texttt{userid} argument
there is now a \texttt{key} argument for selecting which primary key to add
the subkey to.

In the following example an encryption subkey will be added to the
primary key. Since Danger Mouse is a security conscious secret agent,
this subkey will only be valid for about six months, half the length
of the primary key.

```
\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

key = c.get_key(dmkey.fpr, secret=True)
dmsub = c.create_subkey(key, algorithm="rsa3072", expires_in=15768000,
                        encrypt=True)
\end{verbatim}
```

As with the primary key, the results here can be checked with:

```
\begin{verbatim}
print("""
Fingerprint: {0}
Primary Key: {1}
 Public Key: {2}
 Secret Key: {3}
Sub Key: {4}
User IDs: {5}
""".format(dmsub.fpr,
 dmsub.primary, dmsub.pubkey, dmsub.seckey, dmsub.sub,
          dmsub.uid))
\end{verbatim}
```

As well as on the command line with:

```
\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----------------------
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
      177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid           [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}
```

```
\subsection{User IDs}
\label{sec:org4869c58}
```

\subsubsection{Adding User IDs}
\label{sec:orgebb13ca}
By comparison to creating primary keys and subkeys, adding a new user
ID to an existing key is much simpler. The method used to do this is
\texttt{key_add_uid} and the only arguments it takes are for the \texttt{key} and
the new \texttt{uid}.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid
 = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_add_uid(key, uid)
\end{verbatim}

Unsurprisingly the result of this is:

\begin{verbatim}
bash-4.4$ gpg --homedir ~/.gnupg-dm -K
~/.gnupg-dm/pubring.kbx
----
sec   rsa3072 2018-03-15 [SC] [expires: 2019-03-15]
    177B7C25DB99745EE2EE13ED026D2F19E99E63AA
uid   [ultimate] Danger Mouse <danger.mouse@secret.example.net>
uid   [ultimate] Danger Mouse <dm@secret.example.net>
ssb   rsa3072 2018-03-15 [E] [expires: 2018-09-13]

bash-4.4$
\end{verbatim}

\subsubsection{Revoking User IDs}
\label{sec:org1683695}
Revoking a user ID is a fairly similar process, except that it uses
the \texttt{key_revoke_uid} method.

\begin{verbatim}
import gpg

c = gpg.Context()
c.home_dir = "~/.gnupg-dm"

```
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
uid = "Danger Mouse <danger.mouse@secret.example.net>"

c.key_revoke_uid(key, uid)
\end{verbatim}
```

```
\subsection{Key certification}
\label{sec:orgf431bf8}
```

Since
key certification is more frequently referred to as key signing,
the method used to perform this function is \texttt{key_sign}.

The \texttt{key_sign} method takes four arguments: \texttt{key}, \texttt{uids},
\texttt{expires_in} and \texttt{local}. The default value of \texttt{uids} is \texttt{None} and
which results in all user IDs being selected. The default value of
both \texttt{expires_in} and \texttt{local} is \texttt{False}; which results in the
signature never expiring and being able to be exported.

The \texttt{key} is the key being signed rather than the key doing the
signing. To change the key doing the signing refer to the signing key
selection above for signing messages and files.

If the \texttt{uids} value is not \texttt{None} then it must either be a string to
match a single user ID or a list of strings to match multiple user
IDs. In this case the matching of those strings must be precise and
it is case sensitive.

To sign Danger
Mouse's key for just the initial user ID with a
signature which will last a little over a month, do this:

```
\begin{verbatim}
import gpg

c = gpg.Context()
uid = "Danger Mouse <dm@secret.example.net>"

dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
key = c.get_key(dmfpr, secret=True)
c.key_sign(key, uids=uid, expires_in=2764800)
\end{verbatim}
```

```
\subsubsection{Verifying key certifications}
\label{sec:org87abdd3}
\begin{verbatim}
```

```
import gpg
import time

c = gpg.Context()
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
keys = list(c.keylist(pattern=dmuid, mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
\end{verbatim}
```

Which for Danger Mouse displays the following:

```
\begin{verbatim}
0x92E3F6115435C65A  Thu Mar 15 13:17:44 2018  Danger Mouse <dm@secret.example.net>
0x321E4E2373590E5D  Mon Nov 26 12:46:05 2018  Ben McGinnes <ben@adversary.org>
\end{verbatim}
```

The
two key signatures listed are for the self-certification of Danger
Mouse's key made when the key was created in March, 2018; and the
second is a signature made by the author and set to expire at the end
of the year. Note that the second signature was made with the
following code (including the preceding code to display the output of
the certifications or key signatures):

```
\begin{verbatim}
import gpg
import math
import pendulum
import time

hd = "/home/dm/.gnupg"
c = gpg.Context()
d = gpg.Context(home_dir=hd)
dmfpr = "177B7C25DB99745EE2EE13ED026D2F19E99E63AA"
dmuid = "Danger Mouse <dm@secret.example.net>"
dkeys = list(c.keylist(pattern=dmuid))
dmkey = dkeys[0]

c.key_import(d.key_export(pattern=None))

tp = pendulum.period(pendulum.now(tz="local"), pendulum.datetime(2019, 1, 1))
ts = tp.total_seconds()
total_secs = math.ceil(ts)
```

```
c.key_sign(dmkey, uids=dmuid, expires_in=total_secs)

d.key_import(c.key_export(pattern=dmuid))
keys = list(c.keylist(pattern=dmuid,
 mode=gpg.constants.keylist.mode.SIGS))
key = keys[0]

for user in key.uids:
  for sig in user.signatures:
    print("0x{0}".format(sig.keyid), "", time.ctime(sig.timestamp), "",
        sig.uid)
\end{verbatim}

Note that this final code block includes the use of a module which is
\emph{not} part of Python's standard library, the \href{https://pendulum.eustace.io/}{pendulum module}.  Unlike
the standard datetime module, pendulum makes working with dates and
times significantly easier in Python; just as the requests module
makes working with HTTP and HTTPS easier than the builtin modules do.

Though neither requests nor pendulum are required modules for using
the GPGME Python bindings, they are both highly recommended more
generally.


\section{Advanced or Experimental Use Cases}
\label{sec:org944cc00}
\subsection{C plus Python plus SWIG plus Cython}
\label{sec:org3b53926}
In spite of the apparent incongruence of using Python bindings to a C
interface only to generate
 more C from the Python; it is in fact quite
possible to use the GPGME bindings with \href{http://docs.cython.org/en/latest/index.html}{Cython}.  Though in
many cases
the benefits may not be obvious since the most computationally
intensive work never leaves the level of the C code with which GPGME
itself is interacting with.

Nevertheless, there are some situations where the benefits are
demonstrable.  One of the better and easier examples being the one of
the early examples in this HOWTO, the \hyperref[sec:org63a3d62]{key counting} code.  Running that
example as an executable Python script, \texttt{keycount.py} (available in
the \texttt{examples/howto/} directory), will take a noticeable amount of time
to run on most systems where the public keybox or keyring contains a
few thousand public keys.

Earlier in the evening, prior to starting this section, I ran that
script on my laptop; as I tend to do periodically and timed it using
\texttt{time} utility, with the following results:
```

\begin{verbatim}
bash-4.4$
 time keycount.py

Number of secret keys: 23
Number of public keys: 12112

real 11m52.945s
user 0m0.913s
sys 0m0.752s

bash-4.4$
\end{verbatim}

Sometime after that I imported another key and followed it with a
little test of Cython. This test was kept fairly basic, essentially
lifting the material from the \href{http://docs.cython.org/en/latest/src/tutorial/cython_tutorial.html}{Cython Basic Tutorial} to demonstrate
compiling Python code to C. The first step was to take the example
key counting code quoted previously, essentially from the importing of
the \texttt{gpg} module to the end of the script:

\begin{verbatim}
import gpg

c = gpg.Context()
seckeys = c.keylist(pattern=None, secret=True)
pubkeys = c.keylist(pattern=None, secret=False)

seclist = list(seckeys)
secnum = len(seclist)

publist = list(pubkeys)
pubnum = len(publist)

print("""
   Number of secret keys: {0}
   Number of public keys: {1}

""".format(secnum, pubnum))
\end{verbatim}

Save
 that into a file called \texttt{keycount.pyx} and then create a
\texttt{setup.py} file which contains this:

\begin{verbatim}
from distutils.core import setup
from Cython.Build import cythonize

setup(
  ext_modules = cythonize("keycount.pyx")
)
\end{verbatim}

Compile it:

\begin{verbatim}
bash-4.4$ python setup.py build_ext --inplace
bash-4.4$
\end{verbatim}

Then run it in a similar manner to \texttt{keycount.py}:

\begin{verbatim}
bash-4.4$ time python3.7 -c "import keycount"

Number of secret keys: 23
Number of public keys: 12113

real 6m47.905s
user 0m0.785s
sys 0m0.331s

bash-4.4$
\end{verbatim}

Cython turned \texttt{keycount.pyx} into an 81KB \texttt{keycount.o} file in the
\texttt{build/} directory, a 24KB \texttt{keycount.cpython-37m-darwin.so} file to be
imported into Python 3.7 and a 113KB \texttt{keycount.c} generated C source
code file of nearly three thousand lines. Quite a bit bigger than the
314 bytes of the \texttt{keycount.pyx} file or the full 1,452 bytes
 of the
full executable \texttt{keycount.py} example script.

On the other hand it ran in nearly half the time; taking 6 minutes and
47.905 seconds to run. As opposed to the 11 minutes and 52.945 seconds
which the CPython script alone took.

The \texttt{keycount.pyx} and \texttt{setup.py} files used to generate this example
have been added to the \texttt{examples/howto/advanced/cython/} directory
The example versions include some additional options to annotate the
existing code and to detect Cython's use. The latter comes from the

\href{http://docs.cython.org/en/latest/src/tutorial/pure.html\#magic-attributes-within-the-pxd}{Magic Attributes} section of the Cython documentation.

\section{Miscellaneous extras and work-arounds}
\label{sec:orgd72f7de}
Most of the things in the following sections are here simply because there was no better place to put them, even though some are only peripherally related to the GPGME Python bindings. Some are also workarounds for functions not integrated with GPGME as yet. This is especially true of the first of these, dealing with \hyperref[sec:org83f4d00]{group lines}.

\subsection{Group lines}
\label{sec:org83f4d00}
There is not yet an easy way to access groups configured in the gpg.conf file from within GPGME. As a consequence these central groupings of keys cannot be shared amongst multiple programs, such as MUAs readily.

The following code, however, provides a work-around for obtaining this information in Python.

\begin{verbatim}
import subprocess
import sys

if sys.platform == "win32":
  gpgconfcmd = "gpgconf.exe --list-options gpg"
else:
  gpgconfcmd = "gpgconf --list-options gpg"

process = subprocess.Popen(gpgconfcmd.split(), stdout=subprocess.PIPE)
procom = process.communicate()

if sys.version_info[0] == 2:
  lines = procom[0].splitlines()
else:
  lines = procom[0].decode().splitlines()

for line in lines:
  if line.startswith("group") is True:
    break

groups = line.split(":")[-1].replace("", "").split(',')

group_lines

```
 = []
group_lists = []

for i in range(len(groups)):
  group_lines.append(groups[i].split("="))
  group_lists.append(groups[i].split("="))

for i in range(len(group_lists)):
  group_lists[i][1] = group_lists[i][1].split()
\end{verbatim}
```

The result of that code is that \texttt{group_lines} is a list of lists where
\texttt{group_lines[i][0]} is the name of the group and \texttt{group_lines[i][1]}
is the key IDs of the group as a string.

The \texttt{group_lists} result is very similar in that it is a list of
lists. The first part, \texttt{group_lists[i][0]} matches
\texttt{group_lines[i][0]} as the name of the group, but \texttt{group_lists[i][1]}
is the key IDs of the group as a list.

A demonstration of using the \texttt{groups.py} module is also available in
the form of the executable \texttt{mutt-groups.py} script. This second
script reads all the group entries in a user's \texttt{gpg.conf} file and
converts them into crypt-hooks suitable for use
 with the Mutt and
Neomutt mail clients.

\subsection{Keyserver access for Python}
\label{sec:org5ad99aa}
The \href{https://github.com/Selfnet/hkp4py}{hkp4py} module by Marcel Fest was originally a port of the old
\href{https://github.com/dgladkov/python-hkp}{python-hkp} module from Python 2 to Python 3 and updated to use
the
\href{http://docs.python-requests.org/en/latest/index.html}{requests} module instead. It has since been modified to
provide
support for Python 2.7 as well and is available via PyPI.

Since it rewrites the \texttt{hkp} protocol prefix as \texttt{http} and \texttt{hkps} as
\texttt{https}, the module is able to be used even with servers which do not
support the full scope of keyserver functions.\footnote{Such as with ProtonMail servers. This also means that
restricted servers which only advertise either HTTP or HTTPS end
points and not HKP or HKPS end points must still be identified as as
HKP or HKPS within the Python Code. The \texttt{hkp4py} module will rewrite
these
 appropriately when the connection is made to the server.} It also works quite
readily when incorporated into a \hyperref[sec:org3b53926]{Cython} generated and compiled version
of any code.

\subsubsection{Key import format}
\label{sec:org1e47c97}
The hkp4py module returns key data via requests as string literals
(\texttt{r.text}) instead of byte literals (\texttt{r.content}). This means that
the retrurned key data must be encoded to UTF-8 when importing that
key material using a \texttt{gpg.Context().key_import()} method.

For this reason an alternative method has been added to the \texttt{search}
function of \texttt{hkp4py.KeyServer()} which returns the key in the correct
format as expected by \texttt{key_import}. When importing using this module,
it is now possible to import with this:

\begin{verbatim}
for key in keys:
  if key.revoked is False:
     gpg.Context().key_import(key.key_blob)
  else:
     pass
\end{verbatim}

Without that recent addition it would
have been necessary to encode
the contents of each \texttt{hkp4py.KeyServer().search()[i].key} in
\texttt{hkp4py.KeyServer().search()} before trying to import it.

An example of this is included in the \hyperref[sec:org1ad598a]{Importing Keys} section of this
HOWTO and the corresponding executable version of that example is
available in the \texttt{lang/python/examples/howto} directory as normal; the
executable version is the \texttt{import-keys-hkp.py} file.

\subsection{GPGME version checking}
\label{sec:org18b8ef8}
For various reasons it may be necessary to check which version of
GPGME the bindings have been built against; including whether a
minimum required version of GPGME is in use.

For the most part the \texttt{gpg.version.versionstr} and
\texttt{gpg.version.versionlist} methods have been quite sufficient. The
former returns the same string as \texttt{gpgme-config -{}-version}, while the
latter returns the major, minor and patch values in a list.

To check if the installed bindings
have actually been built against
the current installed libgpgme version, this check can be performed:

\begin{verbatim}

```
import gpg
import subprocess
import sys

gpgme_version_call = subprocess.Popen(["gpgme-config", "--version"],
                                      stdout=subprocess.PIPE,
                                      stderr=subprocess.PIPE)
gpgme_version_str = gpgme_version_call.communicate()

if sys.version_info[0] == 2:
  gpgme_version = gpgme_version_str[0].strip()
elif sys.version_info[0] >= 3:
  gpgme_version = gpgme_version_str[0].decode().strip()
else:
  gpgme_version = None

if gpgme_version is not None:
  if gpgme_version == gpg.version.versionstr:
    print("The GPGME Python bindings match libgpgme.")
  else:
    print("The GPGME Python bindings do NOT match libgpgme.")
else:
  print("Upgrade Python and reinstall the GPGME Python bindings.")
\end{verbatim}

For many developers, however, the preferred checking means checking
for a minimum
 version or point release.  This is now readily available
via the \texttt{gpg.version.versionintlist} method (added in version
\texttt{1.12.1-beta79}).  It is also now possible to easily check whether the
installed GPGME Python bindings were built from a development or beta
branch of the GPGME source code.

The following code demonstrates how both of those methods may be used:

\begin{verbatim}
import gpg

try:
  if gpg.version.is_beta is True:
    print("The installed GPGME Python bindings were built from beta code.")
  else:
    print("The installed GPGME Python bindings are a released version.")
except Exception as e:
  print(e)

try:
  if gpg.version.versionintlist[0] == 1:
```

```
      if gpg.version.versionintlist[1] == 12:
         if gpg.version.versionintlist[2] == 1:
            print("This is the minimum version for using versionintlist.")
         elif gpg.version.versionintlist[2] > 1:
            print("The versionintlist method is available.")

         else:
            pass
      elif gpg.version.versionintlist[1] > 12:
         print("The versionintlist method is available.")
      else:
         pass
   elif gpg.version.versionintlist[0] > 1:
      print("The versionintlist method is available.")
   else:
      pass
except Exception as e:
   print(e)
```

The points where \texttt{pass} is used in the above example will most likely also produce an \texttt{Exception} error since those results should only occur in versions which do not have the \texttt{gpgme.version.is_beta} and \texttt{gpgme.version.versionintlist} methods available.

\section{Copyright and Licensing}
\label{sec:org9d52a23}
\subsection{Copyright}
\label{sec:org26ed04d}
Copyright The GnuPG Project, 2018.

Copyright (C) The GnuPG Project, 2018.

\subsection{Draft Editions of this HOWTO}
\label{sec:org080a94a}
Draft editions of this HOWTO may be periodically available directly from the author at any of the following URLs:

\begin{itemize}
\item
 \href{https://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 SSL)}
\item \href{http://files.au.adversary.org/crypto/gpgme-python-howto.html}{GPGME Python Bindings HOWTO draft (XHTML single file, AWS S3 no SSL)}
\item \href{https://files.au.adversary.org/crypto/gpgme-python-howto-split/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 SSL)}

\item \href{http://files.au.adversary.org/crypto/gpgme-python-howto/index.html}{GPGME Python Bindings HOWTO draft (XHTML multiple files, AWS S3 no SSL)}
\end{itemize}

All of these draft versions except for one have been generated from this document via GNU Emacs \href{https://orgmode.org/}{Org mode} and \href{https://www.gnu.org/software/texinfo/}{GNU Texinfo}. Though it is likely that the specific \href{https://files.au.adversary.org/crypto/gpgme-python-howto}{file} \href{http://files.au.adversary.org/crypto/gpgme-python-howto.org}{version} used will be on the same server with the generated output formats.

The GNU Texinfo and reStructured Text versions ship with the software, while the GNU Emacs Info verseion is generated from the Texinfo version using GNU Texinfo or GNU Makeinfo. The Texinfo format is generated from the original Org mode source file in Org mode itself either within GNU Emacs or via the command line by invoking Emacs in batch mode:

\begin{verbatim}
emacs gpgme-python-howto.org --batch -f org-texinfo-export-to-texinfo --kill
emacs gpgme-python-howto --batch -f org-texinfo-export-to-texinfo --kill
\end{verbatim}

The reStructuredText format is also generated from the Org-mode source file, except it is generated using \href{https://pandoc.org}{Pandoc} with either of the following commands:

\begin{verbatim}
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto.org
pandoc -f org -t rst+smart -o gpgme-python-howto.rst gpgme-python-howto
\end{verbatim}

In addition to these there is a significantly less frequently updated version as a HTML \href{https://files.au.adversary.org/crypto/gpgme-python/dita/webhelp/index.html}{WebHelp site} (AWS S3 SSL); generated from DITA XML source files, which can be found in \href{https://dev.gnupg.org/source/gpgme/browse/ben\%252Fhowto-dita/}{an alternative branch} of the GPGME git repository.

Various generated output formats may occasionally be found in subdirectories of the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python}{gpgme-python} directory. In particular within the \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/dita}{DITA}, \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/rst}{reStructuredText} and \href{https://s3.amazonaws.com/files.au.adversary.org/crypto/gpgme-python/texinfo}{Texinfo} subdirectories. The \texttt{rst}

directory contains output files generated with Sphix and may include a
considerable number of its possible output formats.

These
 draft editions are not official documents and the version of
documentation in the master branch or which ships with released
versions is the only official documentation. Nevertheless, these
draft editions may occasionally be of use by providing more accessible
web versions which are updated between releases. They are provided on
the understanding that they may contain errors or may contain content
subject to change prior to an official release.

\subsection{License GPL compatible}
\label{sec:orge78f3b7}
This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even the
implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.
\end{document}
This is a template. The dist target uses it to create the real file.
Summary: GPGME - GnuPG Made Easy
Name: gpgme
Version: 1.15.1
Release: 1
URL: https://gnupg.org/gpgme.html
Source: https://www.gnupg.org/ftp/gcrypt/gpgme/%{name}-%{version}.tar.gz
Group: Development/Libraries
Copyright: GPL
BuildRoot: %{_tmppath}/%{name}-%{version}
BuildRequires: make
Prereq: /sbin/ldconfig /sbin/install-info
Requires: gnupg

%description
GnuPG Made Easy (GPGME) is a library designed to make access to GnuPG easier
for applications. It provides a High-Level Crypto API for encryption,
decryption, signing, signature verification and key management.

%prep
%setup -q

%build
CFLAGS="$RPM_OPT_FLAGS"; export CFLAGS

```
./configure --prefix=/usr
make

%install
rm -fr $RPM_BUILD_ROOT
mkdir -p $RPM_BUILD_ROOT
make install prefix=$RPM_BUILD_ROOT/usr infodir=$RPM_BUILD_ROOT%{_infodir}
rm -f $RPM_BUILD_ROOT%{_infodir}/dir

%clean
rm -fr $RPM_BUILD_ROOT
make distclean

%post
/sbin/ldconfig
/sbin/install-info %{_infodir}/gpgme.info.gz
 %{_infodir}/dir
/sbin/install-info %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir

%preun
if [ "$1" = 0 ]; then
/sbin/install-info --delete %{_infodir}/gpgme.info.gz %{_infodir}/dir
/sbin/install-info --delete %{_infodir}/gpgme-python-howto.info.gz %{_infodir}/dir
fi

%postun
/sbin/ldconfig

%files
%defattr(-,root,root)
%doc COPYING COPYING.LESSER AUTHORS README INSTALL NEWS ChangeLog TODO THANKS
%attr(0755,root,root) %{_bindir}/gpgme-config
%attr(0755,root,root) %{_libdir}/*gpgme.so*
%attr(0755,root,root) %{_libdir}/*gpgme.la
%attr(0644,root,root) %{_libdir}/*gpgme.a
%{_includedir}/gpgme.h
%{_datadir}/aclocal/gpgme.m4
%{_infodir}/gpgme.info*
%{_infodir}/gpgme-python-howto.info*

%changelog
* Sat Aug 30 2003 Robert Schiele <rschiele@uni-mannheim.de>
- %{_infodir}/dir is not packaged, remove to prevent checking failure
* Mon Jul 01 2002 Wojciech Polak <polak@lodz.pdi.net>
- initial specfile release for GPGME.

# EOF
```

1.195 pax-utils 1.3.8-r1

1.195.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program
or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute
verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and

you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program
(or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute

software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version
2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical
commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.196 kmod-libs 28-10.el9

1.196.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a

restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits
its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact

all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever
changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that

uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on

the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under
the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent

license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these,

write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of
all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
 also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
      GNU GENERAL PUBLIC LICENSE
        Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

       Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by

the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which

contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or

executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number

of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the License,
or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License along
  with this program; if not, write to the Free Software Foundation, Inc.,
  51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
LGPL
LGPL
LGPL

1.197 audit-lib 3.1.5-1.el9

1.197.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors
who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do

these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally,
software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore
permits such linking only if the
entire combination fits its criteria of freedom. The Lesser General

Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it
becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library
in order to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly
into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation
and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it,
in any medium, provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and
can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms
of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do

this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.
^L
 Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

 This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

 4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the
 complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

 If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

 5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

 However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a
 "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

 When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2)

will operate properly with a modified version of the library, if the user installs one, as long as the modified version is

interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything
that is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.
^L
7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined
with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute

the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License,
they do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software

distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License
may add an explicit geographical distribution limitation excluding those
countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

13. The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR

OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS
PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source
file to most
effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for

this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in

the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program,

and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include

anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution

of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free

programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify

it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.198 libnghttp2 1.43.0-6.el9

1.198.1 Available under license :

The MIT License

Copyright (c) 2012, 2014, 2015, 2016 Tatsuhiro Tsujikawa
Copyright (c) 2012, 2014, 2015, 2016 nghttp2 contributors

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
 WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
See COPYING
Copyright Joyent, Inc. and other Node contributors.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN

CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.
This software is licensed under the MIT License.

Copyright Fedor Indutny, 2018.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN
NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE
USE OR OTHER DEALINGS IN THE SOFTWARE.
If not otherwise noted, the extensions in this package are licensed
under the following license.

Copyright (c) 2010 by the contributors (see AUTHORS file).
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL,

EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.199 python3-systemd 234-19.el9

1.199.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these

rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it

does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the

terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!

1.200 python3-libdnf 0.69.0-12.el9

1.200.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

 This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
 decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

 When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of

it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits

such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").

Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do

this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is

interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute

the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system

which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR

OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.201 pcre2-syntax 10.40-6.el9

1.201.1 Available under license :

PCRE2 LICENCE

Please see the file LICENCE in the PCRE2 distribution for licensing details.

End
PCRE2 LICENCE

PCRE2 is a library of functions to support regular expressions whose syntax
and semantics are as close as possible to those of the Perl 5 language.

Releases 10.00 and above of PCRE2 are distributed under the terms of the "BSD"
licence, as specified below, with one exemption for certain binary
redistributions. The documentation for PCRE2, supplied in the "doc" directory,
is distributed under the same terms as the software itself. The data in the
testdata directory is not copyrighted and is in the public domain.

The basic library functions are written in C and are freestanding. Also
included in the distribution is a just-in-time compiler that can be used to
optimize pattern matching. This is an optional feature that can be omitted when
the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: Philip.Hazel
Email domain: gmail.com

Retired from University of Cambridge Computing Service,
Cambridge,
England.

Copyright (c) 1997-2022 University of Cambridge
All rights reserved.

PCRE2 JUST-IN-TIME COMPILATION SUPPORT

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2010-2022 Zoltan Herczeg
All rights reserved.

STACK-LESS JUST-IN-TIME COMPILER

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2009-2022 Zoltan Herczeg
All rights reserved.

THE "BSD" LICENCE

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notices,
this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notices, this list of conditions and the following disclaimer
in the
documentation and/or other materials provided with the distribution.

* Neither the name of the University of Cambridge nor the names of any
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

EXEMPTION FOR BINARY LIBRARY-LIKE PACKAGES

The second condition in the BSD licence (covering binary redistributions) does not apply all the way down a chain of software. If binary package A includes PCRE2, it must respect the condition, but if package B is software that includes package A, the condition is not imposed on package B unless it uses PCRE2 independently.

End
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT

OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.202 rpm-libs 4.16.1.3-34.el9

1.202.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to
rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to

your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The

"Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy
an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this

License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute
them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of
the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of

the work for
making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that

version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY
WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may

consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the
freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them

with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to

permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains
code derived from the library, while the latter only
works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from

such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the

source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must

include the
copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other
proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined

library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free

redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Library General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a
version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,

write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.203 libcurl 7.76.1-31.el9

1.203.1 Available under license :

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1996 - 2021, Daniel Stenberg, <daniel@haxx.se>, and many
contributors, see the THANKS file.

All rights reserved.

Permission to use, copy, modify, and distribute this software for any purpose
with or without fee is hereby granted, provided that the above copyright
notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not
be used in advertising or otherwise to promote the sale, use or other
dealings
in this Software without prior written authorization of the copyright holder.

1.204 rpm-sign-libs 4.16.1.3-34.el9

1.204.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General Public License (GPL), which appears immediately below. Alternatively, all of the source code in the lib and rpmio subdirectories of the RPM source code distribution as well as any code derived from that code may instead be distributed under the GNU Library General Public License (LGPL), at the choice of the distributor. The complete text of the LGPL appears at the bottom of this file.

This alternative is provided to enable applications to be linked against the RPM library (commonly called librpm) without forcing such applications to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to rpm-maint@lists.rpm.org

---

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free

software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such

interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is

allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that
version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY
WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the
freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis

or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains
code derived from the library, while the latter only
works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must

be optional: if the application does not supply it, the square root
function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a

medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot

distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by

the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively

convey the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

  <one line to give the library's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This library is free software; you can redistribute it and/or
  modify it under the terms of the GNU Library General Public
  License as published by the Free Software Foundation; either
  version 2 of the License, or (at your option) any later version.

  This library is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
  Library General Public License for more details.

  You should have received a copy of the GNU Library General Public
  License along with this library; if not, write to the Free
  Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library
 `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!

1.205 util-linux-core 2.37.4-20.el9

1.205.1 Available under license :

NR START   END SECTORS SIZE NAME UUID
1   32 7679   7648 3.7M   8f8378c0-01
2 7680 16383   8704 4.3M   8f8378c0-02
5 7936 12799   4864 2.4M
6 12544 16127   3584 1.8M
7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<

0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;
OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,
FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data

prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the

ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object

file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at

least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your

rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that

system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE

LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301

USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest

your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any

such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN

OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc.,

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,

the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2)

tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that

same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you

receive it, in any medium, provided that you conspicuously and
appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other

parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided

you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and

adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some

trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that

copyright
holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered

work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public
License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),

EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.

* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?
sS|11np#_(~'u7gi}[IgYZ

1.206 file-system 3.16-5.el9

1.206.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: Public Domain
License: Public Domain

Found in path(s):
* /filesystem-3.16-2.el9-1.src.rpm-cosi-expand-archive-dX4YKifE/filesystem.spec

1.207 libuuid 2.37.4-20.el9

1.207.1 Available under license :

NR START   END SECTORS SIZE NAME UUID
1   32 7679   7648 3.7M   8f8378c0-01
2 7680 16383   8704 4.3M   8f8378c0-02
5 7936 12799   4864 2.4M
6 12544 16127   3584 1.8M

7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<
0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;
OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,
FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge

for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary

General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of

this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary

GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The

threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate

properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the

integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.

EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid

anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the

Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent

access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For
example, if a patent
license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other

circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the

GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for

software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those

products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,

is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of

technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution

medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the

Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation

(including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this

License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS

THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF

LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.

* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?
sS|11np#_(~'u7gi}[IgYZ

1.208 libmount 2.37.4-20.el9

1.208.1 Available under license :

NR START   END SECTORS SIZE NAME UUID
1   32 7679   7648 3.7M   8f8378c0-01
2 7680 16383   8704 4.3M   8f8378c0-02
5 7936 12799   4864 2.4M
6 12544 16127   3584 1.8M
7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<
0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;
OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,

FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less

of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the

Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for

that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may

distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy

from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not

signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to

be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY

AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if

necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License

along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of

a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under

this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to

decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,

REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we
stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that

patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated

conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is
 covered by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

 You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

 Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
 section 10
makes it unnecessary.

 3. Protecting Users' Legal Rights From Anti-Circumvention Law.

 No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

 When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of
technological measures.

 4. Conveying Verbatim Copies.

 You may convey verbatim copies of the Program's source code as you
receive it, in any medium, provided that you conspicuously and
appropriately
 publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all

recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the

machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source

as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in

source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under

this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims

owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is

conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
 to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, and the entire permission notice in its entirety,
  including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
  products derived from this software without specific prior
  written permission.

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above

copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE

* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?
sS|11np#_(~'u7gi}[IgYZ

1.209 dnf-data 4.14.0-17.el9

1.209.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it

if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component

itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For
example, if a patent
license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals

of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.210 python 4.16.1.3-34.el9

1.210.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to
rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not

covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute

them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of
the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of
the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component

itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that
version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals

of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY
WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991

Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the
freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link a program with the library, you must provide
complete object files to the recipients so that they can relink them
with the library, after making changes to the library and recompiling
it. And you must show them these terms so they know
their rights.

Our method of protecting your rights has two steps: (1) copyright
the library, and (2) offer you this license which gives you legal
permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain
that everyone understands that there is no warranty for this free

library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The

former contains
code derived from the library, while the latter only
works together with the library.

Note that it is possible for a library to be covered by the ordinary
General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which
contains a notice placed by the copyright holder or other authorized
party saying it may be distributed under the terms of this Library
General Public License (also called "this License"). Each licensee is
addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control compilation
and installation of the library.

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what
the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's
complete source code as you receive it, in any medium, provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact

all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work.
(Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must
include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that

uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact

that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you
redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free
redistribution of the Library by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any

patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO

WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED
BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER
SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU

Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.211 gdbm-libs 1.23-1.el9

1.211.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007, 2011 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses

are designed to make sure that you
have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2)
offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those
domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and

modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays
"Appropriate Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source

form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content,

constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any

tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and
execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information
does not include a
requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included
in this License, to the extent
that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive

additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above requirements apply either way.

8. Termination.

You
may not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and
finally terminates your license, and (b) permanently, if the copyright
holder fails to notify you of the violation by some reasonable means
prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days
after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, you do not qualify to receive new licenses for the same
material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted

by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered

work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or that patent license was granted, prior to
28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this
License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the

Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms,

reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief
idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes
with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands

might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But
first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.212 python3-setuptools-wheel 53.0.0-13.el9

1.212.1 Available under license :

Copyright Jason R. Coombs

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE
OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.

1.213 rpm-plugin-selinux 4.16.1.3-34.el9

1.213.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,

all of the source code in the lib and rpmio subdirectories of the RPM source code distribution as well as any code derived from that code may instead be distributed under the GNU Library General Public License (LGPL), at the choice of the distributor. The complete text of the LGPL appears at the bottom of this file.

This alternative is provided to enable applications to be linked against the RPM library (commonly called librpm) without forcing such applications to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to rpm-maint@lists.rpm.org

---

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as

distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that
version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY
WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the
freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link a program with the library, you must provide
complete object files to the recipients so that they can relink them
with the library, after making changes to the library and recompiling
it. And you must show them these terms so they know
their rights.

Our method of protecting your rights has two steps: (1) copyright
the library, and (2) offer you this license which gives you legal
permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain
that everyone understands that there is no warranty for this free
library. If the library is modified by someone else and passed on, we
want its recipients to know that what they have is not the original
version, so that any problems introduced by others will not reflect on
the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary

General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what
the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy,

and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root
function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must
include the
copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application

to use the modified definitions.)

b) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

d) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the source code distributed need not include anything that is normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other
proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any

attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed

through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Library General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a
version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED
BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.214 python3-dnf 4.14.0-17.el9

1.214.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program

is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the
Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based

on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering

access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to

apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.215 fdisk 2.37.4-20.el9

1.215.1 Available under license :

NR START   END SECTORS SIZE NAME UUID
1   32 7679   7648 3.7M   8f8378c0-01
2 7680 16383   8704 4.3M   8f8378c0-02
5 7936 12799   4864 2.4M

6 12544 16127 3584 1.8M
7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<
0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;
OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,
FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that

you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a

combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or

other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary

GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The

threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate

properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the

integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.

EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid

anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the

Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent

access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other

circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the

GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for

software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those

products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,

is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of

technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution

medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the

Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation

(including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this

License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS

THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF

LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.

* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?
sS|11np#_(~'u7gi}[IgYZ

1.216 python3-hawkey 0.69.0-12.el9

1.216.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software

patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the

users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control compilation
and installation of the library.

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's

complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

2. You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be
reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based

on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or

linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany

the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a

license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is

safest to attach them to the start of each source file to most effectively
convey
the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.217 python3-dnf-plugins-core 4.3.0-16.el9

1.217.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any

patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any

part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium

customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to

these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions

of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.218 fsnotify 1.8.0

1.218.1 Available under license :

Copyright 2012 The Go Authors. All rights reserved.
Copyright fsnotify Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this
 list of conditions and the following disclaimer in the documentation and/or
 other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used
 to endorse or promote products derived from this software without specific
 prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.219 tpm2-tss-tcti 3.2.3-1.el9

1.219.1 Available under license :

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN
CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF
THE POSSIBILITY OF SUCH DAMAGE.

1.220 chkconfig 1.24-1.el9_5.1

1.220.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to

control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For

example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.221 systemd 252-46.el9_5.2

1.221.1 Available under license :

systemd Project Licensing

Main License

The systemd project uses single-line references to Unique License Identifiers as
defined by the Linux Foundation's SPDX project (https://spdx.org/). The line in
each individual source file identifies the license applicable to that file.

The current set of valid, predefined SPDX identifiers can be found on the SPDX
License List at https://spdx.org/licenses/.

The 'LICENSES/' directory contains all the licenses used by the sources included in
the systemd project source tree.

Unless otherwise noted, the systemd project sources are licensed under the terms
and conditions of the **GNU Lesser General Public License v2.1 or later**.

New sources that cannot be distributed under LGPL-2.1-or-later will no longer
be accepted for inclusion in the systemd project to maintain license uniformity.

Other Licenses

The following exceptions apply:

* some udev sources under src/udev/ are licensed under **GPL-2.0-or-later**, so the
  udev binaries as a
 whole are also distributed under **GPL-2.0-or-later**.
* the header files contained in src/basic/linux/ and src/shared/linux/ are copied
  verbatim from the Linux kernel source tree and are licensed under **GPL-2.0 WITH
  Linux-syscall-note** and are used within the scope of the Linux-syscall-note
  exception provisions
* the src/shared/initreq.h header is licensed under original license,
  LGPL-2.0-or-later.
* the src/shared/linux/bpf_insn.h header is copied from the Linux kernel
  source tree and is licensed under either **BSD-2-Clause** or **GPL-2.0-only**,
  and thus is included in the systemd build under the BSD-2-Clause license.
* The src/basic/linux/wireguard.h header is copied from the Linux kernel
  source tree and is licensed under either **MIT** or **GPL-2.0 WITH Linux-syscall-note**,
  and thus is included in the systemd build under the MIT license.
* the following sources are licensed under the **MIT** license (in case of our
  scripts, to facilitate copying
 and reuse of those helpers to other projects):
  - hwdb.d/parse_hwdb.py

- src/basic/linux/batman_adv.h
- src/basic/sparse-endian.h
- tools/catalog-report.py

* the following sources are licensed under the **CC0-1.0** license:
- src/basic/siphash24.c
- src/basic/siphash24.h
- tools/check-includes.pl

* the following sources are licensed under the **MIT-0** license:
- all examples under man/
- src/systemctl/systemd-sysv-install.SKELETON
- config files and examples under /network

* the following sources are under **Public Domain** (LicenseRef-murmurhash2-public-domain):
- src/basic/MurmurHash2.c
- src/basic/MurmurHash2.h

* the following sources are under **Public Domain** (LicenseRef-lookup3-public-domain):
- src/libsystemd/sd-journal/lookup3.c
- src/libsystemd/sd-journal/lookup3.h

* the tools/chromiumos/gen_autosuspend_rules.py script is licensed under the
BSD-3-Clause license.

* Heebo fonts under docs/fonts/ are licensed under the
SIL Open Font License 1.1,

* any files under test/ without an explicit license we assume non-copyrightable
(eg: computer-generated fuzzer data)

OpenSSL Notes

Note that building the systemd project with OpenSSL does not affect the libsystemd.so
shared library, which is not linked with the OpenSSL library.

MurmurHash2 was written by Austin Appleby, and is placed in the public
domain. The author hereby disclaims copyright to this source code.

GNU LIBRARY GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most
GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public
License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library".
The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright
law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that
uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the

Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole.
If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections

1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work
is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you
must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the

Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may

not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of
this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted
in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify
a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE

LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the
public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.
Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright

disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in
the library `Frob' (a library for tweaking knobs) written
by James Random Hacker.

signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
// Copyright 2014 The Chromium OS Authors. All rights reserved.
//
// Redistribution and use in source and binary forms, with or without
// modification, are permitted provided that the following conditions are
// met:
//
//   * Redistributions of source code must retain the above copyright
// notice, this list of conditions and the following disclaimer.
//   * Redistributions in binary form must reproduce the above
// copyright notice, this list of conditions and the following disclaimer
// in the documentation and/or other materials provided with the
// distribution.
//   * Neither the name of Google Inc. nor the names of its
// contributors may be used to endorse or promote products derived from
// this software without specific prior written permission.
//
// THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
// "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
// LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
// A PARTICULAR
 PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
// OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
// SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
// LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
// DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
// THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
// (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
// OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
lookup3.c, by Bob Jenkins, May 2006, Public Domain.
Copyright (c) <dates>, <Copyright Holder> (<URL|email>),
with Reserved Font Name <Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>),
with Reserved Font Name <additional Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>).

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide development of collaborative font projects, to support the font creation efforts of academic and linguistic communities, and to provide a free and open framework in which fonts may be shared and improved in partnership with others.

The OFL allows the licensed fonts to be used, studied, modified and redistributed freely as long as they are not sold by themselves. The fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names are not used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part or in whole -- any of the components of the Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components,
in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled,
redistributed and/or sold with any software, provided that each copy
contains the above copyright notice and this license. These can be
included either as stand-alone text files, human-readable headers or
in the appropriate machine-readable metadata fields within
text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font
Name(s) unless explicit written permission is granted by the corresponding
Copyright Holder. This restriction only applies to the primary font name as
presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font
Software shall not be used to promote, endorse or advertise any
Modified Version, except to acknowledge the contribution(s) of the
Copyright Holder(s) and the Author(s) or with their explicit written
permission.

5) The Font Software, modified or unmodified, in part or in whole,
must be distributed entirely under this license, and must not be
distributed under any other license. The requirement for fonts to
remain under this license does not apply to any document created
using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are
not met.

DISCLAIMER
THE
FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT
OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE
COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL
DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM
OTHER DEALINGS IN THE FONT SOFTWARE.
NOTE! This copyright does *not* cover user programs that use kernel
services by normal system calls - this is merely considered normal use
of the kernel, and does *not* fall under the heading of "derived work".
Also note that the GPL below is copyrighted by the Free Software

Foundation, but the instance of code that it refers to (the Linux
kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel
is concerned is _this_ particular version of the license (ie v2, not
v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and

(2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License

along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of

a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License.

However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that

system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE

PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this

when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
MIT License

Copyright (c) <year> <copyright holders>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) <year> <owner> All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT No Attribution

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons")
that the public can reliably and without fear
of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal
effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation

thereof, including any amended or successor version of such directive); and
vii. other similar, equivalent or corresponding rights throughout the

world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected

by this document.
b. Affirmer offers the Work as-is and makes no representations or
warranties of any kind concerning the Work, express, implied,
statutory or otherwise, including without limitation warranties of
title, merchantability, fitness for a particular purpose, non
infringement, or the absence of latent or other defects, accuracy, or
the present or absence of errors, whether or not discoverable, all to
the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons
that may apply to the Work or any use thereof, including without
limitation any person's Copyright and Related Rights in the Work.
Further, Affirmer disclaims responsibility for obtaining any necessary
consents, permissions or other rights required for any use of the
Work.
d. Affirmer understands and acknowledges that Creative Commons is not a
party to this document and has no duty or obligation with
respect to
this CC0 or use of the Work.

1.222 pythonurllib 1.26.5-6.el9

1.222.1 Notifications :

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
This product includes software written by Tim Hudson (tjh@cryptsoft.com).
This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit
(http://www.openssl.org/)

1.222.2 Available under license :

Contributions to the urllib3 project

Creator & Maintainer

* Andrey Petrov <andrey.petrov@shazow.net>

Contributors

In chronological order:

* victor.vde <http://code.google.com/u/victor.vde/>
 * HTTPS patch (which inspired HTTPSConnectionPool)

* erikcederstrand <http://code.google.com/u/erikcederstrand/>
 * NTLM-authenticated HTTPSConnectionPool
 * Basic-authenticated HTTPSConnectionPool (merged into make_headers)

* niphlod <niphlod@gmail.com>
 * Client-verified SSL certificates for HTTPSConnectionPool

 * Response gzip and deflate encoding support
 * Better unicode support for filepost using StringIO buffers

* btoconnor <brian@btoconnor.net>
 * Non-multipart encoding for POST requests

* p.dobrogost <http://code.google.com/u/@WBRSRlBZDhBFXQB6/>
 * Code review, PEP8 compliance, benchmark fix

* kennethreitz <me@kennethreitz.com>
 * Bugfixes, suggestions, Requests integration

* georgemarshall <https://github.com/georgemarshall>
 * Bugfixes, Improvements and Test
coverage

* Thomas Kluyver <thomas@kluyver.me.uk>
 * Python 3 support

* brandon-rhodes <http://rhodesmill.org/brandon>
 * Design review, bugfixes, test coverage.

* studer <theo.studer@gmail.com>
 * IPv6 url support and test coverage

* Shivaram Lingamneni <slingamn@cs.stanford.edu>
 * Support for explicitly closing pooled connections

* hartator <hartator@gmail.com>
 * Corrected multipart behavior for params

* Thomas Weischuh <thomas@t-8ch.de>
 * Support for TLS SNI
 * API unification of ssl_version/cert_reqs
 * SSL fingerprint and alternative hostname verification
 * Bugfixes in testsuite

* Sune Kirkeby <mig@ibofobi.dk>
 * Optional SNI-support for Python 2 via PyOpenSSL.

* Marc Schlaich <marc.schlaich@gmail.com>
 * Various bugfixes and test improvements.

* Bryce Boe <bbzbryce@gmail.com>
 * Correct six.moves conflict
 * Fixed pickle support of some exceptions

* Boris Figovsky <boris.figovsky@ravellosystems.com>

* Allowed to skip SSL hostname verification

* Cory Benfield
<https://lukasa.co.uk/about/>
* Stream method for Response objects.
* Return native strings in header values.
* Generate 'Host' header when using proxies.

* Jason Robinson <jaywink@basshero.org>
* Add missing WrappedSocket.fileno method in PyOpenSSL

* Audrius Butkevicius <audrius.butkevicius@elastichosts.com>
* Fixed a race condition

* Stanislav Vitkovskiy <stas.vitkovsky@gmail.com>
* Added HTTPS (CONNECT) proxy support

* Stephen Holsapple <sholsapp@gmail.com>
* Added abstraction for granular control of request fields

* Martin von Gagern <Martin.vGagern@gmx.net>
* Support for non-ASCII header parameters

* Kevin Burke <kev@inburke.com> and Pavel Kirichenko <juanych@yandex-team.ru>
* Support for separate connect and request timeouts

* Peter Waller <p@pwaller.net>
* HTTPResponse.tell() for determining amount received over the wire

* Nipunn Koorapati <nipunn1313@gmail.com>
* Ignore default ports when comparing hosts for equality

* Danilo @dbrgn <https://dbrgn.ch/>
* Disabled TLS compression by default on Python 3.2+
* Disabled TLS compression in pyopenssl contrib module
* Configurable cipher suites in pyopenssl contrib module

* Roman Bogorodskiy <roman.bogorodskiy@ericsson.com>
* Account retries on proxy errors

* Nicolas Delaby <nicolas.delaby@ezeep.com>
* Use the platform-specific CA certificate locations

* Josh Schneier <https://github.com/jschneier>
* HTTPHeaderDict and associated tests and docs
* Bugfixes, docs, test coverage

* Tahia Khan <http://tahia.tk/>

 * Added Timeout examples in docs

* Arthur Grunseid <https://grunseid.com>
 * source_address support and tests (with https://github.com/bui)

* Ian Cordasco <graffatcolmingov@gmail.com>
 * PEP8 Compliance and Linting
 * Add ability to pass socket options to an HTTP Connection

* Erik Tollerud <erik.tollerud@gmail.com>
 * Support for standard library io module.

* Krishna Prasad <kprasad.iitd@gmail.com>
 * Google App Engine documentation

* Aaron Meurer
 <asmeurer@gmail.com>
 * Added Url.url, which unparses a Url

* Evgeny Kapun <abacabadabacaba@gmail.com>
 * Bugfixes

* Benjamen Meyer <bm_witness@yahoo.com>
 * Security Warning Documentation update for proper capture

* Shivan Sornarajah <github@sornars.com>
 * Support for using ConnectionPool and PoolManager as context managers.

* Alex Gaynor <alex.gaynor@gmail.com>
 * Updates to the default SSL configuration

* Tomas Tomecek <ttomecek@redhat.com>
 * Implemented generator for getting chunks from chunked responses.

* tlynn <https://github.com/tlynn>
 * Respect the warning preferences at import.

* David D. Riddle <ddriddle@illinois.edu>
 * IPv6 bugfixes in testsuite

* Thea Flowers <magicalgirl@google.com>
 * App Engine environment tests.
 * Documentation re-write.

* John Krauss <https://github.com/talos>
 * Clues to debugging problems with `cryptography` dependency in docs

* Disassem <https://github.com/Disassem>

* Fix pool-default headers not applying for url-encoded
requests like GET.

* James Atherfold <jlatherfold@hotmail.com>
* Bugfixes relating to cleanup of connections during errors.

* Christian Pedersen <https://github.com/chripede>
* IPv6 HTTPS proxy bugfix

* Jordan Moldow <https://github.com/jmoldow>
* Fix low-level exceptions leaking from ``HTTPResponse.stream()``.
* Bugfix for ``ConnectionPool.urlopen(release_conn=False)``.
* Creation of ``HTTPConnectionPool.ResponseCls``.

* Predrag Gruevski <https://github.com/obi1kenobi>
* Made cert digest comparison use a constant-time algorithm.

* Adam Talsma <https://github.com/a-tal>
* Bugfix to ca_cert file paths.

* Evan Meagher <https://evanmeagher.net>
* Bugfix related to `memoryview` usage in PyOpenSSL adapter

* John Vandenberg <jayvdb@gmail.com>
* Python 2.6 fixes; pyflakes and pep8 compliance

* Andy Caldwell <andy.m.caldwell@googlemail.com>
* Bugfix related to reusing connections in indeterminate states.

* Ville Skytt <ville.skytta@iki.fi>
* Logging efficiency
improvements, spelling fixes, Travis config.

* Shige Takeda <smtakeda@gmail.com>
* Started Recipes documentation and added a recipe about handling concatenated gzip data in HTTP response

* Jess Shapiro <jesse@jesseshapiro.net>
* Various character-encoding fixes/tweaks
* Disabling IPv6 DNS when IPv6 connections not supported

* David Foster <http://dafoster.net/>
* Ensure order of request and response headers are preserved.

* Jeremy Cline <jeremy@jcline.org>
* Added connection pool keys by scheme

* Aviv Palivoda <palaviv@gmail.com>
* History list to Retry object.

* HTTPResponse contains the last Retry object.

* Nate Prewitt <nate.prewitt@gmail.com>
* Ensure timeouts are not booleans and greater than zero.
* Fixed infinite loop in ``stream`` when amt=None.
* Added length_remaining to determine remaining data to be read.
* Added enforce_content_length to raise exception when incorrect content-length received.

* Seth Michael Larson <sethmichaellarson@protonmail.com>
* Created selectors backport that supports PEP 475.

* Alexandre Dias <alex.dias@smarkets.com>
* Don't retry on timeout if method not in whitelist

* Moinuddin Quadri <moin18@gmail.com>
* Lazily load idna package

* Tom White <s6yg1ez3@mail2tor.com>
* Made SOCKS handler differentiate socks5h from socks5 and socks4a from socks4.

* Tim Burke <tim.burke@gmail.com>
* Stop buffering entire deflate-encoded responses.

* Tuukka Mustonen <tuukka.mustonen@gmail.com>
* Add counter for status_forcelist retries.

* Erik Rose <erik@mozilla.com>
* Bugfix to pyopenssl vendoring

* Wolfgang Richter <wolfgang.richter@gmail.com>
* Bugfix related to loading full certificate chains with PyOpenSSL backend.

* Mike Miller <github@mikeage.net>
* Logging improvements to include the HTTP(S) port when opening a new connection

* Ioannis Tziakos <mail@itziakos.gr>
* Fix ``util.selectors._fileobj_to_fd`` to accept ``long``.
* Update appveyor tox setup to use the 64bit python.

* Akamai
(through Jess Shapiro) <jshapiro@akamai.com>
* Ongoing maintenance; 2017-2018

* Dominique Leuenberger <dimstar@opensuse.org>
* Minor fixes in the test suite

* Will Bond <will@wbond.net>
* Add Python 2.6 support to ``contrib.securetransport``

* Aleksei Alekseev <alekseev.yeskela@gmail.com>
 * using auth info for socks proxy

* Chris Wilcox <git@crwilcox.com>
 * Improve contribution guide
 * Add ``HTTPResponse.geturl`` method to provide ``urllib2.urlopen().geturl()`` behavior

* Bruce Merry <https://www.brucemerry.org.za>
 * Fix leaking exceptions when system calls are interrupted with zero timeout

* Hugo van Kemenade <https://github.com/hugovk>
 * Drop support for EOL Python 2.6

* Tim Bell <https://github.com/timb07>
 * Bugfix for responses with Content-Type: message/* logging warnings

* Justin Bramley <https://github.com/jbramleycl>
 * Add ability to handle multiple Content-Encodings

* Katsuhiko YOSHIDA <https://github.com/kyoshidajp>
 * Remove Authorization header
 regardless of case when redirecting to cross-site

* James Meickle <https://permadeath.com/>
 * Improve handling of Retry-After header

* Chris Jerdonek <chris.jerdonek@gmail.com>
 * Remove a spurious TypeError from the exception chain inside
   HTTPConnectionPool._make_request(), also for BaseExceptions.

* Jorge Lopez Silva <https://github.com/jalopezsilva>
 * Added support for forwarding requests through HTTPS proxies.

* Benno Rice <benno@jeamland.net>
 * Allow cadata parameter to be passed to underlying ``SSLContext.load_verify_locations()``.

* Keiichi Kobayashi <abok.1k@gmail.com>
 * Rename VerifiedHTTPSConnection to HTTPSConnection

* Himanshu Garg <garg_himanshu@outlook.com>
 * DOC & LICENSE Update

* Hod Bin Noon <bin.noon.hod@gmail.com>
 * Test improvements

* Chris Olufson <tycarac@gmail.com>
 * Fix for connection not being released on HTTP redirect and response not preloaded

* [Bastiaan Bakker] <https://github.com/bastiaanb>
 * Support for logging session keys
 via environment variable ``SSLKEYLOGFILE`` (Python 3.8+)

* [Ezzeri Esa] <https://github.com/savarin>
 * Ports and extends on types from typeshed

* [Your name or handle] <[email or website]>
 * [Brief summary of your changes]
MIT License

Copyright (c) 2008-2020 Andrey Petrov and contributors (see CONTRIBUTORS.txt)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
 OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.223 coreutils 8.32-36.el9

1.223.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we

stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to
avoid the special danger that patents applied to a free program could
make it effectively proprietary. To prevent this, the GPL assures that
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this
License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work
in a fashion requiring copyright permission, other than the making of an
exact copy. The resulting work is called a "modified version" of the
earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based
on the Program.

To "propagate" a work means to do anything with it that, without
permission, would make you directly or secondarily liable for
infringement under applicable copyright law, except executing it on a
computer or modifying a private copy. Propagation includes copying,
distribution (with or without modification), making available to the
public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other
parties to make or receive copies. Mere interaction with a user through
a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding

Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not

used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is

available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates

for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or

authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is

reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for

sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a

covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License,

section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE

USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.

1.224 tar 1.34-7.el9

1.224.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to

your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could

make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of

copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;

keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms

of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded

from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly

documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for

any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the

licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to

address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.

Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it

under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.225 pcre 8.44-4.el9

1.225.1 Available under license :

PCRE2 LICENCE

Please see the file LICENCE in the PCRE2 distribution for licensing details.

End
PCRE2 LICENCE

PCRE2 is a library of functions to support regular expressions whose syntax
and semantics are as close as possible to those of the Perl 5 language.

Releases 10.00 and above of PCRE2 are distributed under the terms of the "BSD"
licence, as specified below, with one exemption for certain binary
redistributions. The documentation for PCRE2, supplied in the "doc" directory,
is distributed under the same terms as the software itself. The data in the
testdata directory is not copyrighted and is in the public domain.

The basic library functions are written in C and are freestanding. Also
included in the distribution is a just-in-time compiler that can be used to
optimize pattern matching. This is an optional feature that can be omitted when
the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: Philip.Hazel
Email domain: gmail.com

Retired from University of Cambridge Computing Service,
Cambridge,
England.

Copyright (c) 1997-2024 University of Cambridge
All rights reserved.

PCRE2 JUST-IN-TIME COMPILATION SUPPORT

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2010-2024 Zoltan Herczeg
All rights reserved.

STACK-LESS JUST-IN-TIME COMPILER

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2009-2024 Zoltan Herczeg
All rights reserved.

THE "BSD" LICENCE

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notices,
this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notices, this list of conditions and the following disclaimer
in the
documentation and/or other materials provided with the distribution.

* Neither the name of the University of Cambridge nor the names of any
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

EXEMPTION FOR BINARY LIBRARY-LIKE PACKAGES

The second condition in the BSD licence (covering binary redistributions) does not apply all the way down a chain of software. If binary package A includes PCRE2, it must respect the condition, but if package B is software that includes package A, the condition is not imposed on package B unless it uses PCRE2 independently.

End
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT

OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.226 systemd-libs 252-46.el9_5.2

1.226.1 Available under license :

systemd Project Licensing

Main License

The systemd project uses single-line references to Unique License Identifiers as
defined by the Linux Foundation's SPDX project (https://spdx.org/). The line in
each individual source file identifies the license applicable to that file.

The current set of valid, predefined SPDX identifiers can be found on the SPDX
License List at https://spdx.org/licenses/.

The 'LICENSES/' directory contains all the licenses used by the sources included in
the systemd project source tree.

Unless otherwise noted, the systemd project sources are licensed under the terms
and conditions of the **GNU Lesser General Public License v2.1 or later**.

New sources that cannot be distributed under LGPL-2.1-or-later will no longer
be accepted for inclusion in the systemd project to maintain license uniformity.

Other Licenses

The following exceptions apply:

* some udev sources under src/udev/ are licensed under **GPL-2.0-or-later**, so the
  udev binaries as a
 whole are also distributed under **GPL-2.0-or-later**.
* the header files contained in src/basic/linux/ and src/shared/linux/ are copied
  verbatim from the Linux kernel source tree and are licensed under **GPL-2.0 WITH
  Linux-syscall-note** and are used within the scope of the Linux-syscall-note
  exception provisions
* the src/shared/initreq.h header is licensed under original license,
  LGPL-2.0-or-later.
* the src/shared/linux/bpf_insn.h header is copied from the Linux kernel
  source tree and is licensed under either **BSD-2-Clause** or **GPL-2.0-only**,
  and thus is included in the systemd build under the BSD-2-Clause license.
* The src/basic/linux/wireguard.h header is copied from the Linux kernel
  source tree and is licensed under either **MIT** or **GPL-2.0 WITH Linux-syscall-note**,

and thus is included in the systemd build under the MIT license.
* the following sources are licensed under the **MIT** license (in case of our
scripts, to facilitate copying
and reuse of those helpers to other projects):
- hwdb.d/parse_hwdb.py
- src/basic/linux/batman_adv.h
- src/basic/sparse-endian.h
- tools/catalog-report.py
* the following sources are licensed under the **CC0-1.0** license:
- src/basic/siphash24.c
- src/basic/siphash24.h
- tools/check-includes.pl
* the following sources are licensed under the **MIT-0** license:
- all examples under man/
- src/systemctl/systemd-sysv-install.SKELETON
- config files and examples under /network
* the following sources are under **Public Domain** (LicenseRef-murmurhash2-public-domain):
- src/basic/MurmurHash2.c
- src/basic/MurmurHash2.h
* the following sources are under **Public Domain** (LicenseRef-lookup3-public-domain):
- src/libsystemd/sd-journal/lookup3.c
- src/libsystemd/sd-journal/lookup3.h
* the tools/chromiumos/gen_autosuspend_rules.py script is licensed under the
BSD-3-Clause license.
* Heebo fonts under docs/fonts/ are licensed under the
SIL Open Font License 1.1,
* any files under test/ without an explicit license we assume non-copyrightable
(eg: computer-generated fuzzer data)

OpenSSL Notes

Note that building the systemd project with OpenSSL does not affect the libsystemd.so
shared library, which is not linked with the OpenSSL library.
MurmurHash2 was written by Austin Appleby, and is placed in the public
domain. The author hereby disclaims copyright to this source code.
GNU LIBRARY GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most
GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public
License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library".
The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright
law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that
uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole.
If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work
is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you
must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may
place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void,
and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or

modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may
not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of
this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted
in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify
a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting

the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the
public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.
Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write

to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in
the library `Frob' (a library for tweaking knobs) written
by James Random Hacker.

signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
// Copyright 2014 The Chromium OS Authors. All rights reserved.
//
// Redistribution and use in source and binary forms, with or without
// modification, are permitted provided that the following conditions are
// met:
//
//   * Redistributions of source code must retain the above copyright
// notice, this list of conditions and the following disclaimer.
//   * Redistributions in binary form must reproduce the above
// copyright notice, this list of conditions and the following disclaimer
// in the documentation and/or other materials provided with the
// distribution.
//   * Neither the name of Google Inc. nor the names of its
// contributors may be used to endorse or promote products derived from
// this software without specific prior written permission.
//
// THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
// "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
// LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
// A PARTICULAR
 PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
// OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
// SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
// LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
// DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
// THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
// (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
// OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
lookup3.c, by Bob Jenkins, May 2006, Public Domain.
Copyright (c) <dates>, <Copyright Holder> (<URL|email>),
with Reserved Font Name <Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>),
with Reserved Font Name <additional Reserved Font Name>.

Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>).

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide
development of collaborative font projects, to support the font creation
efforts of academic and linguistic communities, and to provide a free and
open framework in which fonts may be shared and improved in partnership
with others.

The OFL allows the licensed fonts to be used, studied,
modified and
redistributed freely as long as they are not sold by themselves. The
fonts, including any derivative works, can be bundled, embedded,
redistributed and/or sold with any software provided that any reserved
names are not used by derivative works. The fonts and derivatives,
however, cannot be released under any other type of license. The
requirement for fonts to remain under this license does not apply
to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright
Holder(s) under this license and clearly marked as such. This may
include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the
copyright statement(s).

"Original Version" refers to the collection of Font Software components as
distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting,
or substituting -- in part
or in whole -- any of the components of the
Original Version, by changing formats or by porting the Font Software to a
new environment.

"Author" refers to any designer, engineer, programmer, technical
writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining
a copy of the Font Software, to use, study, copy, merge, embed, modify,
redistribute, and sell modified and unmodified copies of the Font
Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components,
in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled,
redistributed and/or sold with any software, provided that each copy
contains the above copyright notice and this license. These can be
included either as stand-alone text files, human-readable headers or
in the appropriate machine-readable metadata fields within
text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font
Name(s) unless explicit written permission is granted by the corresponding
Copyright Holder. This restriction only applies to the primary font name as
presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font
Software shall not be used to promote, endorse or advertise any
Modified Version, except to acknowledge the contribution(s) of the
Copyright Holder(s) and the Author(s) or with their explicit written
permission.

5) The Font Software, modified or unmodified, in part or in whole,
must be distributed entirely under this license, and must not be
distributed under any other license. The requirement for fonts to
remain under this license does not apply to any document created
using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are
not met.

DISCLAIMER
THE
FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT
OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE
COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL
DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM

OTHER DEALINGS IN THE FONT SOFTWARE.

NOTE! This copyright does *not* cover user programs that use kernel services by normal system calls - this is merely considered normal use of the kernel, and does *not* fall under the heading of "derived work". Also note that the GPL below is copyrighted by the Free Software Foundation, but the instance of code that it refers to (the Linux kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel is concerned is _this_ particular version of the license (ie v2, not v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that

you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies

of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest

your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the

source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any

patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.

EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along

with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
MIT License

Copyright (c) <year> <copyright holders>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A

PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) <year> <owner> All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT No Attribution

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES

REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons")
that the public can reliably and without fear
of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal
effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the

European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation

thereof, including any amended or successor version of such directive); and

vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's

express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document.
b. Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.
d. Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with respect to this CC0 or use of the Work.

1.227 usermode 1.114-5.el9

1.227.1 Available under license :

Copyright (c) 2002 Jorge Acereda <jacereda@users.sourceforge.net> &
Peter O'Gorman <ogorman@users.sourceforge.net>

Portions may be copyright others, see the AUTHORS file included with this distribution.

Maintained by Peter O'Gorman <ogorman@users.sourceforge.net>

Bug Reports and other queries should go to <ogorman@users.sourceforge.net>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY
KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
libffi - Copyright (c) 1996-2003 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL CYGNUS SOLUTIONS BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
X Window System License - X11R6.4

Copyright (c) 1998 The Open Group

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,

EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE OPEN GROUP BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of The Open Group shall
not be used in advertising or otherwise to promote the sale, use or
other dealings in this Software without prior written authorization
from The Open Group.

X Window System is a trademark of The Open Group

Additional Conditions for this Windows binary build

This program is linked with and uses Microsoft Distributable Code,
copyrighted by Microsoft Corporation. The Microsoft Distributable Code
is embedded in each .exe, .dll and .pyd file as a result of running
the code through a linker.

If you further distribute programs that include the Microsoft
Distributable Code, you must comply with the restrictions on
distribution specified by Microsoft. In particular, you must require
distributors and external end users to agree to terms that protect the
Microsoft Distributable Code at least as much as Microsoft's own
requirements for the Distributable Code. See Microsoft's documentation
(included in its developer tools and on its website at microsoft.com)
for specific details.

Redistribution of the Windows binary build of the Python interpreter
complies with this agreement, provided that you do not:

- alter any copyright, trademark or patent
notice in Microsoft's
Distributable Code;

- use Microsoft's trademarks in your programs' names or in a way that
suggests your programs come from or are endorsed by Microsoft;

- distribute Microsoft's Distributable Code to run on a platform other
than Microsoft operating systems, run-time technologies or application
platforms; or

- include Microsoft Distributable Code in malicious, deceptive or

unlawful programs.

These restrictions apply only to the Microsoft Distributable Code as
defined above, not to Python itself or any programs running on the
Python interpreter. The redistribution of the Python interpreter and
libraries is governed by the Python Software License included with this
file, or by other licenses as marked.
Copyright (c) 1998-2000 Thai Open Source Software Center Ltd and Clark Cooper
Copyright (c) 2001-2022 Expat maintainers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
 ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations, which became
Zope Corporation. In 2001, the Python Software Foundation (PSF, see
https://www.python.org/psf/) was formed, a non-profit organization
created specifically to own Python-related Intellectual Property.

Zope Corporation was a sponsoring member of the PSF.

All
Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

Python software and documentation are licensed under the
Python Software Foundation License Version 2.

Starting with Python 3.8.6,

examples, recipes, and other code in
the documentation are dual licensed under the PSF License Version 2
and the Zero-Clause BSD license.

Some software incorporated into Python is under different licenses.
The licenses are listed with code falling under that license.

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2
---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright
(c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 Python Software Foundation;
All Rights Reserved" are retained in Python alone or in any derivative version
prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY
INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python, Licensee agrees to be bound by the terms and conditions of this License Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the Individual or Organization ("Licensee") accessing and otherwise using this software in source or binary form and its associated documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License Agreement, BeOpen hereby grants Licensee a non-exclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use the Software alone or in any derivative version, provided, however, that the BeOpen Python License is retained in the Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS" basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html
may be used according to the
permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice
of copyright, i.e., "Copyright (c)
1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of

the changes made
to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS"
basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. This License Agreement shall be governed by the federal
intellectual property law of the United States, including without
limitation the federal copyright law, and, to the extent such
U.S. federal law does not apply,
by the law of the Commonwealth of
Virginia, excluding Virginia's conflict of law provisions.
Notwithstanding the foregoing, with regard to derivative works based
on Python 1.6.1 that incorporate non-separable material that was
previously distributed under the GNU General Public License (GPL), the
law of the Commonwealth of Virginia shall govern this License
Agreement only as to issues arising under or with respect to
Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this
License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture between CNRI and Licensee. This
License Agreement does not grant permission to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or
services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying,
installing or otherwise using Python 1.6.1, Licensee agrees to be
bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER
RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

ZERO-CLAUSE BSD LICENSE FOR CODE IN THE PYTHON DOCUMENTATION

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM
LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.
This license applies to the bootstrapper application that is embedded within the installer. It has no impact on the licensing for the rest of the installer or Python itself, as no code covered by this license exists in any other part of the product.

Microsoft Reciprocal License (MS-RL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

1. Definitions
The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.
A "contribution" is the original software, or any additions or changes to the software.
A "contributor" is any person that distributes its contribution under this license.

"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights
(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.
(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations
(A) Reciprocal Grants- For any file you distribute that contains code from the software (in source code or binary format), you must provide recipients the source code to that file along with a copy of this license, which license will govern that file. You may license other files that are entirely your own work and do not contain code from the software under any terms you choose.
(B) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.
(C) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.
(D) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.
(E) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.
(F) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions.
You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

1.228 util-linux 2.37.4-20.el9

1.228.1 Available under license :

NR START END SECTORS SIZE NAME UUID
1 32 7679 7648 3.7M 8f8378c0-01
2 7680 16383 8704 4.3M 8f8378c0-02
5 7936 12799 4864 2.4M
6 12544 16127 3584 1.8M
7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<
0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;

OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,
FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these

rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it

does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the

terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their

rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the

notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is

void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed

through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS

TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute
it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
 is what you want to do, use the GNU Lesser General
Public License instead of this License.
                GNU GENERAL PUBLIC LICENSE
                 Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

                      Preamble

 The GNU General Public License is a free, copyleft license for
software and other kinds of works.

 The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to

any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we
have designed this version of the GPL to prohibit the practice for those
products. If such problems arise substantially in other domains, we
stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to

avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a

menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any

non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,

in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of

it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and
finally terminates your license, and (b) permanently, if the copyright
holder fails to notify you of the violation by some reasonable means
prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright
holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will

be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.

Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
 to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, and the entire permission notice in its entirety,
  including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
  products derived from this software without specific prior
  written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
 DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*

* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?
sS|11np#_(~'u7gi}[IgYZ

1.229 nghttp2 1.43.0-6.el9

1.229.1 Available under license :

The MIT License

Copyright (c) 2012, 2014, 2015, 2016 Tatsuhiro Tsujikawa
Copyright (c) 2012, 2014, 2015, 2016 nghttp2 contributors

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
 WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
See COPYING
Copyright Joyent, Inc. and other Node contributors.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.
This software is licensed under the MIT License.

Copyright Fedor Indutny, 2018.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to permit
persons to whom the Software is furnished to do so, subject to the
following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN
NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE
USE OR OTHER DEALINGS IN THE SOFTWARE.
If not otherwise noted, the extensions in this package are licensed
under the following license.

Copyright (c) 2010 by the contributors (see AUTHORS file).
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
 notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
 notice, this list of conditions and the following disclaimer in the
 documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL,
 EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.230 dnf 4.14.0-17.el9

1.230.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by

the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed

under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this

License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for

making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot

distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of

this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this

is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.231 libksba 1.5.1-7.el9

1.231.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright on the software, and (2) offer
you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we
have designed this version of the GPL to prohibit the practice for those
products. If such problems arise substantially in other domains, we
stand ready to extend this provision to those domains
in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to
avoid the special danger that patents applied to a free program could
make it effectively proprietary. To prevent this, the GPL assures that
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this
License. Each licensee is addressed as "you". "Licensees" and
"recipients" may be individuals or organizations.

To

"modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate
Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than
the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component

(kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under

the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license
the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution medium, is called an
"aggregate" if the compilation and
its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years and valid for as
long as you offer spare parts or customer
support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the

Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge.
You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object
code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute

modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place

additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional
terms are considered "further
restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the

form of a separately written license, or stated as exceptions;
the above requirements apply either way.

8. Termination.

You may
not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and
finally terminates your license, and (b) permanently, if the copyright
holder fails to notify you of the violation by some reasonable means
prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your
receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, you do not qualify to receive new licenses for the same
material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or
run a copy of the Program. Ancillary propagation of a covered work
occurring solely as a consequence of using peer-to-peer transmission
to receive a copy likewise does not require acceptance. However,
nothing other than this License grants you permission to propagate or
modify any covered work. These actions infringe copyright if you do
not accept this License. Therefore, by modifying or propagating a
covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time

you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not
impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control"
includes the right to grant
patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent

(such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different

permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING,
BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of
warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively

state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea
of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software: you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation, either version 3 of the License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

 If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

  <program> Copyright (C) <year> <name of author>
  This program comes with ABSOLUTELY
NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But first,
 please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by
the Library is deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that
displays copyright notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is
necessary to install and execute a modified version of the
Combined Work produced by recombining or relinking the
Application with a modified version of the Linked Version. (If
you use option 4d0, the Installation Information must accompany
the Minimal Corresponding Source and Corresponding Application
Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined
library under terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the Library.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to

control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For

example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

KSBA is distributed under mixed GPL and LGPL licenses. Please see the file AUTHOR for details. The text of the used licenses can be found in the files:

COPYING.LGPLv3
COPYING.GPLv3
COPYING.GPLv2

1.232 dmidecode 3.6-1.el9

1.232.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the

source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate

copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt

otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made

generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute
it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
 is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.233 ima-evm-utils 1.5-2.el9

1.233.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such

interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution

and only if you
  received the program in object code or executable form with such
  an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source
 code, even though third parties are not
compelled to copy the source along with the object code.

 4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

 5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
 or modifying
the Program or works based on it.

 6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing

version number. If the Program
specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.

1.234 libdnf-plugin-subscription-manager 1.29.42-1.el9

1.234.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data

prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the

ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object

file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at

least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your

rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that

system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE

LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301

USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not

compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY

FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
GNU LGPLv2.1
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: subscription-manager
Source: <url://example.com>

Files: *
Copyright: <years> <put author's name and email here>
<years> <likewise for another author>
License: <special license>
<Put the license of the package here indented by 1 space>
<This follows the format of Description: lines in control file>
.
<Including paragraphs>

If you want to use GPL v2 or later for the /debian/* files use
the following clauses, or change it to suit. Delete these two lines
Files: debian/*
Copyright: 2017 Matthias Dellweg <dellweg@atix.de>
License: GPL-2+
This package is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
.
This package is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even
 the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>
.
On Debian systems, the complete text of the GNU General
Public License version 2 can be found in "/usr/share/common-licenses/GPL-2".

Please also look if there are files or directories which have a
different copyright/license attached and list them here.
Please avoid picking licenses with terms that are more restrictive than the
packaged work, as it may make Debian's contributions unacceptable upstream.

1.235 subscription-manager 1.29.42-1.el9

1.235.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a

restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an

appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote

it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked

with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined

library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free

programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which

contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or

executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number

of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the License,
or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License along
  with this program; if not, write to the Free Software Foundation, Inc.,
  51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
GNU LGPLv2.1
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: subscription-manager
Source: <url://example.com>

Files: *
Copyright: <years> <put author's name and email here>
        <years> <likewise for another author>
License: <special license>
<Put the license of the package here indented by 1 space>
<This follows the format of Description: lines in control file>
.
<Including paragraphs>

If you want to use GPL v2 or later for the /debian/* files use
the following clauses, or change it to suit. Delete these two lines
Files: debian/*
Copyright: 2017 Matthias Dellweg <dellweg@atix.de>
License: GPL-2+
This package is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
.
This package is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even
 the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>
.
On Debian systems, the complete text of the GNU General
Public License version 2 can be found in "/usr/share/common-licenses/GPL-2".

Please also look if there are files or directories which have a
different copyright/license attached and list them here.
Please avoid picking licenses with terms that are more restrictive than the
packaged work, as it may make Debian's contributions unacceptable upstream.

1.236 gdb 14.2-3.el9

1.236.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim
copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably
considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work

based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code
or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free
redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version
number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING

WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author

Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
The libgloss subdirectory is a collection of software from several sources.

Each file may have its own copyright/license that is embedded in the source
file. Unless otherwise noted in the body of the source file(s), the following copyright
notices will apply to the contents of the libgloss subdirectory:

(1) Red Hat Incorporated

Copyright (c) 1994-2009 Red Hat, Inc. All rights reserved.

This copyrighted material is made available to anyone wishing to use, modify,
copy, or redistribute it subject to the terms and conditions of the BSD
License. This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY expressed or implied, including the implied warranties
of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. A copy of this license
is available at http://www.opensource.org/licenses. Any Red Hat trademarks that
are incorporated in the source code or documentation are not subject to the BSD
License and may only be used or replicated with the express
permission of
Red Hat, Inc.

(2) University of California, Berkeley

Copyright (c) 1981-2000 The Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
  this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.
* Neither the name of the University nor the names of its contributors may
  be used to endorse or promote products derived from this software without
  specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
 LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT

NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY
OF SUCH DAMAGE.

(3) DJ Delorie

Copyright (C) 1993 DJ Delorie
All rights reserved.

Redistribution, modification, and use in source and binary forms is permitted
provided that the above copyright notice and following paragraph are
duplicated in all such forms.

This file is distributed WITHOUT ANY WARRANTY; without even the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
 PURPOSE.

(4) (formerly GPL for fr30)

The GPL is no longer applicable to the fr30 platform. The piece of
code (syscalls.c) referencing the GPL has been officially relicensed.

(5) Advanced Micro Devices

Copyright 1989, 1990 Advanced Micro Devices, Inc.

This software is the property of Advanced Micro Devices, Inc (AMD) which
specifically grants the user the right to modify, use and distribute this
software provided this notice is not removed or altered. All other rights
are reserved by AMD.

AMD MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS SOFTWARE. IN NO EVENT SHALL AMD BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS SOFTWARE.

So that all may benefit from your experience, please report any problems
or suggestions about this software to the 29K Technical Support Center at
800-29-29-AMD (800-292-9263) in the USA, or 0800-89-1131 in the UK, or
0031-11-1129 in
Japan, toll free. The direct dial number is 512-462-4118.

Advanced Micro Devices, Inc.
29K Support Products
Mail Stop 573
5900 E. Ben White Blvd.
Austin, TX 78741
800-292-9263

(6) - Analog Devices, Inc. (bfin-* targets)

Copyright (C) 2006, 2008, 2009, 2011, 2012 Analog Devices, Inc.

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

(7) University of Utah and the Computer Systems Laboratory (CSL)
[applies only to hppa*-*-pro* targets]

Copyright (c) 1990,1994
The University of Utah and
the Computer Systems Laboratory (CSL). All rights reserved.

Permission to use, copy, modify and distribute this software is hereby

granted provided that (1) source code retains these copyright, permission,
and disclaimer notices, and (2) redistributions including binaries
reproduce the notices in supporting documentation, and (3) all advertising
materials mentioning features or use of this software display the following
acknowledgement: ``This product includes software developed by the
Computer Systems Laboratory at the University of Utah."

THE UNIVERSITY OF UTAH AND CSL ALLOW FREE USE OF THIS SOFTWARE IN ITS "AS
IS" CONDITION. THE UNIVERSITY OF UTAH AND CSL DISCLAIM ANY LIABILITY OF
ANY KIND FOR ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

CSL requests users of this software to return to csl-dist@cs.utah.edu any
improvements that they make and grant CSL redistribution rights.

(8) Sun Microsystems

Copyright (C) 1993 by Sun Microsystems,
 Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems, Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice is preserved.

(9) Hewlett Packard

(c) Copyright 1986 HEWLETT-PACKARD COMPANY

To anyone who acknowledges that this file is provided "AS IS"
without any express or implied warranty:

permission to use, copy, modify, and distribute this file
for any purpose is hereby granted without fee, provided that
the above copyright notice and this notice appears in all
copies, and that the name of Hewlett-Packard Company not be
used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.
Hewlett-Packard Company makes no representations about the
suitability of this software for any purpose.

(10) Hans-Peter Nilsson

Copyright (C) 2001 Hans-Peter Nilsson

Permission to use, copy, modify, and distribute this software is
freely granted, provided that
 the above copyright notice, this notice
and the following disclaimer are preserved with no changes.

THIS SOFTWARE IS PROVIDED ``AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

(11) IBM Corp. spu processor (only spu-* targets)

(C) Copyright IBM Corp. 2005, 2006

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of IBM nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(12) Jon Beniston (only lm32-* targets)

Contributed by Jon Beniston <jon@beniston.com>

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the

documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(13) - Xilinx, Inc. (microblaze-* and powerpc-* targets)

Copyright (c) 2004, 2009 Xilinx, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

1. Redistributions source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. Neither the name of Xilinx nor the names of its contributors may be
used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS "AS
IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(14) - National Semiconductor Corporation

Copyright (c) 2004 National Semiconductor Corporation

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice
 is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

(15) - CodeSourcery, Inc. (tic6x-* targets)

Copyright (c) 2010 CodeSourcery, Inc.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
  * Redistributions of source code must retain the above copyright
    notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above copyright
    notice, this list of conditions and the following disclaimer in the
    documentation and/or other materials provided with the distribution.
  * Neither the name of CodeSourcery
 nor the
    names of its contributors may be used to endorse or promote products
    derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CODESOURCERY, INC. ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL CODESOURCERY BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(16) - GPL with exception (sparc-*leon*, crx-*, cr16-* targets only)

 Copyright (C) 1992 Free Software Foundation,

Inc.
Written By David Vinayak Henkel-Wallace, June 1992

This file is free software; you can redistribute it and/or modify it
under the terms of the GNU General Public License as published by the
Free Software Foundation; either version 2, or (at your option) any
later version.

In addition to the permissions in the GNU General Public License, the
Free Software Foundation gives you unlimited permission to link the
compiled version of this file with other programs, and to distribute
those programs without any restriction coming from the use of this
file. (The General Public License restrictions do apply in other
respects; for example, they cover modification of the file, and
distribution when not linked into another program.)

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You should have received
a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street - Fifth Floor, Boston,
MA 02110-1301, USA.

As a special exception, if you link this library with files
compiled with GCC to produce an executable, this does not cause
the resulting executable to be covered by the GNU General Public License.
This exception does not however invalidate any other reasons why
the executable file might be covered by the GNU General Public License.

(17) - Adapteva, Inc. (epiphany-* targets)

Copyright (c) 2011, Adapteva, Inc.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,

this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of Adapteva nor the names of its contributors may be used

to endorse or promote products derived from this software without specific
prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The newlib subdirectory is a collection of software from several sources.

Each file may have its own copyright/license that is embedded in the source
file. Unless otherwise noted in the body of the source file(s), the following copyright
notices will apply to the contents of the newlib subdirectory:

(1) Red Hat Incorporated

Copyright (c) 1994-2009 Red Hat, Inc. All rights reserved.

This copyrighted material is made available to anyone wishing to use,
modify, copy, or redistribute it subject to the terms and conditions
of the BSD License. This program is distributed in the hope that
it will be useful, but WITHOUT ANY WARRANTY expressed or implied,
including the implied warranties of MERCHANTABILITY or FITNESS FOR
A PARTICULAR PURPOSE. A copy of this license is available at
http://www.opensource.org/licenses. Any Red Hat trademarks that are
incorporated in the source code or documentation are not subject to
the BSD License and may only be used or replicated with the express
permission
of Red Hat, Inc.

(2) University of California, Berkeley

Copyright (c) 1981-2000 The Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation

and/or other materials provided with the distribution.
* Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT

NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY
OF SUCH DAMAGE.

(3) David M. Gay (AT&T 1991, Lucent 1998)

The author of this software is David M. Gay.

Copyright (c) 1991 by AT&T.

Permission to use, copy, modify, and distribute this software for any
purpose without fee is hereby granted, provided that this entire notice
is included in all copies of any software which is or includes a copy
or modification of this software and in
all copies of the supporting
documentation for such software.

THIS SOFTWARE IS BEING PROVIDED "AS IS", WITHOUT ANY EXPRESS OR IMPLIED
WARRANTY. IN PARTICULAR, NEITHER THE AUTHOR NOR AT&T MAKES ANY
REPRESENTATION OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY
OF THIS SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

The author of this software is David M. Gay.

Copyright (C) 1998-2001 by Lucent Technologies
All Rights Reserved

Permission to use, copy, modify, and distribute this software and
its documentation for any purpose and without fee is hereby
granted, provided that the above copyright notice appear in all

copies and that both that the copyright notice and this
permission notice and warranty disclaimer appear in supporting
documentation, and that the name of Lucent or any of its entities
not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

LUCENT
DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.
IN NO EVENT SHALL LUCENT OR ANY OF ITS ENTITIES BE LIABLE FOR ANY
SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER
IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION,
ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF
THIS SOFTWARE.

(4) Advanced Micro Devices

Copyright 1989, 1990 Advanced Micro Devices, Inc.

This software is the property of Advanced Micro Devices, Inc (AMD) which
specifically grants the user the right to modify, use and distribute this
software provided this notice is not removed or altered. All other rights
are reserved by AMD.

AMD MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS
SOFTWARE. IN NO EVENT SHALL AMD BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL
DAMAGES IN CONNECTION WITH OR ARISING FROM THE FURNISHING,
PERFORMANCE, OR
USE OF THIS SOFTWARE.

So that all may benefit from your experience, please report any problems
or suggestions about this software to the 29K Technical Support Center at
800-29-29-AMD (800-292-9263) in the USA, or 0800-89-1131 in the UK, or
0031-11-1129 in Japan, toll free. The direct dial number is 512-462-4118.

Advanced Micro Devices, Inc.
29K Support Products
Mail Stop 573
5900 E. Ben White Blvd.
Austin, TX 78741
800-292-9263

(5)

(6)

(7) Sun Microsystems

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems, Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice is preserved.

(8) Hewlett Packard

(c) Copyright 1986 HEWLETT-PACKARD COMPANY

To anyone who acknowledges that this file is provided "AS IS"
without any express or implied warranty:
permission to use, copy, modify, and distribute this file
for any purpose is hereby
granted without fee, provided that
the above copyright notice and this notice appears in all
copies, and that the name of Hewlett-Packard Company not be
used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.
Hewlett-Packard Company makes no representations about the
suitability of this software for any purpose.

(9) Hans-Peter Nilsson

Copyright (C) 2001 Hans-Peter Nilsson

Permission to use, copy, modify, and distribute this software is
freely granted, provided that the above copyright notice, this notice
and the following disclaimer are preserved with no changes.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND WITHOUT ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE.

(10) Stephane Carrez (m68hc11-elf/m68hc12-elf targets only)

Copyright (C) 1999, 2000, 2001, 2002 Stephane Carrez (stcarrez@nerim.fr)

The authors hereby grant permission
to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.

Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

(11) Christopher G. Demetriou

Copyright (c) 2001 Christopher G. Demetriou
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice,
 this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
  derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(12) SuperH, Inc.

Copyright
 2002 SuperH, Inc. All rights reserved

This software is the property of SuperH, Inc (SuperH) which specifically
grants the user the right to modify, use and distribute this software
provided this notice is not removed or altered. All other rights are
reserved by SuperH.

SUPERH MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO
THIS SOFTWARE. IN NO EVENT SHALL SUPERH BE LIABLE FOR INDIRECT, SPECIAL,
INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM
THE FURNISHING, PERFORMANCE, OR USE OF THIS SOFTWARE.

So that all may benefit from your experience, please report any problems
or suggestions about this software to the SuperH Support Center via
e-mail at softwaresupport@superh.com .

SuperH, Inc.
405 River Oaks Parkway
San Jose
CA 95134
USA

(13) Royal Institute of Technology

Copyright (c) 1999 Kungliga Tekniska Hgskolan
(Royal Institute of Technology, Stockholm, Sweden).
All rights reserved.

Redistribution and use in source and binary
forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. Neither the name of KTH nor the names of its contributors may be
used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY KTH AND ITS CONTRIBUTORS ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL KTH OR ITS CONTRIBUTORS BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(14) Alexey Zelkin

Copyright (c) 2000, 2001 Alexey Zelkin <phantom@FreeBSD.org>

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS
 ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(15) Andrey A. Chernov

Copyright (C) 1997 by Andrey A. Chernov, Moscow, Russia.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF

SUCH DAMAGE.

(16)
FreeBSD

Copyright (c) 1997-2002 FreeBSD Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR
 SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(17) S. L. Moshier

Author: S. L. Moshier.

Copyright (c) 1984,2000 S.L. Moshier

Permission to use, copy, modify, and distribute this software for any
purpose without fee is hereby granted, provided that this entire notice
is included in all copies of any software which is or includes a copy
or modification of this software and in all copies of the supporting
documentation for such software.

THIS SOFTWARE IS BEING PROVIDED "AS IS", WITHOUT ANY EXPRESS OR IMPLIED
WARRANTY. IN PARTICULAR, THE AUTHOR MAKES NO REPRESENTATION
OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY OF THIS
SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

(18) Citrus Project

Copyright (c)1999 Citrus Project,
All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(19) Todd C. Miller

Copyright (c) 1998 Todd C. Miller <Todd.Miller@courtesan.com>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
derived from this software without specific prior written permission.

THIS SOFTWARE
IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL
THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,

EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(20) DJ Delorie (i386)
Copyright (C) 1991 DJ Delorie
All rights reserved.

Redistribution, modification, and use in source and binary forms is permitted
provided that the above copyright notice and following paragraph are
duplicated in all such forms.

This file is distributed WITHOUT ANY WARRANTY; without even the
implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

(21) Free Software Foundation LGPL License (*-linux* targets only)

Copyright (C) 1990-1999, 2000, 2001 Free Software Foundation, Inc.
This file is part of the GNU C Library.
Contributed by Mark Kettenis <kettenis@phys.uva.nl>, 1997.

The GNU C Library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

The GNU C Library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with the GNU C Library; if not, write to the Free
Software Foundation,
Inc., 51 Franklin Street, Fifth Floor, Boston, MA
02110-1301 USA.

(22) Xavier Leroy LGPL License (i[3456]86-*-linux* targets only)

Copyright (C) 1996 Xavier Leroy (Xavier.Leroy@inria.fr)

This program is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public License
as published by the Free Software Foundation; either version 2

of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU Library General Public License for more details.

(23) Intel (i960)

Copyright (c) 1993 Intel Corporation

Intel hereby grants you permission to copy, modify, and distribute this
software and its documentation. Intel grants this permission provided
that the above copyright notice appears in all copies and that both the
copyright notice and this permission
 notice appear in supporting
documentation. In addition, Intel grants this permission provided that
you prominently mark as "not part of the original" any modifications
made to this software or documentation, and that the name of Intel
Corporation not be used in advertising or publicity pertaining to
distribution of the software or the documentation without specific,
written prior permission.

Intel Corporation provides this AS IS, WITHOUT ANY WARRANTY, EXPRESS OR
IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY
OR FITNESS FOR A PARTICULAR PURPOSE. Intel makes no guarantee or
representations regarding the use of, or the results of the use of,
the software and documentation in terms of correctness, accuracy,
reliability, currentness, or otherwise; and you rely on the software,
documentation and results solely at your own risk.

IN NO EVENT SHALL INTEL BE LIABLE FOR ANY LOSS OF USE, LOSS OF BUSINESS,
LOSS OF PROFITS, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL
 DAMAGES
OF ANY KIND. IN NO EVENT SHALL INTEL'S TOTAL LIABILITY EXCEED THE SUM
PAID TO INTEL FOR THE PRODUCT LICENSED HEREUNDER.

(24) Hewlett-Packard (hppa targets only)

(c) Copyright 1986 HEWLETT-PACKARD COMPANY

To anyone who acknowledges that this file is provided "AS IS"
without any express or implied warranty:
   permission to use, copy, modify, and distribute this file
for any purpose is hereby granted without fee, provided that
the above copyright notice and this notice appears in all
copies, and that the name of Hewlett-Packard Company not be
used in advertising or publicity pertaining to distribution

of the software without specific, written prior permission.
Hewlett-Packard Company makes no representations about the
suitability of this software for any purpose.

(25) Henry Spencer (only *-linux targets)

Copyright 1992, 1993, 1994 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents
of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
explicit claim or by omission. Since few users ever read sources,
credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
misrepresented as being the original software. Since few users
ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

(26) Mike Barcroft

Copyright (c) 2001 Mike Barcroft <mike@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are
met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL

DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(27) Konstantin Chuguev (--enable-newlib-iconv)

Copyright (c) 1999, 2000
Konstantin Chuguev. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

iconv (Charset Conversion Library) v2.0

(28) Artem Bityuckiy (--enable-newlib-iconv)

Copyright (c) 2003, Artem B. Bityuckiy, SoftMine Corporation.
Rights transferred to Franklin Electronic Publishers.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright

notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(29) IBM, Sony, Toshiba (only spu-* targets)

(C) Copyright 2001,2006,
International Business Machines Corporation,
Sony Computer Entertainment, Incorporated,
Toshiba Corporation,

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
* Neither the names of the copyright holders nor the names of their
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN
CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE

POSSIBILITY OF SUCH DAMAGE.

(30) - Alex Tatmanjants (targets using libc/posix)

Copyright (c) 1995 Alex Tatmanjants <alex@elvisti.kiev.ua>
at Electronni Visti IA, Kiev, Ukraine.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice,
this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(31)
- M. Warner Losh (targets using libc/posix)

Copyright (c) 1998, M. Warner Losh <imp@freebsd.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE

ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(32) - Andrey A. Chernov (targets using libc/posix)

Copyright (C) 1996 by Andrey A. Chernov, Moscow, Russia.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials
provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(33) - Daniel Eischen (targets using libc/posix)

Copyright (c) 2001 Daniel Eischen <deischen@FreeBSD.org>.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification,
are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright

notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(34) - Jon Beniston (only lm32-* targets)

Contributed by Jon Beniston <jon@beniston.com>

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

(35) - ARM Ltd (arm and thumb variant targets only)

Copyright (c) 2009 ARM Ltd
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions
 and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. The name of the company may not be used to endorse or promote
   products derived from this software without specific prior written
   permission.

THIS SOFTWARE IS PROVIDED BY ARM LTD ``AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL ARM LTD BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(36) - Xilinx, Inc. (microblaze-*
 and powerpc-* targets)

Copyright (c) 2004, 2009 Xilinx, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

1. Redistributions source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. Neither the name of Xilinx nor the names of its contributors may be
used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS "AS
IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT
SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(37) Texas Instruments Incorporated (tic6x-* targets)

Copyright (c) 1996-2010 Texas Instruments Incorporated
http://www.ti.com/

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of Texas Instruments Incorporated nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(38) National Semiconductor (cr16-* and crx-* targets)

Copyright (c) 2004 National Semiconductor Corporation

The authors hereby grant permission to use, copy, modify, distribute,
and license this software and its documentation for any purpose, provided
that existing copyright notices are retained in all copies and that this
notice is included verbatim in any distributions. No written agreement,
license, or royalty fee is required for any of the authorized uses.
Modifications to this software may be copyrighted by their authors
and need not follow the licensing terms described here, provided that
the new terms are clearly indicated on the first page of each file where
they apply.

(39) - Adapteva, Inc. (epiphany-* targets)

Copyright (c) 2011, Adapteva, Inc.
All rights reserved.

Redistribution and use in source
and binary forms, with or without
modification, are permitted provided that the following conditions are met:
* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of Adapteva nor the names of its contributors may be used
to endorse or promote products derived from this software without specific
prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY,
OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(40) - Altera Corportion (nios2-* targets)

Copyright (c) 2003 Altera Corporation
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions

are met:

o Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
o Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
o Neither the name of Altera Corporation nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ALTERA CORPORATION, THE COPYRIGHT HOLDER,
AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL
THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR
TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

(41) Ed Schouten
- Free BSD

Copyright (c) 2008 Ed Schouten <ed@FreeBSD.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY

OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
(This file is under construction.) -*- text -*-

If you've contributed to gas and your name isn't listed here, it is
not meant as a slight. I just don't know about it. Email me,
nickc@redhat.com and I'll correct the situation.

This file will eventually be deleted: The general info will go into
the documentation, and info on specific files will go into an AUTHORS
file, as requested by the FSF.

++++++++++++++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for
gdb-specific debug information and the 68k series machines, most of
the preprocessing pass, and extensive changes in messages.c,
input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various
enhancements and many bug fixes, including merging support for several
processors, breaking gas up to handle multiple object file format
backends (including heavy rewrite, testing, an integration of the coff
and b.out backends), adding configuration
 including heavy testing and
verification of cross assemblers and file splits and renaming,
converted gas to strictly ansi C including full prototypes, added
support for m680[34]0 & cpu32, considerable work on i960 including a
coff port (including considerable amounts of reverse engineering), a
sparc opcode file rewrite, decstation, rs6000, and hp300hpux host
ports, updated "know" assertions and made them work, much other
reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of
the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan.
Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of
Buffalo University and Torbjorn Granlund of the Swedish Institute of
Computer Science.

Keith
Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation
that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many
small
bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus

Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000
series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30
(tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error
checking, updating the code, and improving the 16 bit support, using
patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If
you've contributed significant work and are not mentioned on this list, and
want to be, let us know. Some of the history has been lost;
 we aren't
intentionally leaving anyone out.

Copyright (C) 2012-2023 Free Software Foundation, Inc.

Copying and distribution of this file, with or without modification,
are permitted in any medium without royalty provided the copyright
notice and this notice are preserved.
@c The GNU Free Documentation License.
@center Version 1.3, 3 November 2008

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
@uref{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
@end display

@enumerate 0
@item
PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document @dfn{free} in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,

with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License is a kind of ``copyleft'', which means that derivative
works of the document
must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

@item
APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to use that
work under the conditions stated herein. The ``Document'', below,
refers
to any such manual or work. Any member of the public is a
licensee, and is addressed as ``you''. You accept the license if you
copy, modify or distribute the work in a way requiring permission
under copyright law.

A ``Modified Version'' of the Document means any work containing the
Document or a portion of it, either copied verbatim, or with
modifications and/or translated into another language.

A ``Secondary Section'' is a named appendix or a front-matter section
of the Document that deals exclusively with the relationship of the
publishers or authors of the Document to the Document's overall
subject (or to related matters) and contains nothing that could fall
directly within that overall subject. (Thus, if the Document is in
part a textbook of mathematics, a Secondary Section may not explain
any mathematics.) The relationship could be a matter of historical
connection with the subject or with related matters, or of legal,
commercial, philosophical, ethical or political
position regarding
them.

The ``Invariant Sections'' are certain Secondary Sections whose titles
are designated, as being those of Invariant Sections, in the notice
that says that the Document is released under this License. If a
section does not fit the above definition of Secondary then it is not
allowed to be designated as Invariant. The Document may contain zero
Invariant Sections. If the Document does not identify any Invariant
Sections then there are none.

The ``Cover Texts'' are certain short passages of text that are listed,
as Front-Cover Texts or Back-Cover Texts, in the notice that says that
the Document is released under this License. A Front-Cover Text may
be at most 5 words, and a Back-Cover Text may be at most 25 words.

A ``Transparent'' copy of the Document means a machine-readable copy,
represented in a format whose specification is available to the
general public, that is suitable for revising the document
straightforwardly with generic text editors or (for
 images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not ``Transparent'' is called ``Opaque''.

Examples of suitable formats for Transparent copies include plain
@sc{ascii} without markup, Texinfo input format, La@TeX{} input
format, @acronym{SGML} or @acronym{XML} using a publicly available
@acronym{DTD}, and standard-conforming simple @acronym{HTML},
PostScript or @acronym{PDF} designed for human modification. Examples
of transparent image formats include @acronym{PNG}, @acronym{XCF} and
@acronym{JPG}. Opaque formats
 include proprietary formats that can be
read and edited only by proprietary word processors, @acronym{SGML} or
@acronym{XML} for which the @acronym{DTD} and/or processing tools are
not generally available, and the machine-generated @acronym{HTML},
PostScript or @acronym{PDF} produced by some word processors for
output purposes only.

The ``Title Page'' means, for a printed book, the title page itself,
plus such following pages as are needed to hold, legibly, the material
this License requires to appear in the title page. For works in
formats which do not have any title page as such, ``Title Page'' means
the text near the most prominent appearance of the work's title,
preceding the beginning of the body of the text.

The ``publisher'' means any person or entity that distributes copies
of the Document to the public.

A section ``Entitled XYZ'' means a named subunit of the Document whose
title either is precisely XYZ or contains XYZ in parentheses following
text that translates XYZ in
 another language. (Here XYZ stands for a
specific section name mentioned below, such as ``Acknowledgements'',
``Dedications'', ``Endorsements'', or ``History''.)  To ``Preserve the Title''
of such a section when you modify the Document means that it remains a
section ``Entitled XYZ'' according to this definition.

The Document may include Warranty Disclaimers next to the notice which
states that this License applies to the Document. These Warranty
Disclaimers are considered to be included by reference in this
License, but only as regards disclaiming warranties: any other
implication that these Warranty Disclaimers may have is void and has
no effect on the meaning of this License.

@item
VERBATIM COPYING

You may copy and distribute the Document in any medium, either
commercially or noncommercially, provided that this License, the
copyright notices, and the license notice saying this License applies
to the Document are reproduced in all copies, and that you add no other
conditions whatsoever
 to those of this License. You may not use
technical measures to obstruct or control the reading or further
copying of the copies you make or distribute. However, you may accept
compensation in exchange for copies. If you distribute a large enough
number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and
you may publicly display copies.

@item
COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have
printed covers) of the Document, numbering more than 100, and the
Document's license notice requires Cover Texts, you must enclose the
copies in covers that carry, clearly and legibly, all these Cover
Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on
the back cover. Both covers must also clearly and legibly identify
you as the publisher of these copies. The front cover must present
the full title with all words of the title equally prominent and

visible.
You may add other material on the covers in addition.
Copying with changes limited to the covers, as long as they preserve
the title of the Document and satisfy these conditions, can be treated
as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit
legibly, you should put the first ones listed (as many as fit
reasonably) on the actual cover, and continue the rest onto adjacent
pages.

If you publish or distribute Opaque copies of the Document numbering
more than 100, you must either include a machine-readable Transparent
copy along with each Opaque copy, or state in or with each Opaque copy
a computer-network location from which the general network-using
public has access to download using public-standard network protocols
a complete Transparent copy of the Document, free of added material.
If you use the latter option, you must take reasonably prudent steps,
when you begin distribution of Opaque copies in quantity, to ensure
that
this Transparent copy will remain thus accessible at the stated
location until at least one year after the last time you distribute an
Opaque copy (directly or through your agents or retailers) of that
edition to the public.

It is requested, but not required, that you contact the authors of the
Document well before redistributing any large number of copies, to give
them a chance to provide you with an updated version of the Document.

@item
MODIFICATIONS

You may copy and distribute a Modified Version of the Document under
the conditions of sections 2 and 3 above, provided that you release
the Modified Version under precisely this License, with the Modified
Version filling the role of the Document, thus licensing distribution
and modification of the Modified Version to whoever possesses a copy
of it. In addition, you must do these things in the Modified Version:

@enumerate A
@item
Use in the Title Page (and on the covers, if any) a title distinct
from that of the Document, and from
those of previous versions
(which should, if there were any, be listed in the History section
of the Document). You may use the same title as a previous version
if the original publisher of that version gives permission.

@item
List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.

@item
State on the Title page the name of the publisher of the Modified Version, as the publisher.

@item
Preserve all the copyright notices of the Document.

@item
Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.

@item
Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in
the Addendum below.

@item
Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

@item
Include an unaltered copy of this License.

@item
Preserve the section Entitled ``History'', Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled ``History'' in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

@item
Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the ``History'' section. You may omit a network location for a work that was published at least

four years before the Document itself, or if the original
publisher of the version it refers to gives permission.

@item
For any section Entitled ``Acknowledgements'' or ``Dedications'', Preserve
the Title of the section, and preserve in the section all the
substance and tone of each of the contributor acknowledgements and/or
dedications given therein.

@item
Preserve all the Invariant Sections of the Document,
unaltered in their text and in their titles. Section numbers
or the equivalent are not considered part of the section titles.

@item
Delete any section Entitled ``Endorsements''. Such a section
may not be included in the Modified Version.

@item
Do not retitle any existing section to be Entitled ``Endorsements'' or
to conflict in title with any Invariant Section.

@item
Preserve any Warranty Disclaimers.
@end enumerate

If the Modified Version includes new front-matter sections or
appendices that qualify as Secondary Sections and contain no material
copied from the Document,
you may at your option designate some or all
of these sections as invariant. To do this, add their titles to the
list of Invariant Sections in the Modified Version's license notice.
These titles must be distinct from any other section titles.

You may add a section Entitled ``Endorsements'', provided it contains
nothing but endorsements of your Modified Version by various
parties---for example, statements of peer review or that the text has
been approved by an organization as the authoritative definition of a
standard.

You may add a passage of up to five words as a Front-Cover Text, and a
passage of up to 25 words as a Back-Cover Text, to the end of the list
of Cover Texts in the Modified Version. Only one passage of
Front-Cover Text and one of Back-Cover Text may be added by (or
through arrangements made by) any one entity. If the Document already
includes a cover text for the same cover, previously added by you or
by arrangement made by the same entity you are acting on behalf

of,
you may not add another; but you may replace the old one, on explicit
permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License
give permission to use their names for publicity for or to assert or
imply endorsement of any Modified Version.

@item
COMBINING DOCUMENTS

You may combine the Document with other documents released under this
License, under the terms defined in section 4 above for modified
versions, provided that you include in the combination all of the
Invariant Sections of all of the original documents, unmodified, and
list them all as Invariant Sections of your combined work in its
license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and
multiple identical Invariant Sections may be replaced with a single
copy. If there are multiple Invariant Sections with the same name but
different contents, make the title of
each such section unique by
adding at the end of it, in parentheses, the name of the original
author or publisher of that section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled ``History''
in the various original documents, forming one section Entitled
``History''; likewise combine any sections Entitled ``Acknowledgements'',
and any sections Entitled ``Dedications''. You must delete all
sections Entitled ``Endorsements.''

@item
COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents
released under this License, and replace the individual copies of this
License in the various documents with a single copy that is included in
the collection, provided that you follow the rules of this License for
verbatim copying of each of the documents in all other respects.

You may extract
a single document from such a collection, and distribute
it individually under this License, provided you insert a copy of this
License into the extracted document, and follow this License in all
other respects regarding verbatim copying of that document.

@item
AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an ``aggregate'' if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these
copies of the Document, then if the Document is less than one half of
the entire aggregate, the Document's Cover Texts may
 be placed on
covers that bracket the Document within the aggregate, or the
electronic equivalent of covers if the Document is in electronic form.
Otherwise they must appear on printed covers that bracket the whole
aggregate.

@item
TRANSLATION

Translation is considered a kind of modification, so you may
distribute translations of the Document under the terms of section 4.
Replacing Invariant Sections with translations requires special
permission from their copyright holders, but you may include
translations of some or all Invariant Sections in addition to the
original versions of these Invariant Sections. You may include a
translation of this License, and all the license notices in the
Document, and any Warranty Disclaimers, provided that you also include
the original English version of this License and the original versions
of those notices and disclaimers. In case of a disagreement between
the translation and the original version of this License or a notice
or disclaimer, the original
 version will prevail.

If a section in the Document is Entitled ``Acknowledgements'',
``Dedications'', or ``History'', the requirement (section 4) to Preserve
its Title (section 1) will typically require changing the actual
title.

@item
TERMINATION

You may not copy, modify, sublicense, or distribute the Document

except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies
 you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently
reinstated, receipt of a copy of some or all of the same material does
not give you any rights to use it.

@item
FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions
of the GNU Free Documentation License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns. See
@uref{http://www.gnu.org/copyleft/}.

Each version of the License is given a distinguishing version number.
If the Document specifies that
 a particular numbered version of this
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that specified version or
of any later version that has been published (not as a draft) by the
Free Software Foundation. If the Document does not specify a version
number of this License, you may choose any version ever published (not
as a draft) by the Free Software Foundation. If the Document
specifies that a proxy can decide which future versions of this
License can be used, that proxy's public statement of acceptance of a
version permanently authorizes you to choose that version for the
Document.

@item
RELICENSING

``Massive Multiauthor Collaboration Site'' (or ``MMC Site'') means any
World Wide Web server that publishes copyrightable works and also
provides prominent facilities for anybody to edit those works. A
public wiki that anybody can edit is an example of such a server. A
``Massive Multiauthor Collaboration'' (or ``MMC'')
 contained in the
site means any set of copyrightable works thus published on the MMC
site.

``CC-BY-SA'' means the Creative Commons Attribution-Share Alike 3.0
license published by Creative Commons Corporation, a not-for-profit
corporation with a principal place of business in San Francisco,
California, as well as future copyleft versions of that license
published by that same organization.

``Incorporate'' means to publish or republish a Document, in whole or
in part, as part of another Document.

An MMC is ``eligible for relicensing'' if it is licensed under this
License, and if all works that were first published under this License
somewhere other than this MMC, and subsequently incorporated in whole
or in part into the MMC, (1) had no cover texts or invariant sections,
and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the
 MMC is eligible for relicensing.

@end enumerate

@page
@heading ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the License in the document and put the following copyright and
license notices just after the title page:

@smallexample
@group
 Copyright (C) @var{year} @var{your name}.
 Permission is granted to copy, distribute and/or modify this document
 under the terms of the GNU Free Documentation License, Version 1.3
 or any later version published by the Free Software Foundation;
 with no Invariant Sections, no Front-Cover Texts, and no Back-Cover

Texts. A copy of the license is included in the section entitled ``GNU
Free Documentation License".
@end group
@end smallexample

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the ``with@dots{}Texts." line with this:

@smallexample
@group
  with the Invariant Sections being @var{list their titles}, with
  the Front-Cover
Texts being @var{list}, and with the Back-Cover Texts
  being @var{list}.
@end group
@end smallexample

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code, we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:
   GNU LIBRARY GENERAL PUBLIC LICENSE
      Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

      Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some

specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain

designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed
under these terms. A "work based on the
Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent
of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must
itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this
function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition,
mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,

instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the
Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative
work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline

functions (ten lines or less in length), then the use of
the object
file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply
a copy of this License. If the work
during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the
work with a written offer, valid for at
least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the source code distributed need not include anything that is normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the
Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by

modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each
version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY
IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE

LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR
LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year>
<name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary.
Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we
suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis

or for a fee, you must give the
recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits such linking only if the
entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many

libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated

straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility

is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License
to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be
distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered
by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any

executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally distributed (in either source or binary form) with
the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed
under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying
or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free
status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR

CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the
"copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:

(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we
have designed this version of the GPL to prohibit the practice for those
products. If such problems arise substantially in other domains, we
stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to
avoid the special danger that patents applied to a free program could
make it effectively proprietary. To prevent this, the GPL assures that
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this
License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work
in a fashion requiring copyright permission, other than the making of an

exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to

produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;

section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from

a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work,

for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions;

the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and

propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a

party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the
option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where

the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization

obtaining a copy of the software and accompanying documentation covered by this license (the "Software") to use, reproduce, display, distribute, execute, and transmit the Software, and to prepare derivative works of the Software, and to permit third-parties to whom the Software is furnished to do so, all subject to the following:

The copyright notices in the Software and this entire statement, including the above license grant, this restriction and the following disclaimer, must be included in all copies of the Software, in whole or in part, and all derivative works of the Software, unless such copies or derivative works are solely in the form of machine-executable object code generated by a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data
structure
layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the

Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license
document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that,
taken together, effectively do not restrict modification of the
portions of the Library contained in the Combined Work and reverse
engineering for debugging such modifications, if you also do each of
the following:

a) Give prominent notice with each copy of the Combined Work that
the Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license
document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is

necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the

Library.
@ignore
@c Set file name and title for man page.
@setfilename gpl
@settitle GNU General Public License
@c man begin SEEALSO
gfdl(7), fsf-funding(7).
@c man end
@c man begin COPYRIGHT
Copyright @copyright{} 2007 Free Software Foundation, Inc. @url{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.
@c man end
@end ignore
@node Copying
@c man begin DESCRIPTION
@appendix GNU GENERAL PUBLIC LICENSE
@c The GNU General Public License.
@center Version 3, 29 June 2007

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 2007 Free Software Foundation, Inc. @url{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.
@end display

@heading Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The
 licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom
to share and change all versions of a program---to make sure it remains
free software for all its users. We, the Free Software Foundation,
use the GNU General Public License for most of our software; it
applies also to any other work released this way by its authors. You
can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you

have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights
or asking you to surrender the rights. Therefore, you
have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous
versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary.
To prevent this, the GPL
assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

@heading TERMS AND CONDITIONS

@enumerate 0
@item Definitions.

``This License'' refers to version 3 of the GNU General Public License.

``Copyright'' also means copyright-like laws that apply to other kinds
of works, such as semiconductor masks.

``The Program'' refers to any copyrightable work licensed under this
License. Each licensee is addressed as ``you''.  ``Licensees'' and
``recipients'' may be individuals or organizations.

To ``modify'' a work means to copy from or adapt all or part of the work
in a fashion requiring copyright permission, other than the making of
an exact copy. The resulting work is called a ``modified version'' of
the earlier work or a work ``based on'' the earlier work.

A ``covered work'' means either the unmodified Program or a work based
on the Program.

To ``propagate'' a
 work means to do anything with it that, without
permission, would make you directly or secondarily liable for
infringement under applicable copyright law, except executing it on a
computer or modifying a private copy. Propagation includes copying,
distribution (with or without modification), making available to the
public, and in some countries other activities as well.

To ``convey'' a work means any kind of propagation that enables other
parties to make or receive copies. Mere interaction with a user
through a computer network, with no transfer of a copy, is not
conveying.

An interactive user interface displays ``Appropriate Legal Notices'' to
the extent that it includes a convenient and prominently visible
feature that (1) displays an appropriate copyright notice, and (2)
tells the user that there is no warranty for the work (except to the
extent that warranties are provided), that licensees may convey the
work under this License, and how to view a copy of this License. If
the interface
 presents a list of user commands or options, such as a
menu, a prominent item in the list meets this criterion.

@item Source Code.

The ``source code'' for a work means the preferred form of the work for making modifications to it. ``Object code'' means any non-source form of a work.

A ``Standard Interface'' means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The ``System Libraries'' of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A ``Major Component'', in this context,
means a major essential component
(kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The ``Corresponding Source'' for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms
and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

@item Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated

conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey,
without conditions so long as your license otherwise remains in force.
You may convey covered works to others for the sole purpose of having
them make modifications exclusively
 for you, or provide you with
facilities for running those works, provided that you comply with the
terms of this License in conveying all material for which you do not
control copyright. Those thus making or running the covered works for
you must do so exclusively on your behalf, under your direction and
control, on terms that prohibit them from making any copies of your
copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the
conditions stated below. Sublicensing is not allowed; section 10
makes it unnecessary.

@item Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to
 forbid
circumvention of technological measures to the extent such
circumvention is effected by exercising rights under this License with
respect to the covered work, and you disclaim any intention to limit
operation or modification of the work as a means of enforcing, against
the work's users, your or third parties' legal rights to forbid
circumvention of technological measures.

@item Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you
receive it, in any medium, provided that you conspicuously and
appropriately publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

@item
Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these
conditions:

@enumerate a
@item
The work must carry prominent notices stating that you modified it,
and giving a relevant date.

@item
The work must carry prominent notices stating that it is released
under this License and any conditions added under section 7. This
requirement modifies the requirement in section 4 to ``keep intact all
notices".

@item
You must license the entire work, as a whole, under this License to
anyone who comes into possession of a copy. This License will
therefore apply, along with any applicable section 7 additional terms,
to the whole of the work, and all its parts, regardless of how they
are packaged. This License gives no permission to license the work in
any other way, but it does not invalidate such permission if
you have
separately received it.

@item
If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your work
need not make them do so.
@end enumerate

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution medium, is called an
``aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other

parts of the aggregate.

@item Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of
sections 4 and 5, provided that you also convey
 the machine-readable
Corresponding Source under the terms of this License, in one of these
ways:

@enumerate a
@item
Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium customarily
used for software interchange.

@item
Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a written
offer, valid for at least three years and valid for as long as you
offer spare parts or customer support for that product model, to give
anyone who possesses the object code either (1) a copy of the
Corresponding Source for all the software in the product that is
covered by this License, on a durable physical medium customarily used
for software interchange, for a price no more than your reasonable
cost of physically performing this conveying of source, or (2) access
to copy the Corresponding Source from a network
 server at no charge.

@item
Convey individual copies of the object code with a copy of the written
offer to provide the Corresponding Source. This alternative is
allowed only occasionally and noncommercially, and only if you
received the object code with such an offer, in accord with subsection
6b.

@item
Convey the object code by offering access from a designated place
(gratis or for a charge), and offer equivalent access to the
Corresponding Source in the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to copy
the object code is a network server, the Corresponding Source may be
on a different server (operated by you or a third party) that supports
equivalent copying facilities, provided you maintain clear directions
next to the object code saying where to find the Corresponding Source.
Regardless of what server hosts the Corresponding Source, you remain

obligated to
ensure that it is available for as long as needed to
satisfy these requirements.

@item
Convey the object code using peer-to-peer transmission, provided you
inform other peers where the object code and Corresponding Source of
the work are being offered to the general public at no charge under
subsection 6d.

@end enumerate

A separable portion of the object code, whose source code is excluded
from the Corresponding Source as a System Library, need not be
included in conveying the object code work.

A ``User Product'' is either (1) a ``consumer product'', which means any
tangible personal property which is normally used for personal,
family, or household purposes, or (2) anything designed or sold for
incorporation into a dwelling. In determining whether a product is a
consumer product, doubtful cases shall be resolved in favor of
coverage. For a particular product received by a particular user,
``normally used'' refers to a typical or common use of that class of
product, regardless of
the status of the particular user or of the way
in which the particular user actually uses, or expects or is expected
to use, the product. A product is a consumer product regardless of
whether the product has substantial commercial, industrial or
non-consumer uses, unless such uses represent the only significant
mode of use of the product.

``Installation Information'' for a User Product means any methods,
procedures, authorization keys, or other information required to
install and execute modified versions of a covered work in that User
Product from a modified version of its Corresponding Source. The
information must suffice to ensure that the continued functioning of
the modified object code is in no case prevented or interfered with
solely because modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User
Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install

modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this
section must be in a format that is publicly
documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

@item Additional Terms.

``Additional permissions'' are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain
cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

@enumerate a
@item
Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

@item

Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

@item
Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

@item
Limiting the use for publicity purposes of names of licensors or authors of the material; or

@item
Declining
to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

@item
Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.
@end enumerate

All other non-permissive additional terms are considered ``further restrictions'' within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing
or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

@item Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the
copyright holder
fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

@item Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence
of using peer-to-peer transmission
to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

@item Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An ``entity transaction'' is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an

organization, or merging organizations. If propagation of a covered
work results from an entity transaction, each party to that
transaction who receives a copy
 of the work also receives whatever
licenses to the work the party's predecessor in interest had or could
give under the previous paragraph, plus a right to possession of the
Corresponding Source of the work from the predecessor in interest, if
the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the
rights granted or affirmed under this License. For example, you may
not impose a license fee, royalty, or other charge for exercise of
rights granted under this License, and you may not initiate litigation
(including a cross-claim or counterclaim in a lawsuit) alleging that
any patent claim is infringed by making, using, selling, offering for
sale, or importing the Program or any portion of it.

@item Patents.

A ``contributor'' is a copyright holder who authorizes use under this
License of the Program or a work on which the Program is based. The
work thus licensed is called the contributor's ``contributor version''.

A
 contributor's ``essential patent claims'' are all patent claims owned
or controlled by the contributor, whether already acquired or
hereafter acquired, that would be infringed by some manner, permitted
by this License, of making, using, or selling its contributor version,
but do not include claims that would be infringed only as a
consequence of further modification of the contributor version. For
purposes of this definition, ``control'' includes the right to grant
patent sublicenses in a manner consistent with the requirements of
this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free
patent license under the contributor's essential patent claims, to
make, use, sell, offer for sale, import and otherwise run, modify and
propagate the contents of its contributor version.

In the following three paragraphs, a ``patent license'' is any express
agreement or commitment, however denominated, not to enforce a patent
(such as an express permission to practice
 a patent or covenant not to
sue for patent infringement). To ``grant'' such a patent license to a
party means to make such an agreement or commitment not to enforce a
patent against the party.

If you convey a covered work, knowingly relying on a patent license,

and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. ``Knowingly relying'' means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more
identifiable patents in that
country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is ``discriminatory'' if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the
work,
and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

@item No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under

this License and any other pertinent
obligations, then as a
consequence you may not convey it at all. For example, if you agree
to terms that obligate you to collect a royalty for further conveying
from those to whom you convey the Program, the only way you could
satisfy both those terms and this License would be to refrain entirely
from conveying the Program.

@item Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

@item Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions
of
the GNU General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies that a certain numbered version of the GNU General Public
License ``or any later version'' applies to it, you have the option of
following the terms and conditions either of that numbered version or
of any later version published by the Free Software Foundation. If
the Program does not specify a version number of the GNU General
Public License, you may choose any version ever published by the Free
Software Foundation.

If the Program specifies that a proxy can decide which future versions
of the GNU General Public License can be used, that proxy's public
statement of acceptance of a version permanently authorizes you to
choose that version for the Program.

Later license versions may give you additional or different
permissions.
However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

@item Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM ``AS IS'' WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL,
INCIDENTAL OR CONSEQUENTIAL DAMAGES
ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

@item Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

@end enumerate

@heading END OF TERMS AND CONDITIONS

@heading How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the
best way to achieve this is to make it
free software which everyone can redistribute and change under these
terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least

the ``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the program's name and a brief idea of what it does.}
Copyright (C) @var{year} @var{name of author}

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or (at
your option) any later version.

This program is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
General Public License for more details.

You
 should have received a copy of the GNU General Public License
along with this program. If not, see @url{http://www.gnu.org/licenses/}.
@end smallexample

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

@smallexample
@var{program} Copyright (C) @var{year} @var{name of author}
This program comes with ABSOLUTELY NO WARRANTY; for details type @samp{show w}.
This is free software, and you are welcome to redistribute it
under certain conditions; type @samp{show c} for details.
@end smallexample

The hypothetical commands @samp{show w} and @samp{show c} should show
the appropriate parts of the General Public License. Of course, your
program's commands might be different; for a GUI interface, you would
use an ``about box''.

You should also get your employer (if you work as a programmer) or school,
if any, to sign a ``copyright disclaimer''
 for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
@url{http://www.gnu.org/licenses/}.

The GNU General Public License does not permit incorporating your
program into proprietary programs. If your program is a subroutine
library, you may consider it more useful to permit linking proprietary
applications with the library. If this is what you want to do, use

the GNU Lesser General Public License instead of this License. But
first, please read @url{http://www.gnu.org/philosophy/why-not-lgpl.html}.
@c man end

1.237 libeconf 0.4.1-4.el9

1.237.1 Available under license :

Copyright (c) 2019 SUSE LLC

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE
 OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.238 yum 4.14.0-17.el9

1.238.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to

rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy
an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and

you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third

parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute
them as separate works. But when you
distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of
the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of
the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that
version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to
Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY
WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author

Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some

specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the
freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know
their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some
libraries, is covered by the ordinary
GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain

designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any
derivative work under
copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what
the Library does
and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent

notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root
function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,

instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline

functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the source code distributed need not include anything that is normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other
proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the

Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the

original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a
version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED
BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING

RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER
SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.239 python3-cloud-what 1.29.42-1.el9

1.239.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less

of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the

Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for

that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may

distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy

from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not

signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to

be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY

AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if

necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

 When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
 to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

 To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

 For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty;

and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program

with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is

void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed

through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS

TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
GNU LGPLv2.1
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: subscription-manager
Source: <url://example.com>

Files: *
Copyright: <years> <put author's name and email here>
        <years> <likewise for another author>
License: <special license>
<Put the license of the package here indented by 1 space>
<This follows the format of Description: lines in control file>
.
<Including paragraphs>

If you want to use GPL v2 or later for the /debian/* files use
the following clauses, or change it to suit. Delete these two lines
Files: debian/*
Copyright: 2017 Matthias Dellweg <dellweg@atix.de>
License: GPL-2+

This package is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
.
This package is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even
 the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>
.
On Debian systems, the complete text of the GNU General
Public License version 2 can be found in "/usr/share/common-licenses/GPL-2".

Please also look if there are files or directories which have a
different copyright/license attached and list them here.
Please avoid picking licenses with terms that are more restrictive than the
packaged work, as it may make Debian's contributions unacceptable upstream.

1.240 subscription-manager 1.29.42

1.240.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who

decide to use it. You
can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser

General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order

to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy,

and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application

to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any

other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision

will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey
the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or

modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not

price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any

associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU LGPLv2.1
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: subscription-manager
Source: <url://example.com>

Files: *
Copyright: <years> <put author's name and email here>
        <years> <likewise for another author>
License: <special license>
<Put the license of the package here indented by 1 space>
<This follows the format of Description: lines in control file>
.
<Including paragraphs>

If you want to use GPL v2 or later for the /debian/* files use
the following clauses, or change it to suit. Delete these two lines
Files: debian/*
Copyright: 2017 Matthias Dellweg <dellweg@atix.de>
License: GPL-2+
This package is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
.
This package is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even
 the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>
.
On Debian systems, the complete text of the GNU General
Public License version 2 can be found in "/usr/share/common-licenses/GPL-2".

Please also look if there are files or directories which have a
different copyright/license attached and list them here.
Please avoid picking licenses with terms that are more restrictive than the
packaged work, as it may make Debian's contributions unacceptable upstream.

1.241 pcre 10.40-6.el9

1.241.1 Available under license :

PCRE2 LICENCE

Please see the file LICENCE in the PCRE2 distribution for licensing details.

End
PCRE2 LICENCE

PCRE2 is a library of functions to support regular expressions whose syntax
and semantics are as close as possible to those of the Perl 5 language.

Releases 10.00 and above of PCRE2 are distributed under the terms of the "BSD"
licence, as specified below, with one exemption for certain binary
redistributions. The documentation for PCRE2, supplied in the "doc" directory,
is distributed under the same terms as the software itself. The data in the
testdata directory is not copyrighted and is in the public domain.

The basic library functions are written in C and are freestanding. Also
included in the distribution is a just-in-time compiler that can be used to
optimize pattern matching. This is an optional feature that can be omitted when
the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: Philip.Hazel
Email domain: gmail.com

Retired from University of Cambridge Computing Service,
Cambridge,
England.

Copyright (c) 1997-2022 University of Cambridge
All rights reserved.

PCRE2 JUST-IN-TIME COMPILATION SUPPORT

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2010-2022 Zoltan Herczeg
All rights reserved.

STACK-LESS JUST-IN-TIME COMPILER

Written by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

Copyright(c) 2009-2022 Zoltan Herczeg
All rights reserved.

THE "BSD" LICENCE

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notices,
this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notices, this list of conditions and the following disclaimer
in the
documentation and/or other materials provided with the distribution.

* Neither the name of the University of Cambridge nor the names of any
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN
CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

EXEMPTION FOR BINARY LIBRARY-LIKE PACKAGES

The second condition in the BSD licence (covering binary redistributions) does
not apply all the way down a chain of software. If binary package A includes
PCRE2, it must respect the condition, but if package B is software that
includes package A, the condition is not imposed on package B unless it uses

PCRE2 independently.

End
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote products
  derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT
 OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.242 selinux-policy-targeted 38.1.45-3.el9_5

1.242.1 Available under license :

@c The GNU Lesser General Public License.
@center Version 2.1, February 1999

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]
@end display

@subheading Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software---to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software---typically libraries---of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation

will not be affected by problems that might be
introduced by others.

Finally, software patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative
of the original library. The ordinary
General Public License therefore permits such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the @dfn{Lesser} General Public License because it
does @emph{Less} to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the
same job as widely used non-free libraries. In this
case, there is little to gain by limiting the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating

system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library'' and a ``work that uses the library''. The former
contains code derived from the library, whereas the latter must be combined with the library in order to run.

@subheading TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

@enumerate 0
@item
This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called ``this License''). Each licensee is addressed as ``you''.

A ``library'' means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The ``Library'', below, refers to any such software library or work which has been distributed under these terms. A ``work based on the Library'' means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it,
either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term ``modification''.)

``Source code'' for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for

writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

@item
You may copy and distribute
 verbatim copies of the Library's
complete source code as you receive it, in any medium, provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

 You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

@item
You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

@enumerate a
@item
The modified work must itself be a software library.

@item
You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

@item
You must
 cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

@item
If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any

application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)
@end enumerate

These requirements apply to the modified work as a whole. If
identifiable sections
 of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this
 License.

@item
You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

 Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

 This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

@item
You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form

under the terms of Sections 1 and
2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

@item
A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a ``work that uses the Library''. Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a ``work that uses the Library'' with the Library
creates an executable that is a derivative of the Library (because
it
contains portions of the Library), rather than a ``work that uses the
library''. The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a ``work that uses the Library'' uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise,
if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

@item
As an exception to the Sections above, you may also combine or

link a ``work that uses the Library'' with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

@enumerate a
@item
Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable ``work that uses the Library'', as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

@item
Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

@item
Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

@item
If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above

specified materials from the same place.

@item
Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.
@end enumerate

For an executable, the required form of the ``work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies the
executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

@item
You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

@enumerate a
@item
Accompany the combined library with a copy of the same work
based on the Library,
uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

@item
Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.
@end enumerate

@item
You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any

attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

@item
You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

@item
Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

@item
If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License,
they do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the

integrity of the free software
distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

@item
If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

@item
The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
``any later version'', you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

@item
If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

@center @b{NO WARRANTY}

@item
BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY ``AS IS'' WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item
IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
 BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.
@end enumerate

@subheading END OF TERMS AND CONDITIONS

@page
@subheading How to Apply These Terms to Your New Libraries

 If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

 To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source
 file to most effectively
convey the exclusion of warranty; and each file should have at least the
``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the library's name and an idea of what it does.}
Copyright (C) @var{year} @var{name of author}

This library is free software; you can redistribute it and/or modify it

under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301,
USA.
@end
 smallexample

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer'' for the library, if
necessary. Here is a sample; alter the names:

@smallexample
Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
@end smallexample

That's all there is to it!
Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users

ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain

that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the
Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion

of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are

prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING

OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion

of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under

the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a

derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a

copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
 will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF
YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA
FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a
copy of the Unicode data files and any associated documentation (the "Data
Files") or Unicode software and any associated documentation (the "Software")

to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that (a) the above copyright notice(s) and this permission notice appear with all copies of the Data Files or Software, (b) both the above copyright notice(s) and this permission notice appear in associated documentation, and (c) there is clear notice in each modified Data File or in the Software as well as in the documentation associated with the Data File(s) or Software that the data or software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

This file contains the copying permission notices for various files in the GNU C Library distribution that have copyright owners other than the Free Software Foundation. These notices all require that a copy of the notice be included in the accompanying documentation and be distributed with binary distributions of the code, so be sure to include this file along with any binary distributions derived from the GNU C Library.

All code incorporated from 4.4 BSD is distributed under the following license:

Copyright (C) 1991 Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in

the
documentation and/or other materials provided with the distribution.
3. [This condition was removed.]
4. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF
SUCH DAMAGE.

The DNS resolver code, taken from BIND 4.9.5, is copyrighted by UC
Berkeley, by Digital Equipment Corporation and by Internet Software
Consortium. The DEC portions are under the following license:

Portions Copyright (C) 1993 by Digital Equipment Corporation.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies, and
that the name of Digital Equipment Corporation not be used in
advertising or publicity pertaining to distribution of the document or
software without specific, written prior permission.

THE SOFTWARE IS PROVIDED ``AS IS'' AND DIGITAL EQUIPMENT CORP.
DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL
DIGITAL EQUIPMENT CORPORATION BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES
OR ANY DAMAGES WHATSOEVER RESULTING
FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION
WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The ISC portions are under the following license:

Portions Copyright (c) 1996-1999 by Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any

purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS
ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE
CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL
DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR
PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS
ACTION, ARISING
OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS
SOFTWARE.

The Sun RPC support (from rpcsrc-4.0) is covered by the following
license:

Copyright (c) 2010, Oracle America, Inc.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials
provided with the distribution.
* Neither the name of the "Oracle America, Inc." nor the names of its
contributors may be used to endorse or promote products derived
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following CMU license covers some of the support code for Mach,

derived from Mach 3.0:

Mach Operating System
Copyright (C) 1991,1990,1989 Carnegie Mellon University
All Rights Reserved.

Permission to use, copy, modify and distribute this software and its
documentation is hereby granted, provided that
 both the copyright
notice and this permission notice appear in all copies of the
software, derivative works or modified versions, and any portions
thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS ``AS IS''
CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR
ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Carnegie Mellon requests users of this software to return to

Software Distribution Coordinator
School of Computer Science
Carnegie Mellon University
Pittsburgh PA 15213-3890

or Software.Distribution@CS.CMU.EDU any improvements or
extensions that they make and grant Carnegie Mellon the rights to
redistribute these changes.

The file if_ppp.h is under the following CMU license:

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the
 above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
   may be used to endorse or promote products derived from this software
   without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CARNEGIE MELLON UNIVERSITY AND
CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE UNIVERSITY OR CONTRIBUTORS BE LIABLE FOR ANY

DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license covers the files from Intel's "Highly Optimized
Mathematical Functions for Itanium" collection:

Intel License Agreement

Copyright (c) 2000, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

* The name of Intel Corporation may not be used to endorse
or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The files inet/getnameinfo.c and sysdeps/posix/getaddrinfo.c are copyright
(C) by Craig Metz and are distributed under the following license:

/* The Inner Net License,
Version 2.00

The author(s) grant permission for redistribution and use in source and
binary forms, with or without modification, of the software and documentation
provided that the following conditions are met:

0. If you receive a version of the software that is specifically labelled
not being for redistribution (check the version message and/or README),
you are not permitted to redistribute that version of the software in any
way or form.
1. All terms of the all other applicable copyrights and licenses must be
followed.
2. Redistributions of source code must retain the authors' copyright
notice(s), this list of conditions, and the following disclaimer.
3. Redistributions in binary form must reproduce the authors' copyright
notice(s), this list of conditions, and the following disclaimer in the
documentation and/or other materials provided with the distribution.
4. [The copyright holder has authorized the removal of this clause.]
5. Neither the name(s)
of the author(s) nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ITS AUTHORS AND CONTRIBUTORS ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

If these license terms cause you a real problem, contact the author. */

The file sunrpc/des_impl.c
is copyright Eric Young:

Copyright (C) 1992 Eric Young
Collected from libdes and modified for SECURE RPC by Martin Kuck 1994
This file is distributed under the terms of the GNU Lesser General
Public License, version 2.1 or later - see the file COPYING.LIB for details.
If you did not receive a copy of the license with this program, please
see <https://www.gnu.org/licenses/> to obtain a copy.

The file inet/rcmd.c is under a UCB copyright and the following:

Copyright (C) 1998 WIDE Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with
 the distribution.
3. Neither the name of the project nor the names of its contributors
  may be used to endorse or promote products derived from this software
  without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

The file posix/runtests.c is copyright Tom Lord:

Copyright
 1995 by Tom Lord

All Rights Reserved

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of the copyright holder not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission.

Tom Lord DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO
EVENT SHALL TOM LORD BE LIABLE FOR ANY SPECIAL, INDIRECT OR

CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The posix/rxspencer tests
are copyright Henry Spencer:

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
explicit claim or by omission. Since few users ever read sources,
credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
misrepresented as being the original software. Since few users
ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

The file posix/PCRE.tests
is copyright University of Cambridge:

Copyright (c) 1997-2003 University of Cambridge

Permission is granted to anyone to use this software for any purpose on any
computer system, and to redistribute it freely, subject to the following
restrictions:

1. This software is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2. The origin of this software must not be misrepresented, either by
explicit claim or by omission. In practice, this means that if you use
PCRE in software that you distribute to others, commercially or
otherwise, you must put a sentence like this

Regular expression support is provided by the PCRE library package,

which is open source software, written by Philip Hazel, and copyright
by the University of Cambridge, England.

somewhere reasonably visible in your documentation and in any relevant
files or online
help data or similar. A reference to the ftp site for
the source, that is, to

ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/

should also be given in the documentation. However, this condition is not
intended to apply to whole chains of software. If package A includes PCRE,
it must acknowledge it, but if package B is software that includes package
A, the condition is not imposed on package B (unless it uses PCRE
independently).

3. Altered versions must be plainly marked as such, and must not be
misrepresented as being the original software.

4. If PCRE is embedded in any software that is released under the GNU
General Purpose Licence (GPL), or Lesser General Purpose Licence (LGPL),
then the terms of that licence shall supersede any condition above with
which it is incompatible.

Files from Sun fdlibm are copyright Sun Microsystems, Inc.:

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems,
Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice
is preserved.

Various long double libm functions are copyright Stephen L. Moshier:

Copyright 2001 by Stephen L. Moshier <moshier@na-net.ornl.gov>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, see
<https://www.gnu.org/licenses/>. */

1.243 python-setuptools 53.0.0-13.el9

1.243.1 Available under license :

Copyright Jason R. Coombs

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE
 OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.

1.244 gdbm 1.23-1.el9

1.244.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007, 2011 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to

share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright on the software, and (2)
offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we
have designed this version of the GPL to prohibit the practice for those
products. If such problems arise substantially in other domains, we
stand ready to extend this provision to those
domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays
"Appropriate Legal Notices"
to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the

work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing
those activities but
which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content,
constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users'
Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice;

keep
intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must
license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution medium, is called an
"aggregate" if the compilation
and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no

charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the
object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and
execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information
does not include a
requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included
in this License, to the extent
that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections
15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days

after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each
time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you
may
not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license

you grant is automatically
extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or that patent license was granted, prior to
28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this
License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),

EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer
of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief
idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes
with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But
first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.245 crypto-policies 20240828-2.git626aa59.el9_5

1.245.1 Available under license :

Copyright 2020 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE

OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.246 python-systemd 234-19.el9

1.246.1 Available under license :

systemd Project Licensing

Main License

The systemd project uses single-line references to Unique License Identifiers as
defined by the Linux Foundation's SPDX project (https://spdx.org/). The line in
each individual source file identifies the license applicable to that file.

The current set of valid, predefined SPDX identifiers can be found on the SPDX
License List at https://spdx.org/licenses/.

The 'LICENSES/' directory contains all the licenses used by the sources included in
the systemd project source tree.

Unless otherwise noted, the systemd project sources are licensed under the terms
and conditions of the **GNU Lesser General Public License v2.1 or later**.

New sources that cannot be distributed under LGPL-2.1-or-later will no longer
be accepted for inclusion in the systemd project to maintain license uniformity.

Other Licenses

The following exceptions apply:

* some udev sources under src/udev/ are licensed under **GPL-2.0-or-later**, so the
  udev binaries as a
 whole are also distributed under **GPL-2.0-or-later**.
* the header files contained in src/basic/linux/ and src/shared/linux/ are copied
  verbatim from the Linux kernel source tree and are licensed under **GPL-2.0 WITH
  Linux-syscall-note** and are used within the scope of the Linux-syscall-note
  exception provisions
* the src/shared/initreq.h header is licensed under original license,
  LGPL-2.0-or-later.
* the src/shared/linux/bpf_insn.h header is copied from the Linux kernel
  source tree and is licensed under either **BSD-2-Clause** or **GPL-2.0-only**,
  and thus is included in the systemd build under the BSD-2-Clause license.
* The src/basic/linux/wireguard.h header is copied from the Linux kernel
  source tree and is licensed under either **MIT** or **GPL-2.0 WITH Linux-syscall-note**,
  and thus is included in the systemd build under the MIT license.
* the following sources are licensed under the **MIT** license (in case of our
  scripts, to facilitate copying

and reuse of those helpers to other projects):
- hwdb.d/parse_hwdb.py
- src/basic/linux/batman_adv.h
- src/basic/sparse-endian.h
- tools/catalog-report.py

* the following sources are licensed under the **CC0-1.0** license:
- src/basic/siphash24.c
- src/basic/siphash24.h
- tools/check-includes.pl

* the following sources are licensed under the **MIT-0** license:
- all examples under man/
- src/systemctl/systemd-sysv-install.SKELETON
- config files and examples under /network

* the following sources are under **Public Domain** (LicenseRef-murmurhash2-public-domain):
- src/basic/MurmurHash2.c
- src/basic/MurmurHash2.h

* the following sources are under **Public Domain** (LicenseRef-lookup3-public-domain):
- src/libsystemd/sd-journal/lookup3.c
- src/libsystemd/sd-journal/lookup3.h

* the tools/chromiumos/gen_autosuspend_rules.py script is licensed under the
BSD-3-Clause license.

* Heebo fonts under docs/fonts/ are licensed under the
SIL Open Font License 1.1,

* any files under test/ without an explicit license we assume non-copyrightable
(eg: computer-generated fuzzer data)

OpenSSL Notes

Note that building the systemd project with OpenSSL does not affect the libsystemd.so
shared library, which is not linked with the OpenSSL library.

MurmurHash2 was written by Austin Appleby, and is placed in the public
domain. The author hereby disclaims copyright to this source code.

GNU LIBRARY GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU

General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most
GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public

License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library".
The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright
law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that
uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty

protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole.
If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work
is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you
must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work

is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may
place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void,
and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may
not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of
this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted
in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify
a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the
public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.
Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in
the library `Frob' (a library for tweaking knobs) written
by James Random Hacker.

signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
// Copyright 2014 The Chromium OS Authors. All rights reserved.
//
// Redistribution and use in source and binary forms, with or without
// modification, are permitted provided that the following conditions are
// met:
//
//   * Redistributions of source code must retain the above copyright
// notice, this list of conditions and the following disclaimer.
//   * Redistributions in binary form must reproduce the above
// copyright notice, this list of conditions and the following disclaimer
// in the documentation and/or other materials provided with the
// distribution.
//   * Neither the name of Google Inc. nor the names of its
// contributors may be used to endorse or promote products derived from
// this software without specific prior written permission.
//
// THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
// "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
// LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
// A PARTICULAR
 PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
// OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
// SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
// LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
// DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
// THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
// (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
// OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
lookup3.c, by Bob Jenkins, May 2006, Public Domain.
Copyright (c) <dates>, <Copyright Holder> (<URL|email>),
with Reserved Font Name <Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>),
with Reserved Font Name <additional Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>).

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide development of collaborative font projects, to support the font creation efforts of academic and linguistic communities, and to provide a free and open framework in which fonts may be shared and improved in partnership with others.

The OFL allows the licensed fonts to be used, studied, modified and redistributed freely as long as they are not sold by themselves. The fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names are not used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part or in whole -- any of the components of the Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining

a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components, in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled, redistributed and/or sold with any software, provided that each copy contains the above copyright notice and this license. These can be included either as stand-alone text files, human-readable headers or in the appropriate machine-readable metadata fields within text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font Name(s) unless explicit written permission is granted by the corresponding Copyright Holder. This restriction only applies to the primary font name as presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font Software shall not be used to promote, endorse or advertise any Modified Version, except to acknowledge the contribution(s) of the Copyright Holder(s) and the Author(s) or with their explicit written permission.

5) The Font Software, modified or unmodified, in part or in whole, must be distributed entirely under this license, and must not be distributed under any other license. The requirement for fonts to remain under this license does not apply to any document created using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are not met.

DISCLAIMER
THE
FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

NOTE! This copyright does *not* cover user programs that use kernel services by normal system calls - this is merely considered normal use of the kernel, and does *not* fall under the heading of "derived work". Also note that the GPL below is copyrighted by the Free Software Foundation, but the instance of code that it refers to (the Linux kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel is concerned is _this_ particular version of the license (ie v2, not v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the

source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you

conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or

collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the

integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES

PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
MIT License

Copyright (c) <year> <copyright holders>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN

AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) <year> <owner> All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT No Attribution

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM

THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons")
that the public can reliably and without fear
of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal
effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation

thereof, including any amended or successor version of such directive); and

vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the Waiver for the benefit of each member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected by this document.
b. Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.
d. Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with respect to this CC0 or use of the Work.

1.247 curl-minimal 7.76.1-31.el9

1.247.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not

price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program
or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute
verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish,
that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program
(or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any

associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version
2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.248 curl 7.76.1-31.el9

1.248.1 Available under license :

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1996 - 2021, Daniel Stenberg, <daniel@haxx.se>, and many
contributors, see the THANKS file.

All rights reserved.

Permission to use, copy, modify, and distribute this software for any purpose
with or without fee is hereby granted, provided that the above copyright
notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not
be used in advertising or otherwise to promote the sale, use or other
 dealings
in this Software without prior written authorization of the copyright holder.

1.249 audit 3.1.5-1.el9

1.249.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software

Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim
copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a

notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably
considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work
based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code

or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version

number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the
License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program; if not, write to the Free Software
  Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands
 `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Copyright (c) 2009-2010 QLogic Corporation
QLogic Linux qlcnic NIC Driver

This program includes a device driver for Linux 2.6 that may be
distributed with QLogic hardware specific firmware binary file.
You may modify and redistribute the device driver code under the
GNU General Public License (a copy of which is attached hereto as
Exhibit A) published by the Free Software Foundation (version 2).

You may redistribute the hardware specific firmware binary file
under the following terms:

1. Redistribution of source code (only if applicable),
   must retain the above copyright notice, this list of
   conditions and the following disclaimer.

2. Redistribution in binary form must reproduce the above
   copyright notice, this list of conditions and the
   following disclaimer in the documentation and/or other
   materials provided with the distribution.

3. The name of QLogic Corporation may not be used to
   endorse or promote
products derived from this software
   without specific prior written permission

REGARDLESS OF WHAT LICENSING MECHANISM IS USED OR APPLICABLE,
THIS PROGRAM IS PROVIDED BY QLOGIC CORPORATION "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR
BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

USER ACKNOWLEDGES AND AGREES THAT USE OF THIS PROGRAM WILL NOT
CREATE OR GIVE GROUNDS FOR A LICENSE BY IMPLICATION, ESTOPPEL, OR

OTHERWISE
IN ANY INTELLECTUAL PROPERTY RIGHTS (PATENT, COPYRIGHT, TRADE SECRET, MASK WORK, OR OTHER PROPRIETARY RIGHT) EMBODIED IN ANY OTHER QLOGIC HARDWARE OR SOFTWARE EITHER SOLELY OR IN COMBINATION WITH THIS PROGRAM.

EXHIBIT A

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using
it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make
sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty;

and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section
1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition,

mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily
used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If
distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is

void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented

by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING
ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
Contributors to bttv:

Michael Chu <mmchu@pobox.com>
AverMedia fix and more flexible card recognition

Alan Cox <alan@lxorguk.ukuu.org.uk>
Video4Linux interface and 2.1.x kernel adaptation

Chris Kleitsch
Hardware I2C

Gerd Knorr <kraxel@cs.tu-berlin.de>
Radio card (ITT sound processor)

bigfoot <bigfoot@net-way.net>
Ragnar Hojland Espinosa <ragnar@macula.net>
ConferenceTV card

+ many more (please mail me if you are missing in this list and would
like to be mentioned)
TI DSP/Bridge Driver - Contributors File

The DSP/Bridge project wish to thank all of its contributors, current bridge driver is the result of the work of all of them. If any name is accidentally omitted, let us know by sending a mail to omar.ramirez@ti.com or x095840@ti.com.

Please keep the following list in alphabetical order.

Suman Anna
Sripal Bagadia
Felipe Balbi

Ohad Ben-Cohen
Phil Carmody
Deepak Chitriki
Felipe Contreras
Hiroshi Doyu
Seth Forshee
Ivan Gomez Castellanos
Mark Grosen
Ramesh Gupta G
Fernando Guzman Lugo
Axel Haslam
Janet Head
Shivananda Hebbar
Hari Kanigeri
Tony Lindgren
Antonio Luna
Hari Nagalla
Nishanth Menon
Ameya Palande
Vijay Pasam
Gilbert Pitney
Omar Ramirez Luna
Ernesto Ramos
Chris Ring
Larry Schiefer
Rebecca Schultz Zavin
Bhavin Shah
Andy Shevchenko
Jeff Taylor
Roman Tereshonkov
Armando Uribe de Leon
Nischal Varide
Wenbiao Wang

```
/* nicstar.c  v0.22  Jawaid Bazyar (bazyar@hypermall.com)
* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)
*
* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.
*  http://www.hypermall.com/
* 10/1/97 - commented out CFG_PHYIE bit - we don't care when the PHY
* interrupts us (except possibly for removal/insertion of the cable?)
* 10/4/97 - began heavy inline documentation of the code. Corrected typos
* and spelling mistakes.
* 10/5/97 - added code to handle PHY interrupts, disable PHY on
* loss of link, and correctly re-enable PHY when link is
* re-established. (put back CFG_PHYIE)
*
*   Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
*
```

```
* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997
*
* Linux driver for the IDT77201 NICStAR PCI ATM controller.
* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
* see init_nicstar() for PHY initialization to change this. This driver
* expects the Linux ATM stack to support scatter-gather
 lists
* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
*
* Implementing minimal-copy of received data:
*   IDT always receives data into a small buffer, then large buffers
*    as needed. This means that data must always be copied to create
*    the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
*    Fix is simple: make large buffers large enough to hold entire
*    SDU, and leave <small_buffer_data> bytes empty at the start. Then
*    copy small buffer contents to head of large buffer.
*   Trick is to avoid fragmenting Linux, due to need for a lot of large
*    buffers. This is done by 2 things:
*      1) skb->destructor / skb->atm.recycle_buffer
*          combined, allow nicstar_free_rx_skb to be called to
*          recycle large data buffers
*      2) skb_clone of received buffers
*   See nicstar_free_rx_skb and linearize_buffer for implementation
*    details.
*
*
*
* Copyright (c) 1996 University of Cambridge
 Computer Laboratory
*
*   This program is free software; you can redistribute it and/or modify
*   it under the terms of the GNU General Public License as published by
*   the Free Software Foundation; either version 2 of the License, or
*   (at your option) any later version.
*
*   This program is distributed in the hope that it will be useful,
*   but WITHOUT ANY WARRANTY; without even the implied warranty of
*   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
*   GNU General Public License for more details.
*
*   You should have received a copy of the GNU General Public License
*   along with this program; if not, write to the Free Software
*   Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.
*
* M. Welsh, 6 July 1996
*
*
*/
```

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so

that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by

modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED

TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Copyright (c) 2003-2011 QLogic Corporation
QLogic Linux/ESX Fibre Channel HBA Driver

This program includes a device driver for Linux 2.6/ESX that may be
distributed with QLogic hardware specific firmware binary file.
You may modify and redistribute the device driver code under the
GNU General Public License (a copy of which is attached hereto as
Exhibit A) published by the Free Software Foundation (version 2).

You may redistribute the hardware specific firmware binary file
under the following terms:

1. Redistribution of source code (only if applicable),
   must retain the above copyright notice, this list of
   conditions and the following disclaimer.

2. Redistribution in binary form must reproduce the above
   copyright notice, this list of conditions and the
   following disclaimer in the documentation and/or other
   materials provided with the distribution.

3. The name of QLogic Corporation may not be used to
   endorse or promote products derived from this software

   without specific prior written permission

REGARDLESS OF WHAT LICENSING MECHANISM IS USED OR APPLICABLE,

THIS PROGRAM IS PROVIDED BY QLOGIC CORPORATION "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

USER ACKNOWLEDGES AND AGREES THAT USE OF THIS PROGRAM WILL NOT CREATE OR GIVE GROUNDS FOR A LICENSE BY IMPLICATION, ESTOPPEL, OR OTHERWISE IN ANY INTELLECTUAL PROPERTY RIGHTS (PATENT, COPYRIGHT,
TRADE SECRET, MASK WORK, OR OTHER PROPRIETARY RIGHT) EMBODIED IN ANY OTHER QLOGIC HARDWARE OR SOFTWARE EITHER SOLELY OR IN COMBINATION WITH THIS PROGRAM.

EXHIBIT A

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General
Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for

this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms
so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification
follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in

the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work
based on the
Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified
files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to
print an announcement.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include

anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated
place, then offering equivalent
access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program),
you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under
this
License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by

all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author

to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse
of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING
BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.
Code in this directory written at the IDA Supercomputing Research Center
carries the following copyright and license.

Copyright 1993 United States Government as represented by the
Director, National Security Agency. This software may be used
and distributed according to the terms of the GNU General Public License,
incorporated herein by reference.

In addition to the disclaimers in the GPL, SRC expressly disclaims any
and all warranties, expressed or implied, concerning the enclosed software.
This software was developed at SRC for use in internal research, and the
intent in sharing this software is to promote the productive interchange
of ideas throughout the research community. All software is furnished
on an "as-is" basis. No further updates to this software should be
expected. Although updates may occur, no commitment exists.
Copyright (c) 2003-2006, Marvell International Ltd.
All Rights Reserved

This program is free software; you can redistribute it and/or modify it

under the terms of version 2 of the GNU General Public License as
published by the Free Software Foundation.

This program is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or
FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for
more details.

You should have received a copy of the GNU General Public License along with
this program; if not, write to the Free Software Foundation, Inc., 59
Temple Place - Suite 330, Boston, MA 02111-1307, USA.
  GNU LIBRARY GENERAL PUBLIC LICENSE
    Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
          675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

    Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom,
not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis

or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of
the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must
itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this

function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition,
mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the
Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a

medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute
the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system;
it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each
version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a

license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is

safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year>
<name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Library General Public
License as published by the Free Software Foundation; either
version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter
the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
The files in this directory and elsewhere which refer to this LICENCE
file are part of JFFS2, the Journalling Flash File System v2.

Copyright 2001-2007 Red Hat, Inc. and others

JFFS2 is free software; you can redistribute it and/or modify it under
the terms of the GNU General Public License as published by the Free
Software Foundation; either version 2 or (at your option) any later
version.

JFFS2 is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or

FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License
for more details.

You should have received a copy of the GNU General Public License along
with JFFS2; if not, write to the Free Software Foundation, Inc.,
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA.

As a special exception, if other files instantiate templates or use
macros or inline functions from these files, or you compile these
files and link them with other works to produce
 a work based on these
files, these files do not by themselves cause the resulting work to be
covered by the GNU General Public License. However the source code for
these files must still be made available in accordance with section (3)
of the GNU General Public License.

This exception does not invalidate any other reasons why a work based on
this file might be covered by the GNU General Public License.
Copyright (c) 2003-2008 QLogic Corporation
QLogic Linux Networking HBA Driver

This program includes a device driver for Linux 2.6 that may be
distributed with QLogic hardware specific firmware binary file.
You may modify and redistribute the device driver code under the
GNU General Public License as published by the Free Software
Foundation (version 2 or a later version).

You may redistribute the hardware specific firmware binary file
under the following terms:

1. Redistribution of source code (only if applicable),
   must retain the above copyright notice, this list of
   conditions and the following disclaimer.

2. Redistribution in binary form must reproduce the above
   copyright notice, this list of conditions and the
   following disclaimer in the documentation and/or other
   materials provided with the distribution.

3. The name of QLogic Corporation may not be used to
   endorse or promote products derived from this software
   without specific prior written permission

REGARDLESS
 OF WHAT LICENSING MECHANISM IS USED OR APPLICABLE,
THIS PROGRAM IS PROVIDED BY QLOGIC CORPORATION "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

USER ACKNOWLEDGES AND AGREES THAT USE OF THIS PROGRAM WILL NOT CREATE OR GIVE GROUNDS FOR A LICENSE BY IMPLICATION, ESTOPPEL, OR OTHERWISE IN ANY INTELLECTUAL PROPERTY RIGHTS (PATENT, COPYRIGHT, TRADE SECRET, MASK WORK,
OR OTHER PROPRIETARY RIGHT) EMBODIED IN
ANY OTHER QLOGIC HARDWARE OR SOFTWARE EITHER SOLELY OR IN COMBINATION WITH THIS PROGRAM.
Copyright (c) 2003-2006 QLogic Corporation
QLogic Linux Networking HBA Driver

This program includes a device driver for Linux 2.6 that may be distributed with QLogic hardware specific firmware binary file. You may modify and redistribute the device driver code under the GNU General Public License as published by the Free Software Foundation (version 2 or a later version).

You may redistribute the hardware specific firmware binary file under the following terms:

1. Redistribution of source code (only if applicable), must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistribution in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name of QLogic Corporation may not be used to endorse or promote products derived from this software without specific prior written permission

REGARDLESS
OF WHAT LICENSING MECHANISM IS USED OR APPLICABLE,
THIS PROGRAM IS PROVIDED BY QLOGIC CORPORATION "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR

BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

USER ACKNOWLEDGES AND AGREES THAT USE OF THIS PROGRAM WILL NOT
CREATE OR GIVE GROUNDS FOR A LICENSE BY IMPLICATION, ESTOPPEL, OR
OTHERWISE IN ANY INTELLECTUAL PROPERTY RIGHTS (PATENT, COPYRIGHT,
TRADE SECRET, MASK WORK,
OR OTHER PROPRIETARY RIGHT) EMBODIED IN
ANY OTHER QLOGIC HARDWARE OR SOFTWARE EITHER SOLELY OR IN
COMBINATION WITH THIS PROGRAM.
Thanks go to the following people for patches and contributions:

Michael Hunold <m.hunold@gmx.de>
for the initial saa7146 driver and its recent overhaul

Christian Theiss
for his work on the initial Linux DVB driver

Marcus Metzler <mocm@metzlerbros.de>
Ralph Metzler <rjkm@metzlerbros.de>
for their continuing work on the DVB driver

Michael Holzt <kju@debian.org>
for his contributions to the dvb-net driver

Diego Picciani <d.picciani@novacomp.it>
for CyberLogin for Linux which allows logging onto EON
(in case you are wondering where CyberLogin is, EON changed its login
procedure and CyberLogin is no longer used.)

Martin Schaller <martin@smurf.franken.de>
for patching the cable card decoder driver

Klaus Schmidinger <Klaus.Schmidinger@cadsoft.de>
for various fixes regarding tuning, OSD and CI stuff and his work on VDR

Steve Brown <sbrown@cortland.com>
for his AFC kernel thread

Christoph Martin <martin@uni-mainz.de>
for his LIRC infrared handler

Andreas Oberritter
 <obi@linuxtv.org>
Dennis Noermann <dennis.noermann@noernet.de>
Felix Domke <tmbinc@elitedvb.net>
Florian Schirmer <jolt@tuxbox.org>
Ronny Strutz <3des@elitedvb.de>
Wolfram Joost <dbox2@frokaschwei.de>
...and all the other dbox2 people
 for many bugfixes in the generic DVB Core, frontend drivers and
 their work on the dbox2 port of the DVB driver

Oliver Endriss <o.endriss@gmx.de>
 for many bugfixes

Andrew de Quincey <adq_dvb@lidskialf.net>
 for the tda1004x frontend driver, and various bugfixes

Peter Schildmann <peter.schildmann@web.de>
 for the driver for the Technisat SkyStar2 PCI DVB card

Vadim Catana <skystar@moldova.cc>
Roberto Ragusa <r.ragusa@libero.it>
Augusto Cardoso <augusto@carhil.net>
 for all the work for the FlexCopII chipset by B2C2,Inc.

Davor Emard <emard@softhome.net>
 for his work on the budget drivers, the demux code,
 the module unloading problems, ...

Hans-Frieder Vogt <hfvogt@arcor.de>
 for his work on calculating and checking the crc's for the

 TechnoTrend/Hauppauge DEC driver firmware

Michael Dreher <michael@5dot1.de>
Andreas 'randy' Weinberger
 for the support of the Fujitsu-Siemens Activy budget DVB-S

Kenneth Aafly <ke-aa@frisurf.no>
 for adding support for Typhoon DVB-S budget card

Ernst Peinlich <e.peinlich@inode.at>
 for tuning/DiSEqC support for the DEC 3000-s

Peter Beutner <p.beutner@gmx.net>
 for the IR code for the ttusb-dec driver

Wilson Michaels <wilsonmichaels@earthlink.net>

for the lgdt330x frontend driver, and various bugfixes

Michael Krufky <mkrufky@m1k.net>
for maintaining v4l/dvb inter-tree dependencies

Taylor Jacob <rtjacob@earthlink.net>
for the nxt2002 frontend driver

Jean-Francois Thibert <jeanfrancois@sagetv.com>
for the nxt2004 frontend driver

Kirk Lapray <kirk.lapray@gmail.com>
for the or51211 and or51132 frontend drivers, and
for merging the nxt2002 and nxt2004 modules into a
single nxt200x frontend driver.

(If you think you should be in this list, but you are not, drop a
line to the DVB mailing list)

NOTE! This copyright does *not* cover user programs that use kernel
services by normal system calls - this is merely considered normal use
of the kernel, and does *not* fall under the heading of "derived work".
Also note that the GPL below is copyrighted by the Free Software
Foundation, but the instance of code that it refers to (the Linux
kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel
is concerned is _this_ particular version of the license (ie v2, not
v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free

software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is
to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any
other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for
such
interactive use in the most ordinary way, to print or display an

announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be
on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and
2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you

received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface
definition files, plus the scripts used to
control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise
of the rights granted herein.
You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular
circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted
interfaces, the
original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program

specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer)
or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

FlashPoint Driver Developer's Kit
Version 1.0

Copyright 1995-1996 by Mylex Corporation
All Rights Reserved

This program is free software; you may redistribute and/or modify it under
the terms of either:

a) the GNU General Public License as published by the Free Software
Foundation; either version 2, or (at your option) any later version,

or

b) the "BSD-style License" included below.

This program is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, without even the implied warranty of MERCHANTABILITY
or FITNESS FOR A PARTICULAR PURPOSE. See either the GNU General Public
License or the BSD-style License below for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
675 Mass Ave, Cambridge, MA 02139, USA.

The BSD-style License is as follows:

Redistribution
and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

1. Redistributions of source code must retain this LICENSE.FlashPoint
file, without modification, this list of conditions, and the following
disclaimer. The following copyright notice must appear immediately at
the beginning of all source files:

Copyright 1995-1996 by Mylex Corporation. All Rights Reserved

This file is available under both the GNU General Public License
and a BSD-style copyright; see LICENSE.FlashPoint for details.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. The name of Mylex Corporation may not be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE
IS PROVIDED BY MYLEX CORP. ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN
NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

1.250 redhatrelease 9.5-0.6.el9

1.250.1 Available under license :

Copyright (c) 2002 Jorge Acereda <jacereda@users.sourceforge.net> &
Peter O'Gorman <ogorman@users.sourceforge.net>

Portions may be copyright others, see the AUTHORS file included with this
distribution.

Maintained by Peter O'Gorman <ogorman@users.sourceforge.net>

Bug Reports and other queries should go to <ogorman@users.sourceforge.net>

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY

KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
libffi - Copyright (c) 1996-2003 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL CYGNUS SOLUTIONS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
X Window System License - X11R6.4

Copyright (c) 1998 The Open Group

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE OPEN GROUP BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,

ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of The Open Group shall
not be used in advertising or otherwise to promote the sale, use or
other dealings in this Software without prior written authorization
from The Open Group.

X Window System is a trademark of The Open Group

Additional Conditions for this Windows binary build

This program is linked with and uses Microsoft Distributable Code,
copyrighted by Microsoft Corporation. The Microsoft Distributable Code
is embedded in each .exe, .dll and .pyd file as a result of running
the code through a linker.

If you further distribute programs that include the Microsoft
Distributable Code, you must comply with the restrictions on
distribution specified by Microsoft. In particular, you must require
distributors and external end users to agree to terms that protect the
Microsoft Distributable Code at least as much as Microsoft's own
requirements for the Distributable Code. See Microsoft's documentation
(included in its developer tools and on its website at microsoft.com)
for specific details.

Redistribution of the Windows binary build of the Python interpreter
complies with this agreement, provided that you do not:

- alter any copyright, trademark or patent
notice in Microsoft's
Distributable Code;

- use Microsoft's trademarks in your programs' names or in a way that
suggests your programs come from or are endorsed by Microsoft;

- distribute Microsoft's Distributable Code to run on a platform other
than Microsoft operating systems, run-time technologies or application
platforms; or

- include Microsoft Distributable Code in malicious, deceptive or
unlawful programs.

These restrictions apply only to the Microsoft Distributable Code as
defined above, not to Python itself or any programs running on the

Python interpreter. The redistribution of the Python interpreter and
libraries is governed by the Python Software License included with this
file, or by other licenses as marked.
Copyright (c) 1998-2000 Thai Open Source Software Center Ltd and Clark Cooper
Copyright (c) 2001-2022 Expat maintainers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
 ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations, which became
Zope Corporation. In 2001, the Python Software Foundation (PSF, see
https://www.python.org/psf/) was formed, a non-profit organization
created specifically to own Python-related Intellectual Property.
Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

Python software and documentation are licensed under the
Python Software Foundation License Version 2.

Starting with Python 3.8.6,
examples, recipes, and other code in
the documentation are dual licensed under the PSF License Version 2
and the Zero-Clause BSD license.

Some software incorporated into Python is under different licenses.
The licenses are listed with code falling under that license.

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2
---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright
(c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 Python Software Foundation;
All Rights Reserved" are retained in Python alone or in any derivative version
prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY
INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and

Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python, Licensee agrees to be bound by the terms and conditions of this License Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the Individual or Organization ("Licensee") accessing and otherwise using this software in source or binary form and its associated documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License Agreement, BeOpen hereby grants Licensee a non-exclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use the Software alone or in any derivative version, provided, however, that the BeOpen Python License is retained in the Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS" basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to

create any relationship of agency, partnership, or joint venture between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html
may be used according to the
permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice
of copyright, i.e., "Copyright (c)
1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made
to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS"
basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. This License Agreement shall be governed by the federal
intellectual property law of the United States, including without
limitation the federal copyright law, and, to the extent such
U.S. federal law does not apply,
by the law of the Commonwealth of
Virginia, excluding Virginia's conflict of law provisions.
Notwithstanding the foregoing, with regard to derivative works based
on Python 1.6.1 that incorporate non-separable material that was
previously distributed under the GNU General Public License (GPL), the
law of the Commonwealth of Virginia shall govern this License
Agreement only as to issues arising under or with respect to
Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this
License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture between CNRI and Licensee. This
License Agreement does not grant permission to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or
services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying,
installing or otherwise using Python 1.6.1, Licensee agrees to be
bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,

provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER
RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

ZERO-CLAUSE BSD LICENSE FOR CODE IN THE PYTHON DOCUMENTATION

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH
REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM
LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.
This license applies to the bootstrapper application that is embedded within the installer. It has no impact on the licensing for the rest of the installer or Python itself, as no code covered by this license exists in any other part of the product.

Microsoft Reciprocal License (MS-RL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

1. Definitions
The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.
A "contribution" is the original software, or any additions or changes to the software.
A "contributor" is any person that distributes its contribution under this license.
"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights

(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.
(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations
(A) Reciprocal Grants- For any file you distribute that contains code from the software (in source code or binary format), you must provide recipients the source code to that file along with a copy of this license, which license will govern that file. You may license other files that are entirely your own work and do not contain code from the software under any terms you choose.
(B) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.
(C) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.
(D) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.
(E) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.
(F) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions.
You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

1.251 openssl-fips-provider-so 3.0.7-6.el9_5

1.251.1 Available under license :

This software is copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software; you can redistribute it and/or modify it under
the same terms as the Perl 5 programming language system itself.

Terms of the Perl programming language system itself

a) the GNU General Public License as published by the Free
Software Foundation; either version 1, or (at your option) any
later version, or
b) the "Artistic License"

--- The GNU General Public License, Version 1, February 1989 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The GNU General Public License, Version 1, February 1989

GNU GENERAL PUBLIC LICENSE
Version 1, February 1989

Copyright (C) 1989 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The license agreements of most software companies try to keep users at the mercy of those companies. By contrast, our General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. The General Public License applies to the Free Software Foundation's software and to any other program whose authors commit to using it. You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not price. Specifically, the General Public License is designed to make sure that you have the freedom to give away or sell copies of free software, that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of a such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must tell them their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free

software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any work containing the Program or a portion of it, either verbatim or with modifications. Each licensee is addressed as "you".

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this General Public License and to the absence of any warranty; and give any other recipients of the Program a copy of this General Public License along with the Program. You may charge a fee for the physical act of transferring a copy.

2. You may modify your copy or copies of the Program or any portion of it, and copy and distribute such modifications under the terms of Paragraph 1 above, provided that you also do the following:

a) cause the modified files to carry prominent notices stating that you changed the files and the date of any change; and

b) cause the whole of any work that you distribute or publish, that in whole or in part contains the Program or any part thereof, either with or without modifications, to be licensed at no charge to all third parties under the terms of this General Public License (except that you may choose to grant warranty protection to some or all third parties, at your option).

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the simplest and most usual way, to print or display an

announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this General Public License.

d) You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Mere aggregation of another independent work with the Program (or its derivative) on a volume of a storage or distribution medium does not bring the other work under the scope of these terms.

3. You may copy and distribute the Program (or a portion or derivative of it, under Paragraph 2) in object code or executable form under the terms of Paragraphs 1 and 2 above provided that you also do one of the following:

a) accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Paragraphs 1 and 2 above; or,

b) accompany it with a written offer, valid for at least three years, to give any third party free (except for a nominal charge for the cost of distribution) a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Paragraphs 1 and 2 above; or,

c) accompany it with the information you received as to where the corresponding source code may be obtained. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form alone.)

Source code for a work means the preferred form of the work for making modifications to it. For an executable file, complete source code means all the source code for all modules it contains; but, as a special exception, it need not include source code for modules which are standard libraries that accompany the operating system on which the executable file runs, or for standard header files or definitions files that accompany that operating system.

4. You may not copy, modify, sublicense, distribute or transfer the Program except as expressly provided under this General Public License. Any attempt otherwise to copy, modify, sublicense, distribute or transfer the Program is void, and will automatically terminate your rights to use the Program under this License. However, parties who have received

copies, or rights to use copies, from you under this General Public License will not have their licenses terminated so long as such parties remain in full compliance.

5. By copying, distributing or modifying the Program (or any work based on the Program) you indicate your acceptance of this license to do so, and all its terms and conditions.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

7. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of the license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the license, you may choose any version ever published by the Free Software Foundation.

8. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

9. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY

SERVICING,
REPAIR OR CORRECTION.

10. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to humanity, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so,
attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 1, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free
Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) 19xx name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the
appropriate parts of the General Public License. Of course, the
commands you use may be called something other than `show w' and `show
c'; they could even be mouse-clicks or menu items--whatever suits your
program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here a sample; alter
 the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 program `Gnomovision' (a program to direct compilers to make passes
 at assemblers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

That's all there is to it!

--- The Artistic License 1.0 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

 The Artistic License 1.0

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package
may be copied, such that the Copyright Holder maintains some semblance of
artistic control over the development of the package, while giving the users of
the package the right to use and distribute the Package in a more-or-less
customary fashion, plus the right to make reasonable modifications.

Definitions:

- "Package" refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection of files created through textual modification.
- "Standard Version" refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder.
- "Copyright Holder" is whoever is named in the copyright or copyrights for the package.
- "You" is you, if you're thinking about copying or distributing this Package.
- "Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)
- "Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1. You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

b) use the modified Package only within your corporation or organization.

c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b) accompany the distribution with the machine-readable source of the Package with your modifications.

c) accompany any non-standard executables with their corresponding Standard Version executables, giving the non-standard executables non-standard names,
and clearly documenting the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own.

6. The scripts and library files supplied as input to or produced as output from the programs of this Package do not automatically fall under the copyright of this Package, but belong to whomever generated them, and may be sold commercially, and may be aggregated with this Package.

7. C or perl subroutines supplied by you and linked into this Package shall not
be considered part of this Package.

8. The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

9. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Apache License
Version 2.0, January 2004

https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including

the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or

Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the

origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.252 selinux-policy 38.1.45-3.el9_5

1.252.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free

program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program
or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute
verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three

years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based

on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute
software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding

those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies
a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),

EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may

be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.253 openssl-fips-provider 3.0.7-6.el9_5

1.253.1 Available under license :

This software is copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software; you can redistribute it and/or modify it under
the same terms as the Perl 5 programming language system itself.

Terms of the Perl programming language system itself

a) the GNU General Public License as published by the Free
  Software Foundation; either version 1, or (at your option) any
  later version, or
b) the "Artistic License"

--- The GNU General Public License, Version 1, February 1989 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

 The GNU General Public License, Version 1, February 1989

                GNU GENERAL PUBLIC LICENSE
                 Version 1, February 1989

Copyright (C) 1989 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The license agreements of most software companies try to keep users at the mercy of those companies. By contrast, our General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. The General Public License applies to the Free Software Foundation's software and to any other program whose authors commit to using it. You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not price. Specifically, the General Public License is designed to make sure that you have the freedom to give away or sell copies of free software, that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of a such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must tell them their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

The precise terms and conditions
for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any work containing the Program or a portion of it, either verbatim or with modifications. Each licensee is addressed as "you".

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this General Public License and to the absence of any warranty; and give any other recipients of the
Program a copy of this General Public License
along with the Program. You may charge a fee for the physical act of transferring a copy.

2. You may modify your copy or copies of the Program or any portion of it, and copy and distribute such modifications under the terms of Paragraph 1 above, provided that you also do the following:

a) cause the modified files to carry prominent notices stating that you changed the files and the date of any change; and

b) cause the whole of any work that you distribute or publish, that in whole or in part contains the Program or any part thereof, either with or without modifications, to be licensed at no charge to all third parties under the terms of this General Public License (except that you may choose to grant warranty protection to some or all third parties, at your option).

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive
use
in the simplest and most usual way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this General Public License.

d) You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Mere aggregation of another independent work with the Program (or its derivative) on a volume of a storage or distribution medium does not bring the other work under the scope of these terms.

3. You may copy and distribute the Program (or a portion or derivative of it, under Paragraph 2) in object code or executable form under the terms of Paragraphs 1 and 2 above provided that you also do one of the following:

a) accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Paragraphs 1 and 2 above; or,

b) accompany it with a written offer, valid for at least three years, to give any third party free (except for a nominal charge for the cost of distribution) a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Paragraphs 1 and 2 above; or,

c) accompany it with the information you received as to where the corresponding source code may be obtained. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form alone.)

Source code for a work means the preferred form of the work for making modifications to it. For an executable file, complete source code means all the source code for all modules it contains; but, as a special exception, it need not include source code for modules which are standard libraries that accompany the operating system on which the executable file runs, or for standard header files or definitions files that accompany that operating system.

4. You may not copy, modify, sublicense, distribute or transfer the Program except as expressly provided under this General Public License. Any attempt otherwise to copy, modify, sublicense, distribute or transfer the Program is void, and will automatically terminate your rights to use the Program under this License. However, parties who have received copies, or rights to use copies, from you under this General Public License will not have their licenses terminated so long as such parties remain in full compliance.

5. By copying, distributing or modifying the Program (or any work based on the Program) you indicate your acceptance of this license to do so, and all its terms and conditions.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the

original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

7. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of the license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the license, you may choose any version ever published by the Free Software Foundation.

8. If you wish to incorporate parts of the Program into other free programs whose distribution
conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

9. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

10. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE

POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to humanity, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so,
attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 1, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free
Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19xx name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the

commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here a sample; alter
 the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 program `Gnomovision' (a program to direct compilers to make passes
 at assemblers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

That's all there is to it!

--- The Artistic License 1.0 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

 The Artistic License 1.0

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications.

Definitions:

- "Package" refers to the collection of files distributed by the Copyright
  Holder, and derivatives of that collection
of files created through
  textual modification.
- "Standard Version" refers to such a Package if it has not been modified,
  or has been modified in accordance with the wishes of the Copyright
  Holder.
- "Copyright Holder" is whoever is named in the copyright or copyrights for
  the package.

- "You" is you, if you're thinking about copying or distributing this Package.
- "Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)
- "Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1. You may make and give away verbatim copies of
the source form of the
Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

b) use the modified
Package only within your corporation or organization.

c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b) accompany the distribution with the machine-readable source of the Package with your modifications.

c) accompany any non-standard executables with their corresponding Standard
Version executables, giving the non-standard executables non-standard
names,
and clearly documenting the differences in manual pages (or
equivalent), together with instructions on where to get the Standard
Version.

d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this
Package. You may charge any fee you choose for support of this Package. You
may not charge a fee for this Package itself. However, you may distribute this
Package in aggregate with other (possibly commercial) programs as part of a
larger (possibly commercial) software distribution provided that you do not
advertise this Package as a product of your own.

6. The scripts and library files supplied as input to or produced as output
from the programs of this Package do not automatically fall under the copyright
of this Package, but belong to whomever generated them, and may be sold
commercially, and may be aggregated with this Package.

7. C or perl subroutines supplied by you and linked into this Package
shall not
be considered part of this Package.

8. The name of the Copyright Holder may not be used to endorse or promote
products derived from this software without specific prior written permission.

9. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF
MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Apache License
Version 2.0, January 2004
https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any

risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.254 librhsm 0.0.3-9.el9

1.254.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a

restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an

appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote

it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked

with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined

library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
 which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

 12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

 13. The Free Software Foundation may publish
 revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

 14. If you wish to incorporate parts of the Library into other free

programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.255 systemd-pam 252-46.el9_5.2

1.255.1 Available under license :

systemd Project Licensing

Main License

The systemd project uses single-line references to Unique License Identifiers as
defined by the Linux Foundation's SPDX project (https://spdx.org/). The line in
each individual source file identifies the license applicable to that file.

The current set of valid, predefined SPDX identifiers can be found on the SPDX
License List at https://spdx.org/licenses/.

The 'LICENSES/' directory contains all the licenses used by the sources included in
the systemd project source tree.

Unless otherwise noted, the systemd project sources are licensed under the terms
and conditions of the **GNU Lesser General Public License v2.1 or later**.

New sources that cannot be distributed under LGPL-2.1-or-later will no longer
be accepted for inclusion in the systemd project to maintain license uniformity.

Other Licenses

The following exceptions apply:

* some udev sources under src/udev/ are licensed under **GPL-2.0-or-later**, so the
  udev binaries as a
 whole are also distributed under **GPL-2.0-or-later**.
* the header files contained in src/basic/linux/ and src/shared/linux/ are copied
  verbatim from the Linux kernel source tree and are licensed under **GPL-2.0 WITH
  Linux-syscall-note** and are used within the scope of the Linux-syscall-note
  exception provisions
* the src/shared/initreq.h header is licensed under original license,
  LGPL-2.0-or-later.
* the src/shared/linux/bpf_insn.h header is copied from the Linux kernel
  source tree and is licensed under either **BSD-2-Clause** or **GPL-2.0-only**,
  and thus is included in the systemd build under the BSD-2-Clause license.
* The src/basic/linux/wireguard.h header is copied from the Linux kernel
  source tree and is licensed under either **MIT** or **GPL-2.0 WITH Linux-syscall-note**,
  and thus is included in the systemd build under the MIT license.
* the following sources are licensed under the **MIT** license (in case of our
  scripts, to facilitate copying
 and reuse of those helpers to other projects):
  - hwdb.d/parse_hwdb.py
  - src/basic/linux/batman_adv.h
  - src/basic/sparse-endian.h
  - tools/catalog-report.py
* the following sources are licensed under the **CC0-1.0** license:
  - src/basic/siphash24.c
  - src/basic/siphash24.h
  - tools/check-includes.pl
 * the following sources are licensed under the **MIT-0** license:
  - all examples under man/
  - src/systemctl/systemd-sysv-install.SKELETON
  - config files and examples under /network
* the following sources are under **Public Domain** (LicenseRef-murmurhash2-public-domain):
  - src/basic/MurmurHash2.c
  - src/basic/MurmurHash2.h
* the following sources are under **Public Domain** (LicenseRef-lookup3-public-domain):
  - src/libsystemd/sd-journal/lookup3.c

- src/libsystemd/sd-journal/lookup3.h
* the tools/chromiumos/gen_autosuspend_rules.py script is licensed under the
BSD-3-Clause license.
* Heebo fonts under docs/fonts/ are licensed under the
SIL Open Font License 1.1,
* any files under test/ without an explicit license we assume non-copyrightable
(eg: computer-generated fuzzer data)

OpenSSL Notes

Note that building the systemd project with OpenSSL does not affect the libsystemd.so
shared library, which is not linked with the OpenSSL library.
MurmurHash2 was written by Austin Appleby, and is placed in the public
domain. The author hereby disclaims copyright to this source code.
GNU LIBRARY GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the

library, after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most
GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public
License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library".
The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole.
If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work
under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work
is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you
must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may
place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void,
and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may
not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of
this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest

validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted
in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify
a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.
Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in
the library `Frob' (a library for tweaking knobs) written
by James Random Hacker.

signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
// Copyright 2014 The Chromium OS Authors. All rights reserved.
//
// Redistribution and use in source and binary forms, with or without
// modification, are permitted provided that the following conditions are
// met:
//

//   * Redistributions of source code must retain the above copyright
// notice, this list of conditions and the following disclaimer.
//   * Redistributions in binary form must reproduce the above
// copyright notice, this list of conditions and the following disclaimer
// in the documentation and/or other materials provided with the
// distribution.
//   * Neither the name of Google Inc. nor the names of its
// contributors may be used to endorse or promote products derived from
// this software without specific prior written permission.
//
// THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
// "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
// LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
// A PARTICULAR
 PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
// OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
// SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
// LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
// DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
// THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
// (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
// OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
lookup3.c, by Bob Jenkins, May 2006, Public Domain.
Copyright (c) <dates>, <Copyright Holder> (<URL|email>),
with Reserved Font Name <Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>),
with Reserved Font Name <additional Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>).

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide
development of collaborative font projects, to support the font creation
efforts of academic and linguistic communities, and to provide a free and
open framework in which fonts may be shared and improved in partnership
with others.

The OFL allows the licensed fonts to be used, studied,
 modified and
redistributed freely as long as they are not sold by themselves. The

fonts, including any derivative works, can be bundled, embedded, redistributed and/or sold with any software provided that any reserved names are not used by derivative works. The fonts and derivatives, however, cannot be released under any other type of license. The requirement for fonts to remain under this license does not apply to any document created using the fonts or their derivatives.

DEFINITIONS
"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part
or in whole -- any of the components of the
Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components, in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled, redistributed and/or sold with any software, provided that each copy contains the above copyright notice and this license. These can be included either as stand-alone text files, human-readable headers or in the appropriate machine-readable metadata fields within
text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font Name(s) unless explicit written permission is granted by the corresponding Copyright Holder. This restriction only applies to the primary font name as presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font Software shall not be used to promote, endorse or advertise any Modified Version, except to acknowledge the contribution(s) of the Copyright Holder(s) and the Author(s) or with their explicit written permission.

5) The Font Software, modified or unmodified, in part or in whole, must be distributed entirely under this license, and must not be distributed under any other license. The requirement for fonts to remain under this license does not apply to any document created using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are not met.

DISCLAIMER
THE
FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

NOTE! This copyright does *not* cover user programs that use kernel services by normal system calls - this is merely considered normal use of the kernel, and does *not* fall under the heading of "derived work". Also note that the GPL below is copyrighted by the Free Software Foundation, but the instance of code that it refers to (the Linux kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel is concerned is _this_ particular version of the license (ie v2, not v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole

or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete

machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each

time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates

the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your

school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
MIT License

Copyright (c) <year> <copyright holders>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) <year> <owner> All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES

(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT No Attribution

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons")
that the public can reliably and without fear
of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free

culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation thereof, including any amended or successor version of such directive); and
vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the

Waiver for the benefit of each
member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable
law or treaty (including future
time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected
by this document.
b. Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.

d. Affirmer understands and acknowledges that Creative Commons is not a
party to this document and has no duty or obligation with
respect to
this CC0 or use of the Work.

1.256 alternatives 1.24-1.el9_5.1

1.256.1 Available under license :

Copyright (c) 2002 Jorge Acereda <jacereda@users.sourceforge.net> &
Peter O'Gorman <ogorman@users.sourceforge.net>

Portions may be copyright others, see the AUTHORS file included with this
distribution.

Maintained by Peter O'Gorman <ogorman@users.sourceforge.net>

Bug Reports and other queries should go to <ogorman@users.sourceforge.net>

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY
KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
libffi - Copyright (c) 1996-2003 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL CYGNUS SOLUTIONS BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
X Window System License - X11R6.4

Copyright (c) 1998 The Open Group

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE OPEN GROUP BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of The Open Group shall
not be used in advertising or otherwise to promote the sale, use or
other dealings in this Software without prior written authorization
from The Open Group.

X Window System is a trademark of The Open Group

Additional Conditions for this Windows binary build

This program is linked with and uses Microsoft Distributable Code,

copyrighted by Microsoft Corporation. The Microsoft Distributable Code
is embedded in each .exe, .dll and .pyd file as a result of running
the code through a linker.

If you further distribute programs that include the Microsoft
Distributable Code, you must comply with the restrictions on
distribution specified by Microsoft. In particular, you must require
distributors and external end users to agree to terms that protect the
Microsoft Distributable Code at least as much as Microsoft's own
requirements for the Distributable Code. See Microsoft's documentation
(included in its developer tools and on its website at microsoft.com)
for specific details.

Redistribution of the Windows binary build of the Python interpreter
complies with this agreement, provided that you do not:

- alter any copyright, trademark or patent
notice in Microsoft's
Distributable Code;

- use Microsoft's trademarks in your programs' names or in a way that
suggests your programs come from or are endorsed by Microsoft;

- distribute Microsoft's Distributable Code to run on a platform other
than Microsoft operating systems, run-time technologies or application
platforms; or

- include Microsoft Distributable Code in malicious, deceptive or
unlawful programs.

These restrictions apply only to the Microsoft Distributable Code as
defined above, not to Python itself or any programs running on the
Python interpreter. The redistribution of the Python interpreter and
libraries is governed by the Python Software License included with this
file, or by other licenses as marked.
Copyright (c) 1998-2000 Thai Open Source Software Center Ltd and Clark Cooper
Copyright (c) 2001-2022 Expat maintainers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations, which became
Zope Corporation. In 2001, the Python Software Foundation (PSF, see
https://www.python.org/psf/) was formed, a non-profit organization
created specifically to own Python-related Intellectual Property.
Zope Corporation was a sponsoring member of the PSF.

All
Python releases are Open Source (see http://www.opensource.org for
the Open Source Definition). Historically, most, but not all, Python
releases have also been GPL-compatible; the table below summarizes
the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes

2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under
the GPL. All Python licenses, unlike the GPL, let you distribute
a modified version without making your changes open source. The
GPL-compatible licenses make it possible to combine Python with
other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,
because its license has a choice of law clause. According to
CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1
is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's
direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

Python software and documentation are licensed under the
Python Software Foundation License Version 2.

Starting with Python 3.8.6,
examples, recipes, and other code in
the documentation are dual licensed under the PSF License Version 2
and the Zero-Clause BSD license.

Some software incorporated into Python is under different licenses.
The licenses are listed with code falling under that license.

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2
---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,

provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright
(c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 Python Software Foundation;
All Rights Reserved" are retained in Python alone or in any derivative version
prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY
INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an
office at 160 Saratoga

Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee") accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and
otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE
WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE
SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS
AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY
DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all
respects by the law of the State of California, excluding conflict of
law provisions. Nothing in this License Agreement shall be deemed to
create any relationship of agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant
permission to use BeOpen trademarks or trade names in a trademark
sense to endorse or promote products or services of Licensee, or any
third party. As an exception, the "BeOpen Python" logos available at
http://www.pythonlabs.com/logos.html
may be used according to the
permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c) 1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal

intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission to use CNRI trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam, The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Stichting Mathematisch Centrum or CWI not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

ZERO-CLAUSE BSD LICENSE FOR CODE IN THE PYTHON DOCUMENTATION

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This license applies to the bootstrapper application that is embedded within the installer. It has no impact on the licensing for the rest of the installer or Python itself, as no code covered by this license exists in any other part of the product.

Microsoft Reciprocal License (MS-RL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

1. Definitions
The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.
A "contribution" is the original software, or any additions or changes to the software.
A "contributor" is any person that distributes its contribution under this license.
"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights
(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.
(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations
(A) Reciprocal Grants- For any file you distribute that contains code from the software (in source code or binary format), you must provide recipients the source code to that file along with a copy of this license, which license will govern that file. You may license other files that are entirely your own work and do not contain code from the software under any terms you choose.
(B) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.

(C) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.
(D) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.
(E) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.
(F) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions.
You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

1.257 python-pip 21.3.1-1.el9

1.257.1 Available under license :

This is the MIT license

Copyright (c) 2010 ActiveState Software Inc.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2007 Ian Bicking and Contributors
Copyright (c) 2009 Ian Bicking, The Open Planning Project
Copyright (c) 2011-2013 The virtualenv developers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,

distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES
OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2017 Thomas Kluyver

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (C) 2016 Jason R Coombs <jaraco@jaraco.com>

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2010-2020 Benjamin Peterson

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some

specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits
its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The

former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or

collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this

License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the

Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work

based on the Library, uncombined with any other library
facilities. This must be distributed under
the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

11. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status

of
all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or

modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

This software is made available under the terms of *either* of the licenses found in LICENSE.APACHE or LICENSE.BSD. Contributions to this software is made under the terms of *both* these licenses.

MIT License

Copyright (c) 2021 Taneli Hukkinen

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2010 Jonathan Hartley
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

* Neither the name of the copyright holders, nor those of its contributors
 may be used to endorse or promote products derived from this software without
 specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
 HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2012 by Simon Sapin.

Some rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
    notice, this list of conditions and the following disclaimer.

  * Redistributions in binary form must reproduce the above
    copyright notice, this list of conditions and the following
    disclaimer in the documentation and/or other materials provided
    with the distribution.

  * The names of the contributors may not be used to endorse or
    promote products derived from this software without specific
    prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR

A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2018, Tzu-ping Chung <uranusjr@gmail.com>

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Pylons Project Contributor Agreement
==========

The submitter agrees by adding his or her name within the section below named "Contributors" and submitting the resulting modified document to the canonical shared repository location for this software project (whether directly, as a user with "direct commit access", or via a "pull request"), he or she is signing a contract electronically. The submitter becomes a Contributor after a) he or she signs this document by adding their name beneath the "Contributors" section below, and b) the resulting document is accepted into the canonical version control repository.

Treatment of Account

Contributor will not allow anyone other than the Contributor to use his or her username or source repository login to submit code to a Pylons Project source repository. Should Contributor become aware of any such use, Contributor will immediately by notifying Agendaless Consulting.
Notification must be performed
by sending an email to
webmaster@agendaless.com. Until such notice is received, Contributor will be presumed to have taken all actions made through Contributor's account. If the Contributor has direct commit access, Agendaless Consulting will have complete control and discretion over capabilities assigned to Contributor's account, and may disable Contributor's account for any reason at any time.

Legal Effect of Contribution

Upon submitting a change or new work to a Pylons Project source Repository (a "Contribution"), you agree to assign, and hereby do assign, a one-half interest of all right, title and interest in and to copyright and other intellectual property rights with respect to your new and original portions of the Contribution to Agendaless Consulting. You and Agendaless Consulting each agree that the other shall be free to exercise any and all exclusive rights in and to the Contribution, without accounting to one another, including without limitation,
the right to license the Contribution to others
under the Repoze Public License. This agreement shall run with title to the Contribution. Agendaless Consulting does not convey to you any right, title or interest in or to the Program or such portions of the Contribution that were taken from the Program. Your transmission of a submission to the Pylons Project source Repository and marks of identification concerning the Contribution itself constitute your intent to contribute and your assignment of the work in accordance with the provisions of this Agreement.

License Terms

Code committed to the Pylons Project source repository (Committed Code) must be governed by the Repoze Public License (http://repoze.org/LICENSE.txt, aka "the RPL") or another license acceptable to Agendaless Consulting. Until Agendaless Consulting declares in writing an acceptable license other than the RPL, only the RPL shall be used. A list of exceptions is detailed within the "Licensing Exceptions"
section of this document, if one exists.

Representations, Warranty, and Indemnification

Contributor represents and warrants that the Committed Code does not violate the rights of any person or entity, and that the Contributor has legal authority to enter into this Agreement and legal authority over Contributed Code. Further, Contributor indemnifies Agendaless Consulting against violations.

Cryptography

Contributor understands that cryptographic code may be subject to government regulations with which Agendaless Consulting and/or entities using Committed Code must comply. Any code which contains any of the items listed below must not be checked-in until Agendaless Consulting staff has been notified and has

approved such contribution in writing.

- Cryptographic capabilities or features

- Calls to cryptographic features

- User interface elements which provide context relating to cryptography

- Code which may, under
casual inspection, appear to be cryptographic.

Notices

Contributor confirms that any notices required will be included in any
Committed Code.

Licensing Exceptions
==========

None.

List of Contributors
==========

The below-signed are contributors to a code repository that is part of the
project named "Translationstring". Each below-signed contributor has read,
understands and agrees to the terms above in the section within this document
entitled "Pylons Project Contributor Agreement" as of the date beside his or
her name.

Contributors

- Chris McDonough, 2011/02/16
- Wichert Akkerman, 2012/02/02
Copyright (C) 2008-2011 INADA Naoki <songofacandy@gmail.com>

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and

limitations under the License.
This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#
This is a bundle of X.509 certificates of public Certificate Authorities
(CA). These were automatically extracted from Mozilla's root certificates
file (certdata.txt). This file can be found in the mozilla source tree:
http://mxr.mozilla.org/mozilla/source/security/nss/lib/ckfw/builtins/certdata.txt?raw=1#
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

***** BEGIN LICENSE BLOCK *****
This Source Code Form is subject to the terms of the Mozilla Public License,
v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain
one at http://mozilla.org/MPL/2.0/.

***** END LICENSE BLOCK *****
@(#) $RCSfile: certdata.txt,v $
$Revision: 1.80 $ $Date: 2011/11/03 15:11:58 $
A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see http://www.zope.com). In 2001, the Python Software
Foundation (PSF, see http://www.python.org/psf/) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member
of
the PSF.

All Python releases are Open Source (see http://www.opensource.org for
the Open Source Definition). Historically, most, but not all, Python

releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
2.7	2.6	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute

a modified version without making your changes open source. The
GPL-compatible licenses make it possible to combine Python with
other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,
because its license has a choice
of law clause. According to
CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1
is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's
direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2
---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any
derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
Python Software Foundation; All Rights Reserved" are retained in Python alone or
in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR
ANY OTHER USERS OF PYTHON
FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"),
having an
office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee") accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and
otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR
PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1

---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c) 1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following

unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission to use CNRI trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions

of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL
DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership of such entity.

"You"
(or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations,
or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems
that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants
to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work
or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not

pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution
of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly

negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental,
or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted
against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes

2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2

---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated
documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
Python Software Foundation; All Rights Reserved" are retained in Python alone or
in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"
basis. PSF MAKES NO REPRESENTATIONS
OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise
using Python, Licensee
agrees to be bound by the terms and conditions of this License

Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the Individual or Organization ("Licensee") accessing and otherwise using this software in source or binary form and its associated documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License Agreement, BeOpen hereby grants Licensee a non-exclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use the Software alone or in any derivative version, provided, however, that the BeOpen Python License is retained in the Software, alone or in any derivative version prepared by Licensee.

3.
BeOpen is making the Software available to Licensee on an "AS IS" basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the

permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National
Research Initiatives, having an office at 1895 Preston White Drive,
Reston, VA 20191 ("CNRI"), and the Individual or Organization
("Licensee") accessing and otherwise using Python 1.6.1 software in
source or binary form and its associated documentation.

2. Subject to the terms and conditions
of this License Agreement, CNRI
hereby grants Licensee a nonexclusive, royalty-free, world-wide
license to reproduce, analyze, test, perform and/or display publicly,
prepare derivative works, distribute, and otherwise use Python 1.6.1
alone or in any derivative version, provided, however, that CNRI's
License Agreement and CNRI's notice of copyright, i.e., "Copyright (c)
1995-2001 Corporation for National Research Initiatives; All Rights
Reserved" are retained in Python 1.6.1 alone or in any derivative
version prepared by Licensee. Alternately, in lieu of CNRI's License
Agreement, Licensee may substitute the following text (omitting the
quotes): "Python 1.6.1 is made available subject to the terms and
conditions in CNRI's License Agreement. This Agreement together with
Python 1.6.1 may be located on the Internet using the following
unique, persistent identifier (known as a handle): 1895.22/1013. This
Agreement may also be obtained from a proxy server on the Internet
using the following
URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on
or incorporates Python 1.6.1 or any part thereof, and wants to make
the derivative work available to others as provided herein, then
Licensee hereby agrees to include in any such work a brief summary of
the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS"
basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6.
This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission
to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam, The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Stichting Mathematisch Centrum or CWI not be used in advertising or publicity pertaining to distribution of the software

without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
argparse is (c) 2006-2009 Steven J. Bethard <steven.bethard@gmail.com>.

The argparse module was contributed to Python as of Python 2.7 and thus
was licensed under the Python license. Same license applies to all files in
the argparse package project.

For details about the Python License, please see doc/Python-License.txt.

History

Before (and including) argparse 1.1, the argparse package was licensed under
Apache License v2.0.

After argparse 1.1, all project files from the argparse project were deleted
due to license compatibility issues between Apache License 2.0 and GNU GPL v2.

The project repository then had a clean start with some files taken from
Python 2.7.1, so definitely all files are under Python License now.
============
Contributors
============

* Alex Grnholm
* Alice Bevan-McGregor
* Arfrever Frehtes Taifersar Arahesis
* Christophe Combelles
* Daniel Stutzbach
* Daniel Holth
* Hanno Schlichting
* Jannis Leidel
* Jason R. Coombs
* Jim Fulton
* Jonathan Lange
* Justin Azoff
* Lennart Regebro
* Marc Abramowitz
* Martin von Lwis

* Noufal Ibrahim
* Pete Hollobon
* Philip Jenvey
* Reinout van Rees
* Robert Myers
* Stefan H. Holek
* Tarek Ziad
* Toshio Kuratomi

If you think you name is missing, please add it (alpha order by first name)
BSD 3-Clause License

Copyright (c) 2013-2021, Kim Davies
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its
  contributors may be used to endorse or promote products derived from
  this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2008-2021 The pip developers (see AUTHORS.txt file)

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to

the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012 Georgios Verigakis <verigak@gmail.com>
#
Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.
#
THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
License

A copyright notice accompanies this license document that identifies
the copyright holders.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

1. Redistributions in source code must retain the accompanying
   copyright notice, this list of conditions, and the following
   disclaimer.

2. Redistributions in binary form must reproduce the accompanying
   copyright notice, this list of conditions, and the following
   disclaimer in the documentation and/or other materials provided
   with the distribution.

3. Names of the copyright holders must not be used to endorse or
   promote products derived from this software without prior
   written permission from the copyright holders.

4. If any files are modified, you must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

Disclaimer

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2006-2013 James Graham and other contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2011 Agendaless Consulting and Contributors.
(http://www.agendaless.com), All Rights Reserved
MIT License

Copyright (c) 2008-2020 Andrey Petrov and contributors (see CONTRIBUTORS.txt)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
==========
Contributors
==========

* Alex Grnholm
* Alice Bevan-McGregor
* Arfrever Frehtes Taifersar Arahesis
* Christophe Combelles
* Daniel Stutzbach
* Daniel Holth
* Dirley Rodrigues
* Donald Stufft
* Grigory Petrov
* Hanno Schlichting
* Jannis Leidel
* Jason R. Coombs
* Jim Fulton
* Jonathan Lange
* Justin Azoff
* Lennart Regebro
* Marc Abramowitz
* Martin von Lwis
* Noufal Ibrahim
* Pete Hollobon
* Phillip J. Eby
* Philip Jenvey
* Philip Thiem
* Reinout van Rees
* Robert Myers
* Stefan H. Holek
* Tarek Ziad
* Toshio Kuratomi

If you think you name is missing, please add it (alpha order by first name)
Copyright 2015 Eric Larson

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied.

See the License for the specific language governing permissions and
limitations under the License.
Copyright (c) Donald Stufft and individual contributors.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
   this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted"

means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");

you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS
IN THE SOFTWARE.

Copyright (c) 2008-2013 The pip developers (see AUTHORS.txt file)

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

License for Bundle of CA Root Certificates (pip/cacert.pem)
==========

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA
02110-1301

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor

has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

1.258 elfutils 0.191-4.el9

1.258.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by
the Library is deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an
Application with the Library. The particular version of the Library
with which the Combined Work was made is also called the "Linked
Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright notices during execution, include the copyright notice for the Library among these notices, as well as a reference directing the user to the copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this License, and the Corresponding Application Code in a form suitable for, and under terms that permit, the user to recombine or relink the Application with a modified version of the Linked Version to produce a modified Combined Work, in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.

1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application

Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined
library under terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it
is a work based on the Library, and explaining where to find the
accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions
of the GNU Lesser General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the
Library as you received it specifies that a certain numbered version
of the GNU Lesser General Public License "or any later version"
applies to it, you have the option
of following the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser
General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: compressme-seekable-xz
Upstream-Contact: Omar Sandoval <osandov@fb.com>

Files: *
Copyright: Meta Platforms, Inc. and affiliates.
License: GPL-2.0+
This program is free software; you can redistribute it and/or
modify it under the terms of the GNU General Public License
as published by the Free Software Foundation; either version 2
of the License, or (at your option) any later version.
.
This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.
.
On Debian systems, the complete text of the GNU General
Public License
Version 2 can be found in `/usr/share/common-licenses/GPL-2'.
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program

is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based

on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering

access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to

apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to
decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
This license applies to the eu-readelf.1 man page which was forked
from the binutils readelf version of the man page. The rest of the
documentation is provided under the license found in the top level
directory.

GNU Free Documentation License
Version 1.3, 3 November 2008

Copyright (C) 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.
<https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other
functional and useful document "free" in the sense of freedom: to
assure everyone the effective freedom to copy and redistribute it,
with or without modifying it, either commercially or noncommercially.
Secondarily, this License preserves for the author and publisher a way
to get credit for their work, while not being considered responsible
for modifications made by others.

This License
is a kind of "copyleft", which means that derivative
works of the document must themselves be free in the same sense. It
complements the GNU General Public License, which is a copyleft
license designed for free software.

We have designed this License in order to use it for manuals for free
software, because free software needs free documentation: a free
program should come with manuals providing the same freedoms that the
software does. But this License is not limited to software manuals;
it can be used for any textual work, regardless of subject matter or
whether it is published as a printed book. We recommend this License
principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that
contains a notice placed by the copyright holder saying it can be
distributed under the terms of this License. Such a notice grants a
world-wide, royalty-free license, unlimited in duration, to
use that
work under the conditions stated herein. The "Document", below,
refers to any such manual or work. Any member of the public is a
licensee, and is addressed as "you". You accept the license if you
copy, modify or distribute the work in a way requiring permission
under copyright law.

A "Modified Version" of the Document means any work containing the
Document or a portion of it, either copied verbatim, or with
modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of

the Document that deals exclusively with the relationship of the
publishers or authors of the Document to the Document's overall
subject (or to related matters) and contains nothing that could fall
directly within that overall subject. (Thus, if the Document is in
part a textbook of mathematics, a Secondary Section may not explain
any mathematics.) The relationship could be a matter of historical
connection with the subject or with related matters,
or of legal,
commercial, philosophical, ethical or political position regarding
them.

The "Invariant Sections" are certain Secondary Sections whose titles
are designated, as being those of Invariant Sections, in the notice
that says that the Document is released under this License. If a
section does not fit the above definition of Secondary then it is not
allowed to be designated as Invariant. The Document may contain zero
Invariant Sections. If the Document does not identify any Invariant
Sections then there are none.

The "Cover Texts" are certain short passages of text that are listed,
as Front-Cover Texts or Back-Cover Texts, in the notice that says that
the Document is released under this License. A Front-Cover Text may
be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy,
represented in a format whose specification is available to the
general public, that is suitable for revising the document
straightforwardly
with generic text editors or (for images composed of
pixels) generic paint programs or (for drawings) some widely available
drawing editor, and that is suitable for input to text formatters or
for automatic translation to a variety of formats suitable for input
to text formatters. A copy made in an otherwise Transparent file
format whose markup, or absence of markup, has been arranged to thwart
or discourage subsequent modification by readers is not Transparent.
An image format is not Transparent if used for any substantial amount
of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain
ASCII without markup, Texinfo input format, LaTeX input format, SGML
or XML using a publicly available DTD, and standard-conforming simple
HTML, PostScript or PDF designed for human modification. Examples of
transparent image formats include PNG, XCF and JPG. Opaque formats
include proprietary formats that
can be read and edited only by
proprietary word processors, SGML or XML for which the DTD and/or
processing tools are not generally available, and the
machine-generated HTML, PostScript or PDF produced by some word

processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

The "publisher" means any person or entity that distributes copies of the Document to the public.

A section "Entitled XYZ" means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as "Acknowledgements", "Dedications", "Endorsements", or "History".) To "Preserve the Title" of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have

printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct

from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.

B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.

C. State on the Title page the name of the publisher of the Modified Version, as the publisher.

D. Preserve all the copyright notices of the Document.

E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.

F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.

G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

H. Include an unaltered copy of this License.

I. Preserve the section Entitled "History", Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

K. For any section Entitled "Acknowledgements" or "Dedications", Preserve the Title of the section, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.

L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.

M. Delete any section Entitled "Endorsements". Such a section may not be included in the Modified Version.

N. Do not retitle any existing section to be Entitled "Endorsements" or to conflict in title with any Invariant Section.

O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties--for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that

section if known, or else a unique number.
Make the same adjustment to the section titles in the list of
Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled "History"
in the various original documents, forming one section Entitled
"History"; likewise combine any sections Entitled "Acknowledgements",
and any sections Entitled "Dedications". You must delete all sections
Entitled "Endorsements".

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other
documents released under this License, and replace the individual
copies of this License in the various documents with a single copy
that is included in the collection, provided that you follow the rules
of this License for verbatim copying of each of the documents in all
other respects.

You may extract a single document from such a collection, and
distribute it individually under this License, provided you insert a
copy of this License
into the extracted document, and follow this
License in all other respects regarding verbatim copying of that
document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate
and independent documents or works, in or on a volume of a storage or
distribution medium, is called an "aggregate" if the copyright
resulting from the compilation is not used to limit the legal rights
of the compilation's users beyond what the individual works permit.
When the Document is included in an aggregate, this License does not
apply to the other works in the aggregate which are not themselves
derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these
copies of the Document, then if the Document is less than one half of
the entire aggregate, the Document's Cover Texts may be placed on
covers that bracket the Document within the aggregate, or the
electronic equivalent of covers if the Document is in electronic
form.
Otherwise they must appear on printed covers that bracket the whole
aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may
distribute translations of the Document under the terms of section 4.
Replacing Invariant Sections with translations requires special
permission from their copyright holders, but you may include
translations of some or all Invariant Sections in addition to the
original versions of these Invariant Sections. You may include a
translation of this License, and all the license notices in the
Document, and any Warranty Disclaimers, provided that you also include
the original English version of this License and the original versions
of those notices and disclaimers. In case of a disagreement between
the translation and the original version of this License or a notice
or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements",
"Dedications", or "History", the requirement (section
4) to Preserve
its Title (section 1) will typically require changing the actual
title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense, or distribute it is void, and
will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license
from a particular copyright holder is reinstated (a) provisionally,
unless and until the copyright holder explicitly and finally
terminates your license, and (b) permanently, if the copyright holder
fails to notify you of the violation by some reasonable means prior to
60 days after the cessation.

Moreover, your license from a particular copyright holder is
reinstated permanently if the copyright holder notifies you of the
violation by some reasonable means, this is the first time you have
received notice of violation of this License (for any work) from
that
copyright holder, and you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the
licenses of parties who have received copies or rights from you under
this License. If your rights have been terminated and not permanently

reinstated, receipt of a copy of some or all of the same material does not give you any rights to use it.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See https://www.gnu.org/licenses/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of
that specified version or
of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation. If the Document specifies that a proxy can decide which future versions of this License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Document.

11. RELICENSING

"Massive Multiauthor Collaboration Site" (or "MMC Site") means any World Wide Web server that publishes copyrightable works and also provides prominent facilities for anybody to edit those works. A public wiki that anybody can edit is an example of such a server. A "Massive Multiauthor Collaboration" (or "MMC") contained in the site means any set of copyrightable works thus published on the MMC site.

"CC-BY-SA" means the Creative Commons Attribution-Share Alike 3.0

license published by Creative Commons Corporation, a not-for-profit corporation with a principal place of business in San Francisco, California, as well as future copyleft versions of that license published by that same organization.

"Incorporate" means to publish or republish a Document, in whole or in part, as part of another Document.

An MMC is "eligible for relicensing" if it is licensed under this License, and if all works that were first published under this License somewhere other than this MMC, and subsequently incorporated in whole or

in part into the MMC, (1) had no cover texts or invariant sections, and
(2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site
under CC-BY-SA on the same site at any time before August 1, 2009,
provided the MMC is eligible for relicensing.

ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of
the
License in the document and put the following copyright and
license notices just after the title page:

> Copyright (c) YEAR YOUR NAME.
> Permission is granted to copy, distribute and/or modify this document
> under the terms of the GNU Free Documentation License, Version 1.3
> or any later version published by the Free Software Foundation;
> with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts.
> A copy of the license is included in the section entitled "GNU
> Free Documentation License".

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts,
replace the "with...Texts." line with this:

> with the Invariant Sections being LIST THEIR TITLES, with the
> Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.

If you have Invariant Sections without Cover Texts, or some other
combination of the three, merge those two alternatives to suit the
situation.

If your document contains nontrivial examples of program code,
we
recommend releasing these examples in parallel under your choice of
free software license, such as the GNU General Public License,
to permit their use in free software.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for

software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those

products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is

not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of

technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution

medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the

Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of

rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this

License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS

THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.259 libbpf 1.4.0-1.el9

1.259.1 Available under license :

Valid-License-Identifier: BSD-2-Clause
SPDX-URL: https://spdx.org/licenses/BSD-2-Clause.html
Usage-Guide:
To use the BSD 2-clause "Simplified" License put the following SPDX
tag/value pair into a comment according to the placement guidelines in
the licensing rules documentation:
SPDX-License-Identifier: BSD-2-Clause
License-Text:

Copyright (c) 2015 The Libbpf Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
LGPL-2.1 OR BSD-2-Clause

1.260 findutils 4.8.0-7.el9

1.260.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for

them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your

rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the

Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,

or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you

received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor

version. For
purposes of this definition, "control" includes the right to grant
patent sublicenses in a manner consistent with the requirements of
this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free
patent license under the contributor's essential patent claims, to
make, use, sell, offer for sale, import and otherwise run, modify and
propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express
agreement or commitment, however denominated, not to enforce a patent
(such as an express permission to practice a patent or covenant not to
sue for patent infringement). To "grant" such a patent license to a
party means to make such an agreement or commitment not to enforce a
patent against the party.

If you convey a covered work, knowingly relying on a patent license,
and the Corresponding Source of the work is not available for anyone
to copy, free of charge and under the terms of this
License, through a
publicly available network server or other readily accessible means,
then you must either (1) cause the Corresponding Source to be so
available, or (2) arrange to deprive yourself of the benefit of the
patent license for this particular work, or (3) arrange, in a manner
consistent with the requirements of this License, to extend the patent
license to downstream recipients. "Knowingly relying" means you have
actual knowledge that, but for the patent license, your conveying the
covered work in a country, or your recipient's use of the covered work
in a country, would infringe one or more identifiable patents in that
country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or
arrangement, you convey, or propagate by procuring conveyance of, a
covered work, and grant a patent license to some of the parties
receiving the covered work authorizing them to use, propagate, modify
or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying

the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public
License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you

have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the

Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,

if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.

1.261 libuser 0.63-15.el9

1.261.1 Available under license :

NR START END SECTORS SIZE NAME UUID
1 32 7679 7648 3.7M 8f8378c0-01
2 7680 16383 8704 4.3M 8f8378c0-02
5 7936 12799 4864 2.4M
6 12544 16127 3584 1.8M
7zXZF!t/5]oK3&K6Y^
CP#vMOoYL?6]2z({CLYj0
LFIU<>Q&}7!C}e6]]e`M,J}.dE,4hVmp
RsTk!]r!Quo1OE|FfP+A}XBT9 \<
0<P9{>s\36R)m.S(bCb7S<DP(`ka")^oy`r)7I%tU6@AS.SMoOfF3whA!!WIMcK')e/eJ1F
g\BI'W|j>jf_{JPp]oMd3rfQ+}_3<%<6jx{)11D5eg;NtD+~R]w[xiue@F#Em0hu;,,x{R7V2!Vq~AG{EX -
"0h*5x)*x\n)#l$*w!:499X1il:"P+=22cmr3J}/0o9nlB?\N&(q=$pPc!ab,6f&v/RS>O./OW[INy(BM~]~uf$Ng|"_W[0;
OXy[aB*"/_U~fQHO(3[b%o)+lq#+_d<QdLd=$1p!h0h6nfN=I+GNRk gKOL3\N3"uGxflC
zCTJtjSN:$gE11QQ$7*5++V=4Xt9V?r3_Vd2o8h"F8~qM,ZI6=Qgtw|11np#_(+?}zp(;H!E2Nz'WW_WmA,
FSYzE*-exTWFt#|
rd>k\R>aXrvXS~"9=U$puaoqQb;\k,RD5(fu&#
?}w!nz>SbvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG
1%QsS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[ BS=)d ;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[
BS=)d ;*l;._>KfB}&ea)F~H#@|DExb
Fw=|
;}8SPT"_p;27 *,D-sS|11np#_(~*'uM%S61opMG`'B=gD7-`rFTvDY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXx+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?f_{+T@Uo)2fgYZ

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts

as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original

author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU

operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for

writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be

reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not

compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one

of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally

accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and

"any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the

ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to

address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest

possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they

know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A

"Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section

4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,

procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has
been installed in
ROM).

The requirement to provide Installation Information does not include a
requirement to continue to provide support service, warranty, or updates
for a work that has been modified or installed by the recipient, or for
the User Product in which it has been modified or installed. Access to a
network may be denied when the modification itself materially and
adversely affects the operation of the network or violates the rules and
protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided,
in accord with this section must be in a format that is publicly
documented (and with an implementation available to the public in
source code form), and must require no special password or key for
unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this
License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of

it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent

(such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different

permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively

state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions

are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
This library is free software; you can redistribute it and/or
modify it under the terms of the Modified BSD License.

The complete text of the license is available in the
../Documentation/licenses/COPYING.BSD-3-Clause file.
Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later
version.

The complete text of the license is available in the
../Documentation/licenses/COPYING.LGPL-2.1-or-later file.
/*
* Copyright (c) 1989 The Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
* This product includes software developed by the University of
* California, Berkeley and its contributors.
* 4. Neither the name of the University nor the names of its contributors
*   may be used to endorse or promote products derived from this software
*
 without specific prior written permission.
*
* THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/
7zXZF!t/]o."w[7gp<G
H:Oed 18uyMQ9|FO6
87I8.mhGl^eb_X/UQKuB
)Cdk!B_M\/tw|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxYm+sS|11np#_(~*'uM%S61opMG`'\YfRXvY[R+t[BS=)d
;*l;._>KfBqxY(F|0.Ve%S61opMG`'\YfRXvY[R+t[BS=)d ;*l;._>KfBqxY(F|0.Ve%Q?

sS|11np#_(~'u7gi}[IgYZ

1.262 rpm 4.16.1.3-34.el9

1.262.1 Available under license :

RPM is covered under two separate licenses.

The entire code base may be distributed under the terms of the GNU General
Public License (GPL), which appears immediately below. Alternatively,
all of the source code in the lib and rpmio subdirectories of the RPM source
code distribution as well as any code derived from that code may instead be
distributed under the GNU Library General Public License (LGPL), at the
choice of the distributor. The complete text of the LGPL appears
at the bottom of this file.

This alternative is provided to enable applications to be linked against
the RPM library (commonly called librpm) without forcing such applications
to be distributed under the GPL.

Any questions regarding the licensing of RPM should be addressed to
rpm-maint@lists.rpm.org

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you

have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive
source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that
there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The
"Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to

control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided
under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent

license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy
both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be
a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that
version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY
WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w'
and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

GNU LIBRARY GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1991
Free Software Foundation, Inc.
675 Mass Ave, Cambridge, MA 02139, USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some
specially designated Free Software Foundation software, and to any
other libraries whose authors decide to use it. You can use it for
your libraries, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the
freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if
you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link a program with the library, you must provide
complete object files to the recipients so that they can relink them
with the library, after making changes to the library and recompiling
it. And you must show them these terms so they know
their rights.

Our method of protecting your rights has two steps: (1) copyright

the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this

will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

GNU LIBRARY GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root
function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you

distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with
a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the
Library (or a portion or
derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the

Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However,
linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work.
(Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must
include the
copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work

based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a
version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing

and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either

version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.263 libgcrypt 1.10.0-11.el9

1.263.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to

your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed

under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this

License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based
on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or
executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free

Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may

consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Additional license notices for Libgcrypt. -*- org -*-

This file contains the copying permission notices for various files in
the Libgcrypt distribution which are not covered by the GNU Lesser
General Public License (LGPL) or the GNU General Public License (GPL).

These notices all require that a copy of the notice be included
in the accompanying documentation and be distributed with binary
distributions of the code, so be sure to include this file along
with any binary distributions derived from the GNU C Library.

* BSD_3Clause

 For files:
 - cipher/sha256-avx-amd64.S
 - cipher/sha256-avx2-bmi2-amd64.S
 - cipher/sha256-ssse3-amd64.S
 - cipher/sha512-avx-amd64.S
 - cipher/sha512-avx2-bmi2-amd64.S
 - cipher/sha512-ssse3-amd64.S
 - cipher/sha512-ssse3-i386.c

#+begin_quote
 Copyright (c) 2012, Intel Corporation

 All rights reserved.

 Redistribution and use in source and binary forms, with or without
 modification, are permitted provided that the following
 conditions are
 met:

 * Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.

 * Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the
   distribution.

 * Neither the name of the Intel Corporation nor the names of its
   contributors may be used to endorse or promote products derived from
   this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY INTEL CORPORATION "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL CORPORATION OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
#+end_quote

For files:
- random/jitterentropy-base.c
- random/jitterentropy-gcd.c
- random/jitterentropy-gcd.h
- random/jitterentropy-health.c
- random/jitterentropy-health.h
- random/jitterentropy-noise.c
- random/jitterentropy-noise.h
- random/jitterentropy-sha3.c
- random/jitterentropy-sha3.h
- random/jitterentropy-timer.c
- random/jitterentropy-timer.h
- random/jitterentropy.h
- random/rndjent.c (plus common Libgcrypt copyright holders)

#+begin_quote
Copyright (C) 2017 - 2021, Stephan Mueller <smueller@chronox.de>

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that
the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, and the entire permission notice in its entirety,
including the disclaimer of warranties.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. The name of the author may not be used to endorse or promote
products derived from this software without specific prior
written permission.

ALTERNATIVELY, this product may be distributed under the terms of
the GNU General Public License, in which case the provisions of the GPL2

are required INSTEAD OF the above restrictions. (This clause is
necessary due to a potential bad interaction between the GPL and
the restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT
 NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF
WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF NOT ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.
#+end_quote

 For files:
 - cipher/cipher-gcm-ppc.c

#+begin_quote
Copyright (c) 2006, CRYPTOGAMS by <appro@openssl.org>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

    * Redistributions of source code must retain copyright notices,
      this list of conditions and the following disclaimer.

    * Redistributions in binary form must reproduce the above
      copyright notice, this list of conditions and the following
      disclaimer in the documentation and/or other materials
      provided with the distribution.

    * Neither the name of the CRYPTOGAMS nor the names of its
      copyright holder and contributors may be used to endorse or
      promote products derived from this software without specific
      prior written permission.

ALTERNATIVELY, provided that this notice is retained in full, this
product may be distributed under the terms of the GNU General Public
License (GPL), in which case the provisions of the GPL apply INSTEAD OF
those given above.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
#+end_quote

* X License

For files:
- install.sh

#+begin_quote
Copyright (C) 1994 X Consortium

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to
deal in the Software without restriction, including without limitation the
rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
sell copies of the Software, and to permit
persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
X CONSORTIUM BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNEC-
TION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of the X Consortium shall not
be used in advertising or otherwise to promote the sale, use or other deal-
ings in this Software without prior written authorization from the X Consor-
tium.
#+end_quote

* Public domain

For files:
- cipher/arcfour-amd64.S

#+begin_quote
Author: Marc Bevand <bevand_m (at) epita.fr>
Licence: I hereby disclaim the copyright on this code and place it
in the public domain.
#+end_quote

* OCB license 1

For files:
- cipher/cipher-ocb.c

#+begin_quote
OCB is covered by several patents but may be used freely by most
software. See http://web.cs.ucdavis.edu/~rogaway/ocb/license.htm .
In particular license 1 is suitable for Libgcrypt: See
http://web.cs.ucdavis.edu/~rogaway/ocb/license1.pdf for the full
license document; it basically says:

License 1 License for Open-Source Software Implementations of OCB
(Jan 9, 2013)

Under this license, you are authorized to make, use, and
distribute open-source software implementations of OCB. This
license terminates for you if you sue someone over their
open-source software implementation of OCB claiming that you have
a patent covering their implementation.

License for Open Source Software Implementations of OCB
January
9, 2013

1 Definitions

1.1 Licensor means Phillip Rogaway.

1.2 Licensed Patents means any patent that claims priority to United
States Patent Application No. 09/918,615 entitled Method and Apparatus
for Facilitating Efficient Authenticated Encryption, and any utility,
divisional, provisional, continuation, continuations-in-part, reexamination,
reissue, or foreign counterpart patents that may issue with respect to the
aforesaid patent application. This includes, but is not limited to, United
States Patent No. 7,046,802; United States Patent No. 7,200,227; United
States Patent No. 7,949,129; United States Patent No. 8,321,675 ; and any

patent that issues out of United States Patent Application No. 13/669,114.

1.3 Use means any practice of any invention claimed in the Licensed Patents.

1.4 Software Implementation means any practice of any invention claimed in the Licensed Patents that takes the form of software executing on a user-programmable, general-purpose computer or that takes the form of a computer-readable medium storing such software. Software Implementation does not include, for example, application-specific integrated circuits (ASICs), field-programmable gate arrays (FPGAs), embedded systems, or IP cores.

1.5 Open Source Software means software whose source code is published and made available for inspection and use by anyone because either (a) the source code is subject to a license that permits recipients to copy, modify, and distribute the source code without payment of fees or royalties, or (b) the source code is in the public domain, including code released for public use through a CC0 waiver. All licenses certified by the Open Source Initiative at opensource.org as of January 9, 2013 and all Creative Commons licenses identified on the creativecommons.org website as of January 9, 2013, including the Public License Fallback of the CC0 waiver, satisfy these requirements for the purposes of this license.

1.6 Open Source Software Implementation means a Software Implementation in which the software implicating the Licensed Patents is Open Source Software. Open Source Software Implementation does not include any Software Implementation in which the software implicating the Licensed Patents is combined, so as to form a larger program, with software that is not Open Source Software.

2 License Grant

2.1 License. Subject to your compliance with the term s of this license, including the restriction set forth in Section 2.2, Licensor hereby grants to you a perpetual, worldwide, non-exclusive, non-transferable, non-sublicenseable, no-charge, royalty-free, irrevocable license to practice any invention claimed in the Licensed Patents in any Open Source Software Implementation.

2.2 Restriction. If you or your affiliates institute patent litigation (including, but not limited to, a cross-claim or counterclaim in a lawsuit) against any entity alleging that any Use authorized by this license infringes another patent, then any rights granted to you under this license automatically terminate as of the date such litigation is filed.

3 Disclaimer

YOUR USE OF THE LICENSED PATENTS IS AT YOUR OWN RISK AND UNLESS REQUIRED BY APPLICABLE LAW, LICENSOR MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE LICENSED PATENTS OR ANY PRODUCT EMBODYING ANY LICENSED PATENT, EXPRESS OR IMPLIED, STATUT ORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTIBILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. IN NO EVENT WILL LICENSOR BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM OR RELATED TO ANY USE OF THE LICENSED PATENTS, INCLUDING, WITHOUT LIMITATION, DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES PRIOR TO SUCH AN OCCURRENCE.
#+end_quote

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.
^L
Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order
to run.
^L
GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data

prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under
the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can
be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the
ordinary GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the

ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.
^L
 Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

 This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

 4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete
 corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

 If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

 5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

 However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work
 that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

 When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

 If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object

file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute
the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.
^L
6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a)
Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will
operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least

three years, to give the same user the materials specified in
Subsection 6a, above, for a charge no more than the cost of
performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.
^L
7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined
with any other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your

rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited
by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.
^L
11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they
do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution
system which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed

through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.
^L
14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR

PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED
ABOVE, BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

^L

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file
to most
effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public

License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston,
MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.264 virt-what 1.25-10.el9

1.264.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it

if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component

itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals

of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.265 dnf-plugins-core 4.3.0-16.el9

1.265.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we

want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable

source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the

Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY

YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.266 kmod 28-10.el9

1.266.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest

you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients
all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and

is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits
its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library

with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to
a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed
under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever
changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under

the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any

particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of

all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public

License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed

to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,

either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to

control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent

license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w'
and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
LGPL
LGPL

LGPL

1.267 python3-subscription-manager-rhsm 1.29.42-1.el9

1.267.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages

are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under

copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into
another language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,
provided that
you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a

table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all

subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the

object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of this License. Also, you must do one
of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above

specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or

distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,

BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and

(2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which
contains
a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License

along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole
or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered
independent and separate works in
themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of

a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License.

However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that

system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE

PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this

when it starts in an interactive mode:

```
  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.
```

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

```
 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License.
GNU LGPLv2.1
Format: https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/
Upstream-Name: subscription-manager
Source: <url://example.com>

Files: *
Copyright: <years> <put author's name and email here>
        <years> <likewise for another author>
License: <special license>
<Put the license of the package here indented by 1 space>
<This follows the format of Description: lines in control file>
.
<Including paragraphs>

If you want to use GPL v2 or later for the /debian/* files use
the following clauses, or change it to suit. Delete these two lines
Files: debian/*
Copyright: 2017 Matthias Dellweg <dellweg@atix.de>
License: GPL-2+
This package is free software; you can redistribute it and/or modify

it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
.
This package is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even
 the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
.
You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>
.
On Debian systems, the complete text of the GNU General
Public License version 2 can be found in "/usr/share/common-licenses/GPL-2".

Please also look if there are files or directories which have a
different copyright/license attached and list them here.
Please avoid picking licenses with terms that are more restrictive than the
packaged work, as it may make Debian's contributions unacceptable upstream.

1.268 libsolv 0.7.24-3.el9

1.268.1 Available under license :

All files for the Windows compatibility layer are taken from musl,
except for unistd.h and fmemopen.c.

MUSL

musl as a whole is licensed under the following standard MIT license:

Copyright 2005-2014 Rich Felker, et al.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

TRE (tre.h, tre-mem.c)

The TRE regular expression implementation (reg* and tre*) is Copyright 2001-2008 Ville Laurikari and licensed under a 2-clause BSD license (license text in the source files). The included version has been heavily modified by Rich Felker in 2012, in the interests of size, simplicity, and namespace cleanliness.

This is the license, copyright notice, and disclaimer for TRE, a regex matching package (library and tools) with support for approximate matching.

Copyright (c) 2001-2009 Ville Laurikari <vl@iki.fi>
All
rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDER AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA,
OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE

OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

3. Neither the name of Novell nor the names of its contributors may
  be used to endorse or promote products derived from this software
  without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
 DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF SUCH DAMAGE.

1.269 gdb-gdbserver 14.2-3.el9

1.269.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed

to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand

ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices"

to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users

beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for

the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the

violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for

sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a

covered work, and grant a patent license to some of the parties
receiving the covered work authorizing them to use, propagate, modify
or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the

combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF

DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short

notice like this when it starts in an interactive mode:

```
  <program>  Copyright (C) <year>  <name of author>
  This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

 You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

 The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
 do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.

1.270 systemd-rpm-macros 252-46.el9_5.2

1.270.1 Available under license :

systemd Project Licensing

Main License

The systemd project uses single-line references to Unique License Identifiers as
defined by the Linux Foundation's SPDX project (https://spdx.org/). The line in
each individual source file identifies the license applicable to that file.

The current set of valid, predefined SPDX identifiers can be found on the SPDX
License List at https://spdx.org/licenses/.

The 'LICENSES/' directory contains all the licenses used by the sources included in
the systemd project source tree.

Unless otherwise noted, the systemd project sources are licensed under the terms
and conditions of the **GNU Lesser General Public License v2.1 or later**.

New sources that cannot be distributed under LGPL-2.1-or-later will no longer
be accepted for inclusion in the systemd project to maintain license uniformity.

Other Licenses

The following exceptions apply:

* some udev sources under src/udev/ are licensed under **GPL-2.0-or-later**, so the
  udev binaries as a
 whole are also distributed under **GPL-2.0-or-later**.
* the header files contained in src/basic/linux/ and src/shared/linux/ are copied
  verbatim from the Linux kernel source tree and are licensed under **GPL-2.0 WITH
  Linux-syscall-note** and are used within the scope of the Linux-syscall-note
  exception provisions
* the src/shared/initreq.h header is licensed under original license,
  LGPL-2.0-or-later.
* the src/shared/linux/bpf_insn.h header is copied from the Linux kernel
  source tree and is licensed under either **BSD-2-Clause** or **GPL-2.0-only**,
  and thus is included in the systemd build under the BSD-2-Clause license.
* The src/basic/linux/wireguard.h header is copied from the Linux kernel
  source tree and is licensed under either **MIT** or **GPL-2.0 WITH Linux-syscall-note**,
  and thus is included in the systemd build under the MIT license.
* the following sources are licensed under the **MIT** license (in case of our
  scripts, to facilitate copying
 and reuse of those helpers to other projects):
  - hwdb.d/parse_hwdb.py
  - src/basic/linux/batman_adv.h
  - src/basic/sparse-endian.h
  - tools/catalog-report.py
* the following sources are licensed under the **CC0-1.0** license:
  - src/basic/siphash24.c
  - src/basic/siphash24.h
  - tools/check-includes.pl
 * the following sources are licensed under the **MIT-0** license:
  - all examples under man/
  - src/systemctl/systemd-sysv-install.SKELETON
  - config files and examples under /network
* the following sources are under **Public Domain** (LicenseRef-murmurhash2-public-domain):
  - src/basic/MurmurHash2.c
  - src/basic/MurmurHash2.h
* the following sources are under **Public Domain** (LicenseRef-lookup3-public-domain):
  - src/libsystemd/sd-journal/lookup3.c
  - src/libsystemd/sd-journal/lookup3.h
* the tools/chromiumos/gen_autosuspend_rules.py script is licensed under the
  BSD-3-Clause license.
* Heebo fonts under docs/fonts/ are licensed under the
 SIL Open Font License 1.1,
* any files under test/ without an explicit license we assume non-copyrightable
  (eg: computer-generated fuzzer data)

OpenSSL Notes

Note that building the systemd project with OpenSSL does not affect the libsystemd.so
shared library, which is not linked with the OpenSSL library.
MurmurHash2 was written by Austin Appleby, and is placed in the public
domain. The author hereby disclaims copyright to this source code.
GNU LIBRARY GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

When we speak of free software, we are referring to freedom, not price. Our General Public
Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it.
And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that

what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most
GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public
License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library".
The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A

"work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you

distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work
under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections
1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because
it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether

it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work
is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you
must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may
place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate

distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted
in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify
a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the
public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public

License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

one line to give the library's name and an idea of what it does.
Copyright (C) year name of author

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in
the library `Frob' (a library for tweaking knobs) written
by James Random Hacker.

signature of Ty Coon, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
// Copyright 2014 The Chromium OS Authors. All rights reserved.
//
// Redistribution and use in source and binary forms, with or without
// modification, are permitted provided that the following conditions are
// met:
//
//   * Redistributions of source code must retain the above copyright
// notice, this list of conditions and the following disclaimer.
//   * Redistributions in binary form must reproduce the above
// copyright notice, this list of conditions and the following disclaimer
// in the documentation and/or other materials provided with the
// distribution.
//   * Neither the name of Google Inc. nor the names of its
// contributors may be used to endorse or promote products derived from

// this software without specific prior written permission.
//
// THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
// "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
// LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
// A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
// OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
// SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
// LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
// DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
// THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
// (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
// OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
lookup3.c, by Bob Jenkins, May 2006, Public Domain.
Copyright (c) <dates>, <Copyright Holder> (<URL|email>),
with Reserved Font Name <Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>),
with Reserved Font Name <additional Reserved Font Name>.
Copyright (c) <dates>, <additional Copyright Holder> (<URL|email>).

This Font Software is licensed under the SIL Open Font License, Version 1.1.
This license is copied below, and is also available with a FAQ at:
http://scripts.sil.org/OFL

SIL OPEN FONT LICENSE Version 1.1 - 26 February 2007

PREAMBLE
The goals of the Open Font License (OFL) are to stimulate worldwide
development of collaborative font projects, to support the font creation
efforts of academic and linguistic communities, and to provide a free and
open framework in which fonts may be shared and improved in partnership
with others.

The OFL allows the licensed fonts to be used, studied,
modified and
redistributed freely as long as they are not sold by themselves. The
fonts, including any derivative works, can be bundled, embedded,
redistributed and/or sold with any software provided that any reserved
names are not used by derivative works. The fonts and derivatives,
however, cannot be released under any other type of license. The
requirement for fonts to remain under this license does not apply
to any document created using the fonts or their derivatives.

DEFINITIONS

"Font Software" refers to the set of files released by the Copyright Holder(s) under this license and clearly marked as such. This may include source files, build scripts and documentation.

"Reserved Font Name" refers to any names specified as such after the copyright statement(s).

"Original Version" refers to the collection of Font Software components as distributed by the Copyright Holder(s).

"Modified Version" refers to any derivative made by adding to, deleting, or substituting -- in part
or in whole -- any of the components of the
Original Version, by changing formats or by porting the Font Software to a new environment.

"Author" refers to any designer, engineer, programmer, technical writer or other person who contributed to the Font Software.

PERMISSION & CONDITIONS
Permission is hereby granted, free of charge, to any person obtaining a copy of the Font Software, to use, study, copy, merge, embed, modify, redistribute, and sell modified and unmodified copies of the Font Software, subject to the following conditions:

1) Neither the Font Software nor any of its individual components, in Original or Modified Versions, may be sold by itself.

2) Original or Modified Versions of the Font Software may be bundled, redistributed and/or sold with any software, provided that each copy contains the above copyright notice and this license. These can be included either as stand-alone text files, human-readable headers or in the appropriate machine-readable metadata fields within
text or
binary files as long as those fields can be easily viewed by the user.

3) No Modified Version of the Font Software may use the Reserved Font Name(s) unless explicit written permission is granted by the corresponding Copyright Holder. This restriction only applies to the primary font name as presented to the users.

4) The name(s) of the Copyright Holder(s) or the Author(s) of the Font Software shall not be used to promote, endorse or advertise any Modified Version, except to acknowledge the contribution(s) of the Copyright Holder(s) and the Author(s) or with their explicit written permission.

5) The Font Software, modified or unmodified, in part or in whole,

must be distributed entirely under this license, and must not be
distributed under any other license. The requirement for fonts to
remain under this license does not apply to any document created
using the Font Software.

TERMINATION
This license becomes null and void if any of the above conditions are
not met.

DISCLAIMER
THE
FONT SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF COPYRIGHT, PATENT, TRADEMARK, OR OTHER RIGHT. IN NO EVENT SHALL THE COPYRIGHT HOLDER BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, INCLUDING ANY GENERAL, SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF THE USE OR INABILITY TO USE THE FONT SOFTWARE OR FROM OTHER DEALINGS IN THE FONT SOFTWARE.

NOTE! This copyright does *not* cover user programs that use kernel
services by normal system calls - this is merely considered normal use
of the kernel, and does *not* fall under the heading of "derived work".
Also note that the GPL below is copyrighted by the Free Software
Foundation, but the instance of code that it refers to (the Linux
kernel) is copyrighted by me and others who actually wrote it.

Also note that the only valid version of the GPL as far as the kernel
is concerned is _this_ particular version of the license (ie v2, not
v2.2 or v3.x or whatever), unless explicitly otherwise stated.

Linus Torvalds
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to

using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which

contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies
of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in
whole
or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide

a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or

executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number

of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the License,
or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License along
  with this program; if not, write to the Free Software Foundation, Inc.,
  51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w'
 and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.
MIT License

Copyright (c) <year> <copyright holders>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) <year> <owner> All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT No Attribution

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Creative Commons Legal Code

CC0 1.0 Universal

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS DOCUMENT DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM THE USE OF THIS DOCUMENT OR THE INFORMATION OR WORKS PROVIDED HEREUNDER.

Statement of Purpose

The laws of most jurisdictions throughout the world automatically confer exclusive Copyright and Related Rights (defined below) upon the creator and subsequent owner(s) (each and all, an "owner") of an original work of authorship and/or a database (each, a "Work").

Certain owners wish to permanently relinquish those rights to a Work for the purpose of contributing to a commons of creative, cultural and scientific works ("Commons")
that the public can reliably and without fear
of later claims of infringement build upon, modify, incorporate in other works, reuse and redistribute as freely as possible in any form whatsoever and for any purposes, including without limitation commercial purposes. These owners may contribute to the Commons to promote the ideal of a free culture and the further production of creative, cultural and scientific works, or to gain reputation or greater distribution for their Work in part through the use and efforts of others.

For these and/or other purposes and motivations, and without any expectation of additional consideration or compensation, the person associating CC0 with a Work (the "Affirmer"), to the extent that he or she is an owner of Copyright and Related Rights in the Work, voluntarily elects to apply CC0 to the Work and publicly distribute the Work under its

terms, with knowledge of his or her Copyright and Related Rights in the Work and the meaning and intended legal
effect of CC0 on those rights.

1. Copyright and Related Rights. A Work made available under CC0 may be protected by copyright and related or neighboring rights ("Copyright and Related Rights"). Copyright and Related Rights include, but are not limited to, the following:

i. the right to reproduce, adapt, distribute, perform, display, communicate, and translate a Work;
ii. moral rights retained by the original author(s) and/or performer(s);
iii. publicity and privacy rights pertaining to a person's image or likeness depicted in a Work;
iv. rights protecting against unfair competition in regards to a Work, subject to the limitations in paragraph 4(a), below;
v. rights protecting the extraction, dissemination, use and reuse of data in a Work;
vi. database rights (such as those arising under Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, and under any national implementation

thereof, including any amended or successor version of such directive); and
vii. other similar, equivalent or corresponding rights throughout the world based on applicable law or treaty, and any national implementations thereof.

2. Waiver. To the greatest extent permitted by, but not in contravention of, applicable law, Affirmer hereby overtly, fully, permanently, irrevocably and unconditionally waives, abandons, and surrenders all of Affirmer's Copyright and Related Rights and associated claims and causes of action, whether now known or unknown (including existing as well as future claims and causes of action), in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable law or treaty (including future time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "Waiver"). Affirmer makes the
Waiver for the benefit of each
member of the public at large and to the detriment of Affirmer's heirs and successors, fully intending that such Waiver shall not be subject to revocation, rescission, cancellation, termination, or any other legal or equitable action to disrupt the quiet enjoyment of the Work by the public as contemplated by Affirmer's express Statement of Purpose.

3. Public License Fallback. Should any part of the Waiver for any reason be judged legally invalid or ineffective under applicable law, then the

Waiver shall be preserved to the maximum extent permitted taking into account Affirmer's express Statement of Purpose. In addition, to the extent the Waiver is so judged Affirmer hereby grants to each affected person a royalty-free, non transferable, non sublicensable, non exclusive, irrevocable and unconditional license to exercise Affirmer's Copyright and Related Rights in the Work (i) in all territories worldwide, (ii) for the maximum duration provided by applicable
law or treaty (including future
time extensions), (iii) in any current or future medium and for any number of copies, and (iv) for any purpose whatsoever, including without limitation commercial, advertising or promotional purposes (the "License"). The License shall be deemed effective as of the date CC0 was applied by Affirmer to the Work. Should any part of the License for any reason be judged legally invalid or ineffective under applicable law, such partial invalidity or ineffectiveness shall not invalidate the remainder of the License, and in such case Affirmer hereby affirms that he or she will not (i) exercise any of his or her remaining Copyright and Related Rights in the Work or (ii) assert any associated claims and causes of action with respect to the Work, in either case contrary to Affirmer's express Statement of Purpose.

4. Limitations and Disclaimers.

a. No trademark or patent rights held by Affirmer are waived, abandoned, surrendered, licensed or otherwise affected
by this document.
b. Affirmer offers the Work as-is and makes no representations or warranties of any kind concerning the Work, express, implied, statutory or otherwise, including without limitation warranties of title, merchantability, fitness for a particular purpose, non infringement, or the absence of latent or other defects, accuracy, or the present or absence of errors, whether or not discoverable, all to the greatest extent permissible under applicable law.
c. Affirmer disclaims responsibility for clearing rights of other persons that may apply to the Work or any use thereof, including without limitation any person's Copyright and Related Rights in the Work. Further, Affirmer disclaims responsibility for obtaining any necessary consents, permissions or other rights required for any use of the Work.
d. Affirmer understands and acknowledges that Creative Commons is not a party to this document and has no duty or obligation with
respect to
this CC0 or use of the Work.

1.271 libdnf 0.69.0-12.el9

1.271.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling

it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be

allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for

making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form

under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work

under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for

reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if
you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if

written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH

DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.272 berkeley-db 5.3.28-54.el9

1.272.1 Available under license :

Copyright (c) 1995, 1996
The President and Fellows of Harvard University. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Neither the name of the University nor the names of its contributors may be
  used to endorse or promote products derived from this software without
  specific prior written permission.

THIS SOFTWARE IS PROVIDED BY HARVARD AND ITS CONTRIBUTORS ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
  IN NO EVENT SHALL HARVARD OR ITS CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 1990, 2011 Oracle and/or its affiliates. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Redistributions in any form must be accompanied by information on how to
  obtain complete source code for the DB software and any accompanying

software that uses the DB software. The source code must either be included in the distribution or be available for no more than the cost of distribution plus a nominal fee, and must be freely redistributable under reasonable conditions. For an executable file, complete source code means the source code for all modules it contains. It does not include source code for modules or files that typically accompany the major components of the operating system on which the executable file runs.

THIS SOFTWARE IS PROVIDED BY ORACLE "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT, ARE DISCLAIMED. IN NO EVENT SHALL ORACLE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

ASM: a very small and fast Java bytecode manipulation framework
Copyright (c) 2000-2005 INRIA, France Telecom
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holders nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

COMMON DEVELOPMENT AND DISTRIBUTION LICENSE (CDDL) Version 1.0

1. Definitions.

1.1. "Contributor" means each individual or entity that creates or contributes to the creation of Modifications.

1.2. "Contributor Version" means the combination of the Original Software, prior Modifications used by a Contributor (if any), and the Modifications made by that particular Contributor.

1.3. "Covered Software" means (a) the Original Software, or (b) Modifications, or (c) the combination of files containing Original Software with files containing Modifications, in each case including portions thereof.

1.4. "Executable" means the Covered Software in any form other than Source Code.

1.5. "Initial Developer" means the individual or entity that first makes Original Software available under this License.

1.6. "Larger Work" means a work which combines Covered Software or portions thereof with code not governed by the terms of this License.

1.7. "License" means this document.

1.8. "Licensable" means
having the right to grant, to the maximum extent
possible, whether at the time of the initial grant or subsequently acquired, any and all of the rights conveyed herein.

1.9. "Modifications" means the Source Code and Executable form of any of the following:

A. Any file that results from an addition to, deletion from or modification of the contents of a file containing Original Software or previous Modifications;

B. Any new file that contains any part of the Original Software or previous Modification; or

C. Any new file that is contributed or otherwise made available under the terms of this License.

1.10. "Original Software" means the Source Code and Executable form of computer software code that is originally released under this License.

1.11. "Patent Claims" means any patent claim(s), now owned or hereafter

acquired, including without limitation, method, process, and apparatus claims, in any patent Licensable by grantor.

1.12. "Source Code" means (a) the common form of computer software code in which modifications are made and (b) associated documentation included in or with such code.

1.13. "You" (or "Your") means an individual or a legal entity exercising rights under, and complying with all of the terms of, this License. For legal entities, "You" includes any entity which controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants.

2.1. The Initial Developer Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, the Initial Developer hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Initial Developer, to use, reproduce, modify, display, perform, sublicense and distribute the Original Software (or portions thereof), with or without Modifications, and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using or selling of Original Software, to make, have made, use, practice, sell, and offer for sale, and/or otherwise dispose of the Original Software (or portions thereof).

(c) The licenses granted in Sections 2.1(a) and (b) are effective on the date Initial Developer first distributes or otherwise makes the Original Software available to a third party under the terms of this License.

(d) Notwithstanding Section 2.1(b) above, no patent license is granted: (1) for code that You delete from the Original Software, or (2) for infringements caused by: (i) the modification of the Original Software, or (ii) the combination of the Original Software with other software or devices.

2.2. Contributor Grant.

Conditioned upon Your compliance with Section 3.1 below and subject to third party intellectual property claims, each Contributor hereby grants You a

world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by Contributor to use, reproduce, modify, display, perform, sublicense and distribute the Modifications created by such Contributor (or portions thereof), either on an unmodified basis, with other Modifications, as Covered Software and/or as part of a Larger Work; and

(b) under Patent Claims infringed by the making, using, or selling of Modifications made by that Contributor either alone and/or in combination with its Contributor Version (or portions of such combination), to make, use, sell, offer for sale, have made, and/or otherwise dispose of: (1) Modifications made by that Contributor (or portions thereof); and (2) the combination of Modifications made by that Contributor with its Contributor Version (or portions of such combination).

(c)
The licenses granted in Sections 2.2(a) and 2.2(b) are effective on the date Contributor first distributes or otherwise makes the Modifications available to a third party.

(d) Notwithstanding Section 2.2(b) above, no patent license is granted: (1) for any code that Contributor has deleted from the Contributor Version; (2) for infringements caused by: (i) third party modifications of Contributor Version, or (ii) the combination of Modifications made by that Contributor with other software (except as part of the Contributor Version) or other devices; or (3) under Patent Claims infringed by Covered Software in the absence of Modifications made by that Contributor.

3. Distribution Obligations.

3.1. Availability of Source Code.

Any Covered Software that You distribute or otherwise make available in Executable form must also be made available in Source Code form and that Source Code form must be distributed only under the terms of this License. You must include a copy of this License
with every copy of the Source Code form of the
Covered Software You distribute or otherwise make available. You must inform recipients of any such Covered Software in Executable form as to how they can obtain such Covered Software in Source Code form in a reasonable manner on or through a medium customarily used for software exchange.

3.2. Modifications.

The Modifications that You create or to which You contribute are governed by the terms of this License. You represent that You believe Your Modifications are Your original creation(s) and/or You have sufficient rights to grant the

rights conveyed by this License.

3.3. Required Notices.

You must include a notice in each of Your Modifications that identifies You as the Contributor of the Modification. You may not remove or alter any copyright, patent or trademark notices contained within the Covered Software, or any notices of licensing or any descriptive text giving attribution to any Contributor or the Initial Developer.

3.4.
Application of Additional Terms.

You may not offer or impose any terms on any Covered Software in Source Code form that alters or restricts the applicable version of this License or the recipients' rights hereunder. You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, you may do so only on Your own behalf, and not on behalf of the Initial Developer or any Contributor. You must make it absolutely clear that any such warranty, support, indemnity or liability obligation is offered by You alone, and You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of warranty, support, indemnity or liability terms You offer.

3.5. Distribution of Executable Versions.

You may distribute the Executable form of the Covered Software under the terms of this License or under the terms of a license
of Your choice, which may
contain terms different from this License, provided that You are in compliance with the terms of this License and that the license for the Executable form does not attempt to limit or alter the recipient's rights in the Source Code form from the rights set forth in this License. If You distribute the Covered Software in Executable form under a different license, You must make it absolutely clear that any terms which differ from this License are offered by You alone, not by the Initial Developer or Contributor. You hereby agree to indemnify the Initial Developer and every Contributor for any liability incurred by the Initial Developer or such Contributor as a result of any such terms You offer.

3.6. Larger Works.

You may create a Larger Work by combining Covered Software with other code not governed by the terms of this License and distribute the Larger Work as a single product. In such a case, You must make sure the requirements of this License are fulfilled

for the Covered Software.

4. Versions of the License.

4.1. New Versions.

Sun Microsystems, Inc. is the initial license steward and may publish revised and/or new versions of this License from time to time. Each version will be given a distinguishing version number. Except as provided in Section 4.3, no one other than the license steward has the right to modify this License.

4.2. Effect of New Versions.

You may always continue to use, distribute or otherwise make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. If the Initial Developer includes a notice in the Original Software prohibiting it from being distributed or otherwise made available under any subsequent version of the License, You must distribute and make the Covered Software available under the terms of the version of the License under which You originally received the Covered Software. Otherwise, You may also choose to use, distribute or otherwise make the Covered Software available under the terms of any subsequent version of the License published by the license steward.

4.3. Modified Versions.

When You are an Initial Developer and You want to create a new license for Your Original Software, You may create and use a modified version of this License if You: (a) rename the license and remove any references to the name of the license steward (except to note that the license differs from this License); and (b) otherwise make it clear that the license contains terms which differ from this License.

5. DISCLAIMER OF WARRANTY.

COVERED SOFTWARE IS PROVIDED UNDER THIS LICENSE ON AN "AS IS" BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES THAT THE COVERED SOFTWARE IS FREE OF DEFECTS, MERCHANTABLE, FIT FOR A PARTICULAR PURPOSE OR NON-INFRINGING. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE COVERED SOFTWARE IS WITH YOU. SHOULD ANY COVERED SOFTWARE PROVE DEFECTIVE IN ANY RESPECT, YOU (NOT THE INITIAL DEVELOPER OR ANY OTHER CONTRIBUTOR) ASSUME THE COST OF ANY NECESSARY SERVICING, REPAIR OR CORRECTION. THIS DISCLAIMER OF WARRANTY CONSTITUTES AN ESSENTIAL PART OF THIS LICENSE. NO USE OF ANY COVERED SOFTWARE IS AUTHORIZED HEREUNDER EXCEPT UNDER THIS DISCLAIMER.

6. TERMINATION.

6.1. This License and the rights granted hereunder will terminate automatically if You fail to comply with terms herein and fail to cure such breach within 30 days of becoming aware of the breach. Provisions which, by their nature, must remain in effect beyond the termination of this License shall survive.

6.2. If You assert a patent infringement claim (excluding declaratory judgment actions) against Initial Developer or a Contributor (the Initial Developer or Contributor against whom You assert such claim is referred to as "Participant") alleging that the Participant Software (meaning the Contributor Version where the Participant is a Contributor or the Original Software where the Participant is the Initial Developer) directly or indirectly infringes any patent, then any and all rights granted directly or indirectly to You by such Participant, the Initial Developer (if the Initial Developer is not the Participant) and all Contributors under Sections 2.1 and/or 2.2 of this License shall, upon 60 days notice from Participant terminate prospectively and automatically at the expiration of such 60 day notice period, unless if within such 60 day period You withdraw Your claim with respect to the Participant Software against such Participant either unilaterally or pursuant to a written agreement with Participant.

6.3. In the event of termination under Sections 6.1 or 6.2 above, all end user licenses that have been validly granted by You or any distributor hereunder prior to termination (excluding licenses granted to You by any distributor) shall survive termination.

7. LIMITATION OF LIABILITY.

UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, WHETHER TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL YOU, THE INITIAL DEVELOPER, ANY OTHER CONTRIBUTOR, OR ANY DISTRIBUTOR OF COVERED SOFTWARE, OR ANY SUPPLIER OF ANY OF SUCH PARTIES, BE LIABLE TO ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOST PROFITS, LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF SUCH PARTY SHALL HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION OF LIABILITY SHALL NOT APPLY TO LIABILITY FOR DEATH OR PERSONAL INJURY RESULTING FROM SUCH PARTY'S NEGLIGENCE TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH LIMITATION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS EXCLUSION AND LIMITATION MAY NOT APPLY TO YOU.

8. U.S. GOVERNMENT END USERS.

The Covered Software is a "commercial item," as that term is defined in 48

C.F.R.
2.101 (Oct. 1995), consisting of "commercial computer software" (as that term is defined at 48 C.F.R. 252.227-7014(a)(1)) and "commercial computer software documentation" as such terms are used in 48 C.F.R. 12.212 (Sept. 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4 (June 1995), all U.S. Government End Users acquire Covered Software with only those rights set forth herein. This U.S. Government Rights clause is in lieu of, and supersedes, any other FAR, DFAR, or other clause or provision that addresses Government rights in computer software under this License.

9. MISCELLANEOUS.

This License represents the complete agreement concerning subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. This License shall be governed by the law of the jurisdiction specified in a notice contained within the Original Software (except to the extent
applicable law, if any, provides otherwise), excluding such jurisdiction's conflict-of-law provisions. Any litigation relating to this License shall be subject to the jurisdiction of the courts located in the jurisdiction and venue specified in a notice contained within the Original Software, with the losing party responsible for costs, including, without limitation, court costs and reasonable attorneys' fees and expenses. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not apply to this License. You agree that You alone are responsible for compliance with the United States export administration regulations (and the export control laws and regulation of any other countries) when You use, distribute or otherwise make available any Covered Software.

10. RESPONSIBILITY FOR CLAIMS.

As between Initial
Developer and the Contributors, each party is responsible for claims and damages arising, directly or indirectly, out of its utilization of rights under this License and You agree to work with Initial Developer and Contributors to distribute such responsibility on an equitable basis. Nothing herein is intended or shall be deemed to constitute any admission of liability.
Legal Notices:

Information related to copyright, licensing, patents and trademarks. The author of this file is not a lawyer and the opinions herein are not legal council. If you have legal questions, contact a lawyer.

Copyright:

The body of work that comprises the `libdb database library` has multiple copyright holders including, but not limited to:

* Oracle Corporation
* The President and Fellows of Harvard University
* The Regents of the University of California
* Free Software Foundation
* X Consortium
* INRIA, France Telecom
* Gary V. Vaughan
* Makoto Matsumoto
* Takuji Nishimura
* Asim Jalis
* Keith Bostic
* Margo Seltzer
* Gregory Burd

Licensing:

Oracle Corporation licenses their copyrighted portions under the terms of the Sleepyat License (docs/legal/SPL.txt http://www.opensource.org/licenses/Sleepycat). The Sleepyat License's first two conditions are identical to that of the BSD 3-Clause license. Only the third condition differs by adding a copyleft-like requirement. Oracle can be contacted at berkeleydb-info_us@oracle.com.

The President and Fellows of Harvard University licenses their copyrighted portions under the terms of a BSD 3-Clause license (docs/legal/HARVARD.txt http://www.opensource.org/licenses/BSD-3-Clause).

The Regents of the University of California licenses their copyrighted portions under the terms of a BSD 3-Clause license (docs/legal/BSD.txt http://www.opensource.org/licenses/BSD-3-Clause).

INRIA, France Telecom licenses their copyrighted portions under the terms of a BSD 3-Clause license (docs/legal/ASM.txt http://www.opensource.org/licenses/BSD-3-Clause).

Gregory Burd licenses his contributions to this combined work under the terms of the Common Development and Distribution License version 1.0 (docs/legal/CDDL.txt http://www.opensource.org/licenses/cddl1.php).

Patents:

There are no known patent infringements at this time.

Trademarks:

There are no known trademarks infringements at this time.
NOTE

The license is based on the zlib/libpng license. For more details see http://www.opensource.org/licenses/zlib-license.html. The intent of the license is to:

- keep the license as simple as possible
- encourage the use of CuTest in both free and commercial applications and libraries
- keep the source code together
- give credit to the CuTest contributors for their work

If you ship CuTest in source form with your source distribution, the following license document must be included with it in unaltered form. If you find CuTest useful we would like to hear about it.

LICENSE

Copyright (c) 2003 Asim Jalis

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.

2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.

3. This notice may not be removed or altered from any source distribution.
Copyright (c) 1990, 1993, 1994, 1995
The Regents of the University of California. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

3. Neither the name of the University nor the names of its contributors may be
used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE
DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.273 kerberos 1.21.1-4.el9_5

1.273.1 Available under license :

[NOTE: MIT has only incorporated the mechglue and spnego change, and not the incremental propagation changes. The filenames are different between the Sun and MIT sources. The actual MIT filenames appear in the top-level README file. Original text of Sun's LICENSE file follows.]

Subject to the license set forth below, Sun Microsystems, Inc. donates the attached files to MIT for the purpose of including these modifications and additions in future versions of the Kerberos system.

Many of the files attached are subject to licenses issued by other entities, including OpenVision, MIT, and FundsXpress. See the individual files, and/or related Readme files, for these licenses.

In addition Sun requires that the license set forth below be incorporated into any future version of the Kerberos system which contains portions of the files attached. The following files must be listed, in the top level Readme file, as being provided subject to such license:

cmd/krb5/iprop/iprop.x
cmd/krb5/iprop/iprop_hdr.h
cmd/krb5/kadmin/server/ipropd_svc.c
cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
lib/libgss/g_seal.c
lib/libgss/g_sign.c
lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

Sun's
License is as follows:

Copyright (c) 2004 Sun Microsystems, Inc.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright
=========

Copyright |copy| 1985-2024 by the Massachusetts Institute of
Technology and its contributors. All rights reserved.

See :ref:`mitK5license` for additional copyright and license
information.
Copyright (C) 1985-2024 by the Massachusetts Institute of Technology.

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS

"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Downloading of this software may constitute an export of cryptographic
software from the United States of America that is subject to the
United States Export Administration Regulations (EAR), 15 CFR 730-774.
Additional laws or regulations may apply. It is the responsibility of
the person or entity contemplating export to comply with all
applicable export laws and regulations, including obtaining any
required license from the U.S. government.

The U.S. government prohibits export of encryption source code to
certain countries and individuals, including, but not limited to, the
countries of Cuba, Iran, North Korea, Sudan, Syria, and residents and
nationals of
those countries.

Documentation components of this software distribution are licensed
under a Creative Commons Attribution-ShareAlike 3.0 Unported License.
(https://creativecommons.org/licenses/by-sa/3.0/)

Individual source code files are copyright MIT, Cygnus Support,
Novell, OpenVision Technologies, Oracle, Red Hat, Sun Microsystems,
FundsXpress, and others.

Project Athena, Athena, Athena MUSE, Discuss, Hesiod, Kerberos, Moira,
and Zephyr are trademarks of the Massachusetts Institute of Technology
(MIT). No commercial use of these trademarks may be made without
prior written permission of MIT.

"Commercial use" means use of a name in a product or other for-profit
manner. It does NOT prevent a commercial firm from referring to the
MIT trademarks in order to convey information (although in doing so,
recognition of their trademark status should be given).

==========

The following copyright and permission notice applies to

the
OpenVision Kerberos Administration system located in "kadmin/create",
"kadmin/dbutil", "kadmin/passwd", "kadmin/server", "lib/kadm5", and
portions of "lib/rpc":

Copyright, OpenVision Technologies, Inc., 1993-1996, All Rights
Reserved

WARNING: Retrieving the OpenVision Kerberos Administration system
source code, as described below, indicates your acceptance of the
following terms. If you do not agree to the following terms, do
not retrieve the OpenVision Kerberos administration system.

You may freely use and distribute the Source Code and Object Code
compiled from it, with or without modification, but this Source
Code is provided to you "AS IS" EXCLUSIVE OF ANY WARRANTY,
INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR
FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, WHETHER
EXPRESS OR IMPLIED. IN NO EVENT WILL OPENVISION HAVE ANY LIABILITY
FOR ANY LOST PROFITS, LOSS OF DATA OR COSTS OF PROCUREMENT OF
SUBSTITUTE
GOODS OR SERVICES, OR FOR ANY SPECIAL, INDIRECT, OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, INCLUDING,
WITHOUT LIMITATION, THOSE RESULTING FROM THE USE OF THE SOURCE
CODE, OR THE FAILURE OF THE SOURCE CODE TO PERFORM, OR FOR ANY
OTHER REASON.

OpenVision retains all copyrights in the donated Source Code.
OpenVision also retains copyright to derivative works of the Source
Code, whether created by OpenVision or by a third party. The
OpenVision copyright notice must be preserved if derivative works
are made based on the donated Source Code.

OpenVision Technologies, Inc. has donated this Kerberos
Administration system to MIT for inclusion in the standard Kerberos
5 distribution. This donation underscores our commitment to
continuing Kerberos technology development and our gratitude for
the valuable work which has been performed by MIT and the Kerberos
community.

==========

Portions contributed by Matt Crawford "crawdad@fnal.gov" were work
performed at Fermi National Accelerator Laboratory, which is
operated by Universities Research Association, Inc., under contract
DE-AC02-76CHO3000 with the U.S. Department of Energy.

==========

Portions of "src/lib/crypto" have the following copyright:

Copyright (C) 1998 by the FundsXpress, INC.

All rights reserved.

Export of this software from the United States of America may
require a specific license from the United States Government.
It is the responsibility of any person or organization
contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and
distribute this software and its documentation for any purpose and
without fee is hereby granted, provided that the above copyright
notice appear in all copies and that both that copyright
notice and
this permission notice appear in supporting documentation, and that
the name of FundsXpress. not be used in advertising or publicity
pertaining to distribution of the software without specific,
written prior permission. FundsXpress makes no representations
about the suitability of this software for any purpose. It is
provided "as is" without express or implied warranty.

THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED
WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

==========

The implementation of the AES encryption algorithm in
"src/lib/crypto/builtin/aes" has the following copyright:

Copyright (C) 1998-2013, Brian Gladman, Worcester, UK. All
rights reserved.

The redistribution and use of this software (with or without
changes) is allowed without the payment of fees
or royalties
provided that:

source code distributions include the above copyright notice,
this list of conditions and the following disclaimer;

binary distributions include the above copyright notice, this
list of conditions and the following disclaimer in their
documentation.

This software is provided 'as is' with no explicit or implied
warranties in respect of its operation, including, but not limited
to, correctness and fitness for purpose.

==========

Portions contributed by Red Hat, including the pre-authentication
plug-in framework and the NSS crypto implementation, contain the
following copyright:

Copyright (C) 2006 Red Hat, Inc.
Portions copyright (C) 2006 Massachusetts Institute of Technology
All Rights Reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

* Neither the name of Red Hat, Inc., nor the names of its
contributors may be used to endorse or promote products derived
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

The bundled verto source code is subject to the following license:

Copyright 2011 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above
copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

==========

The MS-KKDCP client implementation has the following copyright:

Copyright 2013,2014 Red Hat, Inc.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
   copyright notice, this list of conditions and the following
   disclaimer.

2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or other materials
   provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES

(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE
OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in
"src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c

lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including
the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c

are subject to the following license:

Copyright (C) 2004 Sun Microsystems, Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS
BE LIABLE FOR
ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

==========

Kerberos V5 includes documentation and software developed at the
University of California at Berkeley, which includes this copyright
notice:

Copyright (C) 1983 Regents of the University of California.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

==========

Portions contributed by Novell, Inc., including the LDAP database backend, are subject to the following license:

Copyright (C) 2004-2005, Novell, Inc.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
  copyright notice, this list of conditions and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

* The copyright holder's name is not used to endorse or promote
  products derived from this software without specific prior
  written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
 "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Portions funded by Sandia National Laboratory and developed by the
University of Michigan's Center for Information Technology
Integration, including the PKINIT implementation, are subject to the
following
 license:

   COPYRIGHT (C) 2006-2007
   THE REGENTS OF THE UNIVERSITY OF MICHIGAN
   ALL RIGHTS RESERVED

 Permission is granted to use, copy, create derivative works and
 redistribute this software and such derivative works for any
 purpose, so long as the name of The University of Michigan is not
 used in any advertising or publicity pertaining to the use of
 distribution of this software without specific, written prior
 authorization. If the above copyright notice or any other
 identification of the University of Michigan is included in any
 copy of any portion of this software, then the disclaimer below
 must also be included.

 THIS SOFTWARE IS PROVIDED AS IS, WITHOUT REPRESENTATION FROM THE
 UNIVERSITY OF MICHIGAN AS TO ITS FITNESS FOR ANY PURPOSE, AND
 WITHOUT WARRANTY BY THE UNIVERSITY OF MICHIGAN OF ANY KIND, EITHER
 EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE.
THE REGENTS OF THE UNIVERSITY OF MICHIGAN SHALL NOT BE LIABLE FOR
ANY DAMAGES, INCLUDING SPECIAL, INDIRECT, INCIDENTAL, OR
CONSEQUENTIAL DAMAGES, WITH RESPECT TO ANY CLAIM ARISING OUT OF OR
IN CONNECTION WITH THE USE OF THE SOFTWARE, EVEN IF IT HAS BEEN OR
IS HEREAFTER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

==========

The pkcs11.h file included in the PKINIT code has the following
license:

Copyright 2006 g10 Code GmbH
Copyright 2006 Andreas Jellinghaus

This file is free software; as a special exception the author gives
unlimited permission to copy and/or distribute it, with or without
modifications, as long as this notice is preserved.

This file is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY, to the extent permitted by law; without even
the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE.

==========

Portions
contributed by Apple Inc. are subject to the following
license:

Copyright 2004-2008 Apple Inc. All Rights Reserved.

Export of this software from the United States of America may
require a specific license from the United States Government.
It is the responsibility of any person or organization
contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and
distribute this software and its documentation for any purpose and
without fee is hereby granted, provided that the above copyright
notice appear in all copies and that both that copyright notice and
this permission notice appear in supporting documentation, and that
the name of Apple Inc. not be used in advertising or publicity
pertaining to distribution of the software without specific,
written prior permission. Apple Inc. makes no representations
about the suitability of this software for any purpose. It is
provided "as is" without express or implied warranty.

THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR
IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED
WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

==========

The implementations of UTF-8 string handling in src/util/support and
src/lib/krb5/unicode are subject to the following copyright and
permission notice:

The OpenLDAP Public License
Version 2.8, 17 August 2003

Redistribution and use of this software and associated
documentation ("Software"), with or without modification, are
permitted provided that the following conditions are met:

1. Redistributions in source form must retain copyright
statements and notices,

2. Redistributions in binary form must reproduce applicable
copyright statements and notices, this
list of conditions, and
the following disclaimer in the documentation and/or other
materials provided with the distribution, and

3. Redistributions must contain a verbatim copy of this
document.

The OpenLDAP Foundation may revise this license from time to time.
Each revision is distinguished by a version number. You may use
this Software under terms of this license revision or under the
terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS
CONTRIBUTORS "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE OPENLDAP FOUNDATION, ITS
CONTRIBUTORS, OR THE AUTHOR(S) OR OWNER(S) OF THE SOFTWARE BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF
SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE

USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in advertising or otherwise to promote the sale, use or other dealing in this Software without specific, written prior permission. Title to copyright in this Software shall at all times remain with copyright holders.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City, California, USA. All Rights Reserved. Permission to copy and distribute verbatim copies of this document is granted.

==========

Marked test programs in src/lib/krb5/krb have the following copyright:

Copyright (C) 2006 Kungliga Tekniska Hgskola
(Royal Institute of Technology, Stockholm, Sweden).
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of KTH nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY KTH AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL KTH OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

The KCM Mach RPC definition file used on macOS has the following copyright:

Copyright (C) 2009 Kungliga Tekniska Hgskola
(Royal Institute of Technology, Stockholm, Sweden).
All rights reserved.

Portions Copyright (C) 2009 Apple Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the Institute nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE INSTITUTE AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE INSTITUTE OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Portions of the RPC implementation in src/lib/rpc and
src/include/gssrpc have the following copyright and permission notice:

Copyright (C) 2010, Oracle America, Inc.

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
copyright
notice, this list of conditions and the following
disclaimer.

2. Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

3. Neither the name of the "Oracle America, Inc." nor the names
of its contributors may be used to endorse or promote products
derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Copyright (C) 2006,2007,2009 NTT (Nippon Telegraph and Telephone
Corporation). All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
   copyright notice, this list of conditions and the following
   disclaimer as the first lines of this file unmodified.

2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or
other materials provided
   with the distribution.

THIS SOFTWARE IS PROVIDED BY NTT "AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL NTT BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Copyright 2000 by Carnegie Mellon University

All Rights Reserved

Permission to use, copy, modify, and distribute this software and
its
documentation for any purpose and without fee is hereby
granted, provided that the above copyright notice appear in all
copies and that both that copyright notice and this permission
notice appear in supporting documentation, and that the name of
Carnegie Mellon University not be used in advertising or publicity
pertaining to distribution of the software without specific,
written prior permission.

CARNEGIE MELLON UNIVERSITY DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS, IN NO EVENT SHALL CARNEGIE MELLON UNIVERSITY BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN
AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING
OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS

SOFTWARE.

==========

Copyright
(C) 2002 Naval Research Laboratory (NRL/CCS)

Permission to use, copy, modify and distribute this software and
its documentation is hereby granted, provided that both the
copyright notice and this permission notice appear in all copies of
the software, derivative works or modified versions, and any
portions thereof.

NRL ALLOWS FREE USE OF THIS SOFTWARE IN ITS "AS IS" CONDITION AND
DISCLAIMS ANY LIABILITY OF ANY KIND FOR ANY DAMAGES WHATSOEVER
RESULTING FROM THE USE OF THIS SOFTWARE.

==========

Copyright (C) 2022 United States Government as represented by the
Secretary of the Navy. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
  copyright notice, this list of conditions and the following
  disclaimer in the documentation and/or other materials provided
  with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF

SUCH DAMAGE.

==========

Copyright (C) 1991, 1992, 1994 by Cygnus Support.

Permission to use, copy, modify, and distribute this software and
its documentation for any purpose and without fee is hereby
granted, provided that the above copyright notice appear in all
copies and that both that copyright notice and this permission
notice appear in supporting documentation. Cygnus Support makes no
representations about the suitability of this software for any
purpose. It is provided "as is" without express or implied
warranty.

==========

Copyright (C) 2006 Secure Endpoints Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify,
merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

==========

Portions of the implementation of the Fortuna-like PRNG are subject to
the following notice:

Copyright (C) 2005
Marko Kreen
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
   copyright notice, this list of conditions and the following
   disclaimer.

2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or other materials provided
   with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF
USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT
OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

Copyright (C) 1994 by the University of Southern California

   EXPORT OF THIS SOFTWARE from the United States of America may
   require a specific license from the United States Government. It
   is the responsibility of any person or organization
   contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to copy, modify, and distribute
this software and its documentation in source and binary forms is
hereby granted, provided that any documentation or other materials
related to such distribution or use acknowledge that the software
was developed by the University of Southern California.

DISCLAIMER OF WARRANTY. THIS SOFTWARE IS PROVIDED "AS IS". The
University of Southern California MAKES NO REPRESENTATIONS OR
WARRANTIES, EXPRESS OR IMPLIED. By way of example, but not
limitation, the University of Southern California MAKES NO
REPRESENTATIONS OR WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY
PARTICULAR PURPOSE. The University of Southern California shall not
be held liable for any liability nor for any direct, indirect, or

consequential damages with respect to any claim by the user or
distributor of the ksu software.

==========

Copyright (C) 1995
The President and Fellows of Harvard University

This code is derived from software contributed to Harvard by Jeremy
Rassen.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source
code must retain the above
copyright notice, this list of conditions and the following
disclaimer.

2. Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

3. All advertising materials mentioning features or use of this
software must display the following acknowledgement:

This product includes software developed by the University of
California, Berkeley and its contributors.

4. Neither the name of the University nor the names of its
contributors may be used to endorse or promote products derived
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF
USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT
OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

==========

Copyright (C) 2008 by the Massachusetts Institute of Technology.
Copyright 1995 by Richard P. Basch. All Rights Reserved.
Copyright 1995 by Lehman Brothers, Inc. All Rights Reserved.

Export of this software from the United States of America may
require a specific license from the United States Government. It
is the responsibility
of any person or organization
contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and
distribute this software and its documentation for any purpose and
without fee is hereby granted, provided that the above copyright
notice appear in all copies and that both that copyright notice and
this permission notice appear in supporting documentation, and that
the name of Richard P. Basch, Lehman Brothers and M.I.T. not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission. Richard P.
Basch, Lehman Brothers and M.I.T. make no representations about the
suitability of this software for any purpose. It is provided "as
is" without express or implied warranty.

==========

The following notice applies to "src/lib/krb5/krb/strptime.c" and
"src/include/k5-queue.h".

Copyright (C) 1997, 1998 The NetBSD Foundation, Inc.
All rights reserved.

This code was contributed to The NetBSD Foundation by Klaus Klein.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
copyright notice, this list of conditions and the following
disclaimer.

2. Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

3. All advertising materials mentioning features or use of this

software must display the following acknowledgement:

This product includes software developed by the NetBSD
Foundation, Inc. and its contributors.

4. Neither the name of The NetBSD Foundation nor the names of
its contributors may be used to endorse or promote products
derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE NETBSD FOUNDATION, INC. AND
CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE FOUNDATION OR CONTRIBUTORS BE
LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE
USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

==========

The
following notice applies to Unicode library files in
"src/lib/krb5/unicode":

Copyright 1997, 1998, 1999 Computing Research Labs,
New Mexico State University

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN

NO EVENT SHALL THE COMPUTING RESEARCH LAB OR
NEW MEXICO STATE UNIVERSITY BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE
OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==========

The following notice applies to "src/util/support/strlcpy.c":

Copyright (C) 1998 Todd C. Miller "Todd.Miller@courtesan.com"

Permission to use, copy, modify, and distribute this software for
any purpose with or without fee is hereby granted, provided that
the above copyright notice and this permission notice appear in all
copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL
WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE
AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR
CONSEQUENTIAL DAMAGES OR ANY
DAMAGES WHATSOEVER RESULTING FROM LOSS
OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

==========

The following notice applies to "src/util/profile/argv_parse.c" and
"src/util/profile/argv_parse.h":

Copyright 1999 by Theodore Ts'o.

Permission to use, copy, modify, and distribute this software for
any purpose with or without fee is hereby granted, provided that
the above copyright notice and this permission notice appear in all
copies. THE SOFTWARE IS PROVIDED "AS IS" AND THEODORE TS'O (THE
AUTHOR) DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN
NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER
RESULTING FROM LOSS
OF USE, DATA OR PROFITS, WHETHER IN AN ACTION
OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR
IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE. (Isn't
it sick that the U.S. culture of lawsuit-happy lawyers requires
this kind of disclaimer?)

==========

The following notice applies to SWIG-generated code in
"src/util/profile/profile_tcl.c":

Copyright (C) 1999-2000, The University of Chicago

This file may be freely redistributed without license or fee
provided this copyright message remains intact.

==========

The following notice applies to portiions of "src/lib/rpc" and
"src/include/gssrpc":

Copyright (C) 2000 The Regents of the University of Michigan. All
rights reserved.

Copyright (C) 2000 Dug Song "dugsong@UMICH.EDU". All rights
reserved, all wrongs reversed.

Redistribution and use in source
and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above
   copyright notice, this list of conditions and the following
   disclaimer.

2. Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following
   disclaimer in the documentation and/or other materials provided
   with the distribution.

3. Neither the name of the University nor the names of its
   contributors may be used to endorse or promote products derived
   from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR

BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Implementations of the MD4 algorithm are subject to the following notice:

Copyright (C) 1990, RSA Data Security, Inc. All rights reserved.

License to copy and use this software is granted provided that it is identified as the "RSA Data Security, Inc. MD4 Message Digest Algorithm" in all material mentioning or referencing this software or this function.

License is also granted to make and use derivative works provided that such works are identified as "derived from the RSA Data Security, Inc. MD4 Message Digest Algorithm" in all material mentioning or referencing the derived work.

RSA Data Security, Inc. makes no representations concerning either the merchantability of this software or the suitability of this software for any particular purpose. It is provided "as is" without express or implied warranty of any kind.

These notices must be retained in any copies of any part of this documentation and/or software.

==========

Implementations of the MD5 algorithm are subject to the following notice:

Copyright (C) 1990, RSA Data Security, Inc. All rights reserved.

License to copy and use this software is granted provided that it is identified as the "RSA Data Security, Inc. MD5 Message- Digest Algorithm" in all material mentioning or referencing this software or this function.

License is also granted to make and use derivative works provided that such works are identified as "derived from the RSA Data Security, Inc. MD5 Message-Digest Algorithm" in all material

mentioning or referencing the derived work.

RSA Data Security, Inc. makes no representations concerning either
the merchantability of this software or the suitability of this
software for any particular purpose. It is provided "as is"
without express or implied warranty of any kind.

These notices must be retained in any copies of any part of this
documentation and/or software.

==========

The following notice applies to
"src/lib/crypto/crypto_tests/t_mddriver.c":

Copyright (C) 1990-2, RSA Data Security, Inc. Created 1990. All
rights reserved.

RSA Data Security, Inc. makes no representations concerning either
the merchantability of this software or the suitability of this
software for any particular purpose. It is provided "as is" without
express or implied warranty
of any kind.

These notices must be retained in any copies of any part of this
documentation and/or software.

==========

Portions of "src/lib/krb5" are subject to the following notice:

Copyright (C) 1994 CyberSAFE Corporation.
Copyright 1990,1991,2007,2008 by the Massachusetts
Institute of Technology.
All Rights Reserved.

Export of this software from the United States of America may
require a specific license from the United States Government. It
is the responsibility of any person or organization
contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and
distribute this software and its documentation for any purpose and
without fee is hereby granted, provided that the above copyright
notice appear in all copies and that both that copyright notice and
this permission notice appear in supporting
documentation, and that
the name of M.I.T. not be used in advertising or publicity

pertaining to distribution of the software without specific,
written prior permission. Furthermore if you modify this software
you must label your software as modified software and not
distribute it in such a fashion that it might be confused with the
original M.I.T. software. Neither M.I.T., the Open Computing
Security Group, nor CyberSAFE Corporation make any representations
about the suitability of this software for any purpose. It is
provided "as is" without express or implied warranty.

==========

Portions contributed by PADL Software are subject to the following
license:

Copyright (c) 2011, PADL Software Pty Ltd. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions
of source code must retain the above
copyright notice, this list of conditions and the following
disclaimer.

2. Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

3. Neither the name of PADL Software nor the names of its
contributors may be used to endorse or promote products derived
from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY PADL SOFTWARE AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL PADL SOFTWARE
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR SERVICES; LOSS OF
USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT
OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

==========

The bundled libev source code is subject to the following license:

All files in libev are Copyright (C)2007,2008,2009 Marc Alexander Lehmann.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Alternatively, the contents of this package may be used under the terms of the GNU General Public License ("GPL") version 2 or any later version, in which case the provisions of the GPL are applicable instead of the above. If you wish to allow the use of your version of this package only under the terms of the GPL and not to allow others to use your version of this file under the BSD license, indicate your decision by deleting the provisions above and replace them with the notice and other provisions required by the GPL in this and the other files of this package. If you do not delete the provisions above, a recipient may use your version of this file under either the BSD or the GPL.

==========

Files copied from the Intel AESNI Sample Library are subject to the
following license:

Copyright (C) 2010, Intel Corporation All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source
code must retain the above
copyright notice, this list of conditions and the following
disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials
provided with the distribution.

* Neither the name of Intel Corporation nor the names of its
contributors may be used to endorse or promote products
derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT
NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

The following notice applies to
"src/ccapi/common/win/OldCC/autolock.hxx":

Copyright (C) 1998 by Danilo Almeida. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer
in the documentation and/or other materials provided
with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF SUCH DAMAGE.

==========

The following notice applies to portions of
"src/plugins/preauth/spake/edwards25519.c"
and
"src/plugins/preauth/spake/edwards25519_tables.h":

The MIT License (MIT)

Copyright (c) 2015-2016 the fiat-crypto authors (see the AUTHORS
file).

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
 HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==========

The following notice applies to portions of
"src/plugins/preauth/spake/edwards25519.c":

Copyright (c) 2015-2016, Google Inc.

Permission to use, copy, modify, and/or distribute this software for
any purpose with or without fee is hereby granted, provided that the
above copyright notice and this permission notice appear in all
copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL
WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE
AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL
DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR
PROFITS, WHETHER IN AN ACTION OF CONTRACT,
 NEGLIGENCE OR OTHER
TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.
.. _mitK5license:

MIT Kerberos License information
==========

.. toctree::
  :hidden:

  copyright.rst

.. include:: notice.rst

1.274 crypto-policies-scripts 20240828-2.git626aa59.el9_5

1.274.1 Available under license :

Copyright 2020 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE
OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.275 expat 2.5.0-3.el9_5.1

1.275.1 Available under license :

Copyright (c) 1998-2000 Thai Open Source Software Center Ltd and Clark Cooper
Copyright (c) 2001-2022 Expat maintainers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.276 vim 8.2.2637-21.el9

1.276.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients

all the rights that we gave
you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits
its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain

special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is

included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library
refers to a function or a
table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that,

in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to
a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of

the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed
under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these

materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing

the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people
have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the

original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL

DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and
a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

You should also
get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the

library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
uganda.txt For Vim version 8.2. Last change: 2020 Jan 08

VIM REFERENCE MANUAL by Bram Moolenaar

uganda *Uganda* *copying* *copyright* *license*
SUMMARY
iccf *ICCF*
Vim is Charityware. You can use and copy it as much as you like, but you are encouraged to make a donation for needy children in Uganda. Please see |kcc| below or visit the ICCF web site, available at these URLs:

http://iccf-holland.org/
http://www.vim.org/iccf/
http://www.iccf.nl/

You can also sponsor the development of Vim. Vim sponsors can vote for features. See |sponsor|. The money goes to Uganda anyway.

The Open Publication License applies to the Vim documentation, see |manual-copyright|.

=== begin of license ===

VIM LICENSE

I) There are no restrictions on distributing unmodified copies of Vim except
  that they must include this license text. You can also distribute
  unmodified parts of Vim, likewise unrestricted except that they must
  include this license text. You
are also allowed to include executables
  that you made from the unmodified Vim sources, plus your own usage
  examples and Vim scripts.

II) It is allowed to distribute a modified (or extended) version of Vim,
  including executables and/or source code, when the following four
  conditions are met:
  1) This license text must be included unmodified.
  2) The modified Vim must be distributed in one of the following five ways:
    a) If you make changes to Vim yourself, you must clearly describe in
  the distribution how to contact you. When the maintainer asks you

(in any way) for a copy of the modified Vim you distributed, you must make your changes, including source code, available to the maintainer without fee. The maintainer reserves the right to include your changes in the official version of Vim. What the maintainer will do with your changes and under what license they will be distributed is negotiable. If there has been no negotiation

then this license, or a later version, also applies to your changes. The current maintainer is Bram Moolenaar <Bram@vim.org>. If this changes it will be announced in appropriate places (most likely vim.sf.net, www.vim.org and/or comp.editors). When it is completely impossible to contact the maintainer, the obligation to send him your changes ceases. Once the maintainer has confirmed that he has received your changes they will not have to be sent again.

b) If you have received a modified Vim that was distributed as mentioned under a) you are allowed to further distribute it unmodified, as mentioned at I). If you make additional changes the text under a) applies to those changes.

c) Provide all the changes, including source code, with every copy of the modified Vim you distribute. This may be done in the form of a context diff. You can choose what license to use for new code you add. The changes and their license must not restrict others from making their own changes to the official version of Vim.

d) When you have a modified Vim which includes changes as mentioned under c), you can distribute it without the source code for the changes if the following three conditions are met:

- The license that applies to the changes permits you to distribute the changes to the Vim maintainer without fee or restriction, and permits the Vim maintainer to include the changes in the official version of Vim without fee or restriction.
- You keep the changes for at least three years after last distributing the corresponding modified Vim. When the maintainer or someone who you distributed the modified Vim to asks you (in any way) for the changes within this period, you must make them available to him.
- You clearly describe in the distribution how to contact you. This contact information must remain valid for at least three years after last distributing the corresponding modified Vim, or as long as possible.

e) When the GNU General Public License (GPL) applies to the changes, you can distribute the modified Vim under the GNU GPL version 2 or any later version.

3) A message must be added, at least in the output of the ":version" command and in the intro screen, such that the user of the modified Vim is able to see that it was modified. When distributing as mentioned under 2)e) adding the message is only required for as far as this does

not conflict with the license used for the changes.
4) The contact information as required under 2)a) and 2)d) must not be removed or changed, except that the person himself can make corrections.

III) If you distribute a modified version of Vim, you are encouraged to use the Vim license for your changes and make them available to the maintainer, including the source code. The preferred way to do this is by e-mail or by uploading
the files to a server and e-mailing the URL.
If the number of changes is small (e.g., a modified Makefile) e-mailing a context diff will do. The e-mail address to be used is <maintainer@vim.org>

IV) It is not allowed to remove this license from the distribution of the Vim sources, parts of it or from a modified version. You may use this license for previous Vim releases instead of the license that they came with, at your option.

=== end of license ===

Note:

- If you are happy with Vim, please express that by reading the rest of this file and consider helping needy children in Uganda.

- If you want to support further Vim development consider becoming a |sponsor|. The money goes to Uganda anyway.

- According to Richard Stallman the Vim license is GNU GPL compatible. A few minor changes have been made since he checked it, but that should not make a difference.

- If you link Vim with a library that goes under the GNU GPL, this limits further
distribution to the GNU GPL. Also when you didn't actually change anything in Vim.

- Once a change is included that goes under the GNU GPL, this forces all further changes to also be made under the GNU GPL or a compatible license.

- If you distribute a modified version of Vim, you can include your name and contact information with the "--with-modified-by" configure argument or the MODIFIED_BY define.

==
Kibaale Children's Centre *kcc* *Kibaale* *charity*

Kibaale Children's Centre (KCC) is located in Kibaale, a small town in the south of Uganda, near Tanzania, in East Africa. The area is known as Rakai District. The population is mostly farmers. Although people are poor, there is enough food. But this district is suffering from AIDS more than any other part of the world. Some say that it started there. Estimations are that 10 to 30% of the Ugandans are infected with HIV. Because parents die, there are many orphans. In this district about 60,000 children have lost one or both parents, out of a population of 350,000. And this is still continuing.

The children need a lot of help. The KCC is working hard to provide the needy with food, medical care and education. Food and medical care to keep them healthy now, and education so that they can take care of themselves in the future. KCC works on a Christian base, but help is given to children of any religion.

The key to solving the problems in this area is education. This has been neglected in the past years with president Idi Amin and the following civil wars. Now that the government is stable again, the children and parents have to learn how to take care of themselves and how to avoid infections. There is also help for people who are ill and hungry, but the primary goal is to prevent people from getting ill and to teach them how to grow healthy food.

Most of the orphans are living in an extended family. An uncle or older sister is taking care of them. Because these families are big and the income (if any) is low, a child is lucky if it gets healthy food. Clothes, medical care and schooling is beyond its reach. To help these needy children, a sponsorship program was put into place. A child can be financially adopted. For a few dollars a month KCC sees to it that the child gets indispensable items, is healthy, goes to school and KCC takes care of anything else that needs to be done for the child and the family that supports it.

Besides helping the child directly, the environment where the child grows up needs to be improved. KCC helps schools to improve their teaching methods. There is a demonstration school at the centre and teacher trainings are given. Health workers are being trained, hygiene education is carried out and households are stimulated to build a proper latrine. I helped setting up a production site for cement slabs. These are used to build a good latrine. They are sold below cost price.

There is a small clinic at the project, which provides children and their family with medical help. When needed, transport to a hospital is offered. Immunization programs are carried out and help is provided when an epidemic is breaking out (measles and cholera have been a problem).

donate

Summer 1994 to summer 1995 I spent a whole year at the centre, working as a

volunteer. I have helped to expand the centre and worked in the area of water and sanitation. I learned that the help that the KCC provides really helps. When I came back to Holland, I wanted to continue supporting KCC. To do this I'm raising funds and organizing the sponsorship program. Please consider one of these possibilities:

1. Sponsor a child in primary school: 17 euro a month (or more).
2. Sponsor a child in secondary school: 25 euro a month (or more).
3. Sponsor the clinic: Any amount a month or quarter
4. A one-time donation

Compared with other organizations that do child sponsorship
the amounts are
very low. This is because the money goes directly to the centre. Less than 5% is used for administration. This is possible because this is a small organization that works with volunteers. If you would like to sponsor a child, you should have the intention to do this for at least one year.

How do you know that the money will be spent right? First of all you have my personal guarantee as the author of Vim. I trust the people that are working at the centre, I know them personally. Furthermore, the centre has been co-sponsored and inspected by World Vision, Save the Children Fund and is now under the supervision of Pacific Academy Outreach Society. The centre is visited about once a year to check the progress (at our own cost). I have visited the centre myself many times, starting in 1993. The visit reports are on the ICCF web site.

If you have any further questions, send me e-mail: <Bram@vim.org>.

The address of the centre is:
Kibaale Children's Centre
p.o.
box 1658
Masaka, Uganda, East Africa

Sending money: *iccf-donations*

Check the ICCF web site for the latest information! See |iccf| for the URL.

USA: The methods mentioned below can be used.
Sending a check to the Nehemiah Group Outreach Society (NGOS) is no longer possible, unfortunately. We are looking for another way to get you an IRS tax receipt.
For sponsoring a child contact KCF in Canada (see below). US checks can be sent to them to lower banking costs.

Canada: Contact Kibaale Children's Fund (KCF) in Surrey, Canada. They

take care of the Canadian sponsors for the children in
Kibaale. KCF forwards 100% of the money to the project in
Uganda. You can send them a one time donation directly.
Please send me a note so that I know what has been donated
because of Vim. Ask KCF for information about sponsorship.
Kibaale Children's Fund c/o Pacific Academy
10238-168 Street
Surrey, B.C. V4N 1Z4
Canada
Phone: 604-581-5353
If
you make a donation to Kibaale Children's Fund (KCF) you
will receive a tax receipt which can be submitted with your
tax return.

Holland: Transfer to the account of "Stichting ICCF Holland" in Lisse.
This will allow for tax deduction if you live in Holland.
Postbank, nr. 4548774
IBAN: NL95 INGB 0004 5487 74

Germany: It is possible to make donations that allow for a tax return.
Check the ICCF web site for the latest information:
http://iccf-holland.org/germany.html

World: Use a postal money order. That should be possible from any
country, mostly from the post office. Use this name (which is
in my passport): "Abraham Moolenaar". Use Euro for the
currency if possible.

Europe: Use a bank transfer if possible. Your bank should have a form
that you can use for this. See "Others" below for the swift
code and IBAN number.
Any other method should work. Ask for information about
sponsorship.

Credit Card: You can use PayPal to send money with a Credit
card. This is
the most widely used Internet based payment system. It's
really simple to use. Use this link to find more info:
https://www.paypal.com/en_US/mrb/pal=XAC62PML3GF8Q
The e-mail address for sending the money to is:
Bram@iccf-holland.org
For amounts above 400 Euro ($500) sending a check is
preferred.

Others: Transfer to one of these accounts if possible:
Postbank, account 4548774
Swift code: INGB NL 2A

IBAN: NL95 INGB 0004 5487 74
under the name "stichting ICCF Holland", Lisse
If that doesn't work:
Rabobank Lisse, account 3765.05.117
Swift code: RABO NL 2U
under the name "Bram Moolenaar", Lisse
Otherwise, send a check in euro or US dollars to the address
below. Minimal amount: $70 (my bank does not accept smaller
amounts for foreign check, sorry)

Address to send checks to:
Bram Moolenaar
Finsterruetihof 1
8134 Adliswil
Switzerland

This address is expected to be valid for a long time.

vim:tw=78:ts=8:noet:ft=help:norl:

```
/*
* Copyright (C) 1989-95 GROUPE BULL
*
* Permission is hereby granted, free of charge, to any person obtaining a copy
* of this software and associated documentation files (the "Software"), to
* deal in the Software without restriction, including without limitation the
* rights to use, copy, modify, merge, publish, distribute, sublicense, and/or
* sell copies of the Software, and to permit persons to whom the Software is
* furnished to do so, subject to the following conditions:
*
* The above copyright notice and this permission notice shall be included in
* all copies or substantial portions of the Software.
*
* THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
* IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
* FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL
* GROUPE BULL BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN
* AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
 OF OR IN
* CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
*
* Except as contained in this notice, the name of GROUPE BULL shall not be
* used in advertising or otherwise to promote the sale, use or other dealings
* in this Software without prior written authorization from GROUPE BULL.
*/
```

Arnaud LE HORS BULL Research FRANCE -- Koala Project
(XPM - X PixMap format version 2 & 3)
Internet: lehors@sophia.inria.fr

Surface Mail: Arnaud LE HORS, INRIA - Sophia Antipolis,
2004, route des Lucioles, 06565 Valbonne Cedex -- FRANCE
Voice phone: (33) 93.65.77.71, Fax: (33) 93 65 77 66, Telex: 97 00 50 F

The MIT License

Copyright (c) 2008 Paul Evans <leonerd@leonerd.org.uk>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
VIM LICENSE

I) There are no restrictions on distributing unmodified copies of Vim except
that they must include this license text. You can also distribute
unmodified parts of Vim, likewise unrestricted except that they must
include this license text. You are also allowed to include executables
that you made from the unmodified Vim sources, plus your own usage
examples and Vim scripts.

II) It is allowed to distribute a modified (or extended) version of Vim,
including executables and/or source code, when the following four
conditions are met:
1) This license text must be included unmodified.
2) The modified Vim must be distributed in one of the following five ways:
a) If you make changes to Vim yourself, you must clearly describe in
the distribution how to contact you. When the maintainer asks you
(in any way) for a copy of the modified Vim you distributed, you
must make your changes, including source code, available
to the
maintainer without fee. The maintainer reserves the right to
include your changes in the official version of Vim. What the

maintainer will do with your changes and under what license they
will be distributed is negotiable. If there has been no negotiation
then this license, or a later version, also applies to your changes.
The current maintainer is Bram Moolenaar <Bram@vim.org>. If this
changes it will be announced in appropriate places (most likely
vim.sf.net, www.vim.org and/or comp.editors). When it is completely
impossible to contact the maintainer, the obligation to send him
your changes ceases. Once the maintainer has confirmed that he has
received your changes they will not have to be sent again.

b) If you have received a modified Vim that was distributed as
mentioned under a) you are allowed to further distribute it
unmodified,

as mentioned at I). If you make additional changes the
text under a) applies to those changes.

c) Provide all the changes, including source code, with every copy of
the modified Vim you distribute. This may be done in the form of a
context diff. You can choose what license to use for new code you
add. The changes and their license must not restrict others from
making their own changes to the official version of Vim.

d) When you have a modified Vim which includes changes as mentioned
under c), you can distribute it without the source code for the
changes if the following three conditions are met:

- The license that applies to the changes permits you to distribute
the changes to the Vim maintainer without fee or restriction, and
permits the Vim maintainer to include the changes in the official
version of Vim without fee or restriction.

- You

keep the changes for at least three years after last
distributing the corresponding modified Vim. When the maintainer
or someone who you distributed the modified Vim to asks you (in
any way) for the changes within this period, you must make them
available to him.

- You clearly describe in the distribution how to contact you. This
contact information must remain valid for at least three years
after last distributing the corresponding modified Vim, or as long
as possible.

e) When the GNU General Public License (GPL) applies to the changes,
you can distribute the modified Vim under the GNU GPL version 2 or
any later version.

3) A message must be added, at least in the output of the ":version"
command and in the intro screen, such that the user of the modified Vim
is able to see that it was modified. When distributing as mentioned
under 2)e) adding

the message is only required for as far as this does
not conflict with the license used for the changes.

4) The contact information as required under 2)a) and 2)d) must not be
removed or changed, except that the person himself can make
corrections.

III) If you distribute a modified version of Vim, you are encouraged to use
the Vim license for your changes and make them available to the
maintainer, including the source code. The preferred way to do this is
by e-mail or by uploading the files to a server and e-mailing the URL.
If the number of changes is small (e.g., a modified Makefile) e-mailing a
context diff will do. The e-mail address to be used is
<maintainer@vim.org>

IV) It is not allowed to remove this license from the distribution of the Vim
sources, parts of it or from a modified version. You may use this
license for previous Vim releases instead of the license that they came
with, at your option.

1.277 pam 1.5.1-22.el9_5

1.277.1 Available under license :

Unless otherwise *explicitly* stated the following text describes the
licensed conditions under which the contents of this Linux-PAM release
may be distributed:

Redistribution and use in source and binary forms of Linux-PAM, with
or without modification, are permitted provided that the following
conditions are met:

1. Redistributions of source code must retain any existing copyright
notice, and this entire permission notice in its entirety,
including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current
copyright notices, this list of conditions, and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

3. The name of any author may not be used to endorse or promote
products derived from this software without their specific prior
written permission.

ALTERNATIVELY, this product may be distributed
under the terms of the
GNU General Public License, in which case the provisions of the GNU
GPL are required INSTEAD OF the above restrictions. (This clause is
necessary due to a potential conflict between the GNU GPL and the
restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED

WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Unless otherwise *explicitly* stated the following text describes the licensed conditions under which the contents of this libpamc release may be distributed:

Redistribution and use in source and binary forms of libpamc, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain any existing copyright notice, and this entire permission notice in its entirety, including the disclaimer of warranties.

2. Redistributions in binary form must reproduce all prior and current copyright notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name of any author may not be used to endorse or promote products derived from this software without their specific prior written permission.

ALTERNATIVELY, this product may be distributed under the terms of the
GNU Library General Public License (LGPL), in which case the provisions of the GNU LGPL are required INSTEAD OF the above restrictions. (This clause is necessary due to a potential conflict between the GNU LGPL and the restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND

ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution
and only if you
received the program in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING

WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.

This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
The licensing conditions for each module in this package are detailed in the module source files.
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not

price. Our General Public Licenses are designed
 to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

 To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

 For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

 We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
 and/or modify the software.

 Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

 Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

 The precise terms and conditions for copying, distribution and
modification follow.

     GNU GENERAL PUBLIC LICENSE
  TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

 0. This License applies to any program or other work which
 contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any

associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the
source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each
time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution
of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number
of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN
IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License,
or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and
`show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.278 python 3.9.21-1.el9_5

1.278.1 Available under license :

Copyright (c) 2002 Jorge Acereda <jacereda@users.sourceforge.net> &
Peter O'Gorman <ogorman@users.sourceforge.net>

Portions may be copyright others, see the AUTHORS file included with this
distribution.

Maintained by Peter O'Gorman <ogorman@users.sourceforge.net>

Bug Reports and other queries should go to <ogorman@users.sourceforge.net>

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY
 KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
libffi - Copyright (c) 1996-2003 Red Hat, Inc.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL CYGNUS SOLUTIONS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
X Window System License - X11R6.4

Copyright (c) 1998 The Open Group

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE OPEN GROUP BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of The Open Group shall
not be used in advertising or otherwise to promote the sale, use or
other dealings in this Software without prior written authorization
from The Open Group.

X Window System is a trademark of The Open Group

Additional Conditions for this Windows binary build

This program is linked with and uses Microsoft Distributable Code,
copyrighted by Microsoft Corporation. The Microsoft Distributable Code
is embedded in each .exe, .dll and .pyd file as a result of running
the code through a linker.

If you further distribute programs that include the Microsoft
Distributable Code, you must comply with the restrictions on
distribution specified by Microsoft. In particular, you must require
distributors and external end users to agree to terms that protect the
Microsoft Distributable Code at least as much as Microsoft's own
requirements for the Distributable Code. See Microsoft's documentation
(included in its developer tools and on its website at microsoft.com)
for specific details.

Redistribution of the Windows binary build of the Python interpreter
complies with this agreement, provided that you do not:

- alter any copyright, trademark or patent
notice in Microsoft's
Distributable Code;

- use Microsoft's trademarks in your programs' names or in a way that
suggests your programs come from or are endorsed by Microsoft;

- distribute Microsoft's Distributable Code to run on a platform other
than Microsoft operating systems, run-time technologies or application
platforms; or

- include Microsoft Distributable Code in malicious, deceptive or
unlawful programs.

These restrictions apply only to the Microsoft Distributable Code as
defined above, not to Python itself or any programs running on the
Python interpreter. The redistribution of the Python interpreter and
libraries is governed by the Python Software License included with this
file, or by other licenses as marked.
Copyright (c) 1998-2000 Thai Open Source Software Center Ltd and Clark Cooper
Copyright (c) 2001-2022 Expat maintainers

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

A. HISTORY OF THE SOFTWARE

==========

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All
Python releases are Open Source (see http://www.opensource.org for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under
the GPL. All Python licenses, unlike the GPL, let you distribute
a modified version without making your changes open source. The
GPL-compatible licenses make it possible to combine Python with
other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,
because its license has a choice of law clause. According to
CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1
is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's
direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON
==========

Python software and documentation are licensed under the
Python Software Foundation License Version 2.

Starting with Python 3.8.6,
examples, recipes, and other code in
the documentation are dual licensed under the PSF License Version 2
and the Zero-Clause BSD license.

Some software incorporated into Python is under different licenses.
The licenses are listed with code falling under that license.

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2
---

1. This LICENSE AGREEMENT is between the Python Software Foundation
("PSF"), and the Individual or Organization ("Licensee") accessing and
otherwise using this software ("Python") in source or binary form and
its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby
grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce,
analyze, test, perform and/or display publicly, prepare derivative works,
distribute, and otherwise use Python alone or in any derivative version,
provided, however, that PSF's License Agreement and PSF's notice of copyright,
i.e., "Copyright
(c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010,
2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 Python Software Foundation;

All Rights Reserved" are retained in Python alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on or incorporates Python or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS" basis. PSF MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON FOR ANY
INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between PSF and Licensee. This License Agreement does not grant permission to use PSF trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By copying, installing or otherwise using Python, Licensee agrees to be bound by the terms and conditions of this License Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an office at 160 Saratoga
Avenue, Santa Clara, CA 95051, and the Individual or Organization ("Licensee") accessing and otherwise using this software in source or binary form and its associated documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License Agreement, BeOpen hereby grants Licensee a non-exclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use the Software alone or in any derivative version, provided, however, that the BeOpen Python License is retained in the Software, alone or in any derivative version prepared by Licensee.

3. BeOpen is making the Software available to Licensee on an "AS IS" basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1

---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in

source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, CNRI hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c) 1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions.

Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission to use CNRI trademarks or trade name in a trademark sense to endorse or promote products or services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying, installing or otherwise using Python 1.6.1, Licensee agrees to be bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam, The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Stichting Mathematisch Centrum or CWI not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER
RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

ZERO-CLAUSE BSD LICENSE FOR CODE IN THE PYTHON DOCUMENTATION

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
This license applies to the bootstrapper application that is embedded within the installer. It has no impact on the licensing for the rest of the installer or Python itself, as no code covered by this license exists in any other part of the product.

Microsoft Reciprocal License (MS-RL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

1. Definitions
The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.
A "contribution" is the original software, or any additions or changes to the software.
A "contributor" is any person that distributes its contribution under this license.
"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights
(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.
(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations
(A) Reciprocal Grants- For any file you distribute that contains code from the software (in source code or binary format), you must provide recipients the source code to that file along with a copy of this license, which license will govern that file. You may license other files that are entirely your own work and do not contain code from the software under any terms you choose.
(B) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.
(C) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.
(D) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.
(E) If you distribute any portion of the software in source code form, you may do so only under this license by

including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.
(F) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions.
You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

1.279 libsemanage-common 3.6-2.1.el9_5

1.279.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid

distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves,
then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to
a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed
under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever
changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user
installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people
have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free status
of
all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should

also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.280 libpkit 0.25.3-3.el9_5

1.280.1 Available under license :

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above
  copyright notice, this list of conditions and the
  following disclaimer.
* Redistributions in binary form must reproduce the
  above copyright notice, this list of conditions and
  the following disclaimer in the documentation and/or
  other materials provided with the distribution.
* The names of contributors to this software may not be
  used to endorse or promote products derived from this
  software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
 ANY DIRECT, INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS
OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED
AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF
THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH
DAMAGE.

1.281 scanelf 1.3.8-r1

1.281.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses
are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission
to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program
or other work which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute
verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program

(or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program
in object code or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled
to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based
on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit
royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute
software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies
a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED
BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING

WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version
2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author

Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical
commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.282 githubcomfsnotifyfsnotify 1.8.0

1.282.1 Available under license :

Copyright 2012 The Go Authors. All rights reserved.
Copyright fsnotify Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this
list of conditions and the following disclaimer in the documentation and/or
other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used
to endorse or promote products derived from this software without specific
prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE

DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.283 sigs.k8s.io/json 0.0.0-20241014173422-cfa47c3a1cc8

1.283.1 Available under license :

Files other than internal/golang/* licensed under:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical

transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable

(except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional
or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing
the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor
be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,

or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and
hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You
may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---

internal/golang/* files licensed under:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.284 github.com/moby/spdystream 0.5.0

1.284.1 Available under license :

SpdyStream
Copyright 2014-2021 Docker Inc.

This product includes software developed at
Docker Inc. (https://www.docker.com/).

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all

other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must

include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and
limitations under the License.

1.285 structured-merge-diff 4.5.0

1.285.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object

form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate

as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work

by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.286 kube-openapi 0.0.0-20241212222426-2c72e554b1e7

1.286.1 Available under license :

```
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//    http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

// License information for the exposed API.
```

```
//
// For more information: http://goo.gl/8us55a#licenseObject
type License struct {
 Name string `json:"name,omitempty"`
 URL  string `json:"url,omitempty"`
}
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//    http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

import "testing"

func TestIntegrationLicense(t *testing.T) {
 license := License{Name: "the name", URL: "the url"}
 const licenseJSON = `{"name":"the name","url":"the url"}`
 const licenseYAML = "name: the name\nurl: the url\n"

 assertSerializeJSON(t, license, licenseJSON)
 assertParsesJSON(t, licenseJSON, license)
}
```

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all

other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must

include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.

See the License for the specific language governing permissions and limitations under the License.

1.287 utils 0.0.0-20241210054802-24370beab758

1.287.1 Available under license :

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the

distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable

(except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,

and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.288 easyjson 0.9.0

1.288.1 Available under license :

Copyright (c) 2016 Mail.Ru Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the

Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.289 alpine-baselayout 3.6.8-r1

1.289.1 Available under license :

Note that many files in here are not copyrighted/licensed, so they are
actually in the public domain.

Otherwise:
Copyright 1996-2013 Gentoo Foundation

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License
instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of

running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you

distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program)
 on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

 3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

  a) Accompany it with the complete corresponding machine-readable
  source code, which must be distributed under the terms of Sections
  1 and 2 above on a medium customarily used for software interchange; or,

  b) Accompany it with a written offer, valid for at least three
  years, to give any third party, for a charge no more than your
  cost of physically performing source distribution, a complete
  machine-readable copy of the corresponding source code, to be
  distributed under the terms of Sections 1 and 2 above on a medium
  customarily used for software interchange; or,

  c) Accompany it with the information you received as to the offer
   to distribute corresponding source code. (This alternative is
  allowed only for noncommercial distribution and only if you
  received the program in object code or executable form with such
  an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place,
then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the
Program),
you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the
Program), the recipient automatically receives a license from the
original licensor to copy, distribute or modify the Program subject to
these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties to
this License.

7. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License
and any other pertinent obligations, then as a consequence you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under

any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through
that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present
version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software

generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you
can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type
`show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit
linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.290 musl 1.2.5-r9

1.290.1 Available under license :

musl as a whole is licensed under the following standard MIT license:

Copyright 2005-2020 Rich Felker, et al.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
 LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Authors/contributors include:

A. Wilcox
Ada Worcester
Alex Dowad
Alex Suykov
Alexander Monakov
Andre McCurdy
Andrew Kelley
Anthony G. Basile
Aric Belsito
Arvid Picciani
Bartosz Brachaczek
Benjamin Peterson
Bobby Bingham
Boris Brezillon
Brent Cook
Chris Spiegel
Clment Vasseur
Daniel Micay
Daniel Sabogal

Daurnimator
David Carlier
David Edelsohn
Denys Vlasenko
Dmitry Ivanov
Dmitry V. Levin
Drew DeVault
Emil Renner Berthing
Fangrui Song
Felix Fietkau
Felix Janda
Gianluca Anzolin
Hauke Mehrtens
He X
Hiltjo Posthuma
Isaac Dunham
Jaydeep Patil
Jens Gustedt
Jeremy Huntwork
Jo-Philipp Wich
Joakim Sindholt
John Spencer
Julien Ramseier
Justin Cormack
Kaarle Ritvanen
Khem Raj
Kylie McClain
Leah Neukirchen
Luca Barbato
Luka
Perkov
M Farkas-Dyck (Strake)
Mahesh Bodapati
Markus Wichmann
Masanori Ogino
Michael Clark
Michael Forney
Mikhail Kremnyov
Natanael Copa
Nicholas J. Kain
orc
Pascal Cuoq
Patrick Oppenlander
Petr Hosek
Petr Skocik
Pierre Carrier
Reini Urban
Rich Felker

Richard Pennington
Ryan Fairfax
Samuel Holland
Segev Finer
Shiz
sin
Solar Designer
Stefan Kristiansson
Stefan O'Rear
Szabolcs Nagy
Timo Ters
Trutz Behn
Valentin Ochs
Will Dietz
William Haddon
William Pitcock

Portions of this software are derived from third-party works licensed
under terms compatible with the above MIT license:

The TRE regular expression implementation (src/regex/reg* and
src/regex/tre*) is Copyright 2001-2008 Ville Laurikari and licensed
under a 2-clause BSD license (license text in the source files). The
included version has been heavily modified by Rich Felker in 2012, in
the interests of size, simplicity, and namespace cleanliness.

Much of the math library code (src/math/* and src/complex/*) is
Copyright 1993,2004
 Sun Microsystems or
Copyright 2003-2011 David Schultz or
Copyright 2003-2009 Steven G. Kargl or
Copyright 2003-2009 Bruce D. Evans or
Copyright 2008 Stephen L. Moshier or
Copyright 2017-2018 Arm Limited
and labelled as such in comments in the individual source files. All
have been licensed under extremely permissive terms.

The ARM memcpy code (src/string/arm/memcpy.S) is Copyright 2008
The Android Open Source Project and is licensed under a two-clause BSD
license. It was taken from Bionic libc, used on Android.

The AArch64 memcpy and memset code (src/string/aarch64/*) are
Copyright 1999-2019, Arm Limited.

The implementation of DES for crypt (src/crypt/crypt_des.c) is
Copyright 1994 David Burren. It is licensed under a BSD license.

The implementation of blowfish crypt (src/crypt/crypt_blowfish.c) was

originally written by Solar Designer and placed into the public
domain. The code also comes with a fallback permissive license for use
in jurisdictions that may not recognize the
public domain.

The smoothsort implementation (src/stdlib/qsort.c) is Copyright 2011
Valentin Ochs and is licensed under an MIT-style license.

The x86_64 port was written by Nicholas J. Kain and is licensed under
the standard MIT terms.

The mips and microblaze ports were originally written by Richard
Pennington for use in the ellcc project. The original code was adapted
by Rich Felker for build system and code conventions during upstream
integration. It is licensed under the standard MIT terms.

The mips64 port was contributed by Imagination Technologies and is
licensed under the standard MIT terms.

The powerpc port was also originally written by Richard Pennington,
and later supplemented and integrated by John Spencer. It is licensed
under the standard MIT terms.

All other files which have no copyright comments are original works
produced specifically for use as part of this library, written either
by Rich Felker, the main author of the library, or by one or more
contibutors listed
above. Details on authorship of individual files
can be found in the git version control history of the project. The
omission of copyright and license comments in each file is in the
interest of source tree size.

In addition, permission is hereby granted for all public header files
(include/* and arch/*/bits/*) and crt files intended to be linked into
applications (crt/*, ldso/dlstart.c, and arch/*/crt_arch.h) to omit
the copyright notice and permission notice otherwise required by the
license, and to use these files without any requirement of
attribution. These files include substantial contributions from:

Bobby Bingham
John Spencer
Nicholas J. Kain
Rich Felker
Richard Pennington
Stefan Kristiansson
Szabolcs Nagy

all of whom have explicitly granted such permission.

This file previously contained text expressing a belief that most of the files covered by the above exception were sufficiently trivial not to be subject to copyright, resulting in confusion over whether it negated
the permissions granted in the license. In the spirit of permissive licensing, and of not having licensing issues being an obstacle to adoption, that text has been removed.

1.291 reflect2 1.0.2

1.291.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s)

with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.292 float16 0.8.4

1.292.1 Available under license :

MIT License

Copyright (c) 2019 Montgomery Edwards and Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.293 kubernetes-yaml 1.4.0

1.293.1 Available under license :

This project is covered by two different licenses: MIT and Apache.

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go
writerc.go yamlh.go yamlprivateh.go

Copyright (c) 2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial
portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

  http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR
 CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

  http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
                    Apache License
                Version 2.0, January 2004
             http://www.apache.org/licenses/

 TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

 1. Definitions.

    "License" shall mean the terms and conditions for use, reproduction,
    and distribution as defined by Sections 1 through 9 of this document.

    "Licensor" shall mean the copyright owner or entity authorized by
    the copyright owner that is granting the License.

    "Legal Entity" shall mean the union of the acting entity and all
    other entities that control, are controlled by, or are under common

control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity

on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained

within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,

whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and

limitations under the License.

The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The forked go-yaml.v3 library under this project is covered by two different licenses (MIT and Apache):

MIT License

The following files were ported to Go from C files of libyaml, and thus are still covered by their original MIT license, with the additional copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go
writerc.go yamlh.go yamlprivateh.go

Copyright (c)
2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");

you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The forked go-yaml.v2 library under the project is covered by an
Apache license:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND
CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall
mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative
Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding
communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section)
patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,

where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet
the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution
of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS"
BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.294 cbor 2.7.0

1.294.1 Available under license :

MIT License

Copyright (c) 2019-present Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.295 jsonpatch 4.12.0

1.295.1 Available under license :

Copyright (c) 2014, Evan Phoenix
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.
* Neither the name of the Evan Phoenix nor the names of its contributors
 may be used to endorse or promote products derived from this software
 without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.296 protobuf 1.5.4

1.296.1 Available under license :

Copyright (c) Nils Adermann, Jordi Boggiano

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is furnished
to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.297 pysocks 1.7.1

1.297.1 Available under license :

Copyright 2006 Dan-Haim. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
3. Neither the name of Dan Haim nor the names of his contributors may be used
to endorse or promote products derived from this software without specific
prior written permission.

THIS SOFTWARE IS PROVIDED BY DAN HAIM "AS IS" AND ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO
EVENT SHALL DAN HAIM OR HIS CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT,
INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA
OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT

OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMANGE.
3proxy 0.7 Public License Agreement

(c) 2000-2014 by 3APA3A (3APA3A@security.nnov.ru)
(c) 2000-2014 by SecurityVulns.com (http://3proxy.ru/)
(c) 2000-2014 by Vladimir Dubrovin (vlad@sandy.ru)

This software uses:
RSA Data Security, Inc. MD4 Message-Digest Algorithm
RSA Data Security, Inc. MD5 Message-Digest Algorithm

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF
THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software is FREEWARE.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that following conditions
are met (BSD style license):

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of the SecurityVulns.COM nor the names of its
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

Instead of this license, you can also use and redistribute this software under
terms of compatible license, including:

1. Apache License, Version 2.0
You may obtain a copy
of the License at

http://www.apache.org/licenses/LICENSE-2.0

2. GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/gpl.txt

3. GNU Lesser General Public License as published by the
Free Software Foundation; either version 2.1 of the License, or
(at your option) any later version.
You may obtain a copy of the License at

http://www.gnu.org/licenses/lgpl.txt

1.298 chardet 4.0.0

1.298.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest
you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that

you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a

combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits
its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use
the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of

this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to

a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed
under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this
License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables
containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user

installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally distributed (in either source or binary form) with the
major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any other library
facilities. This must be distributed under
the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing
the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is

implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR

OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should
also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.299 colorama 0.4.4

1.299.1 Available under license :

Copyright (c) 2010 Jonathan Hartley
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

* Neither the name of the copyright holders, nor those of its contributors
may be used to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER

CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.300 platformdirs 2.4.0

1.300.1 Available under license :

This is the MIT license

Copyright (c) 2010 ActiveState Software Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.301 slog-shim 0.1.0

1.301.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.302 packaging 21.0

1.302.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor

has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
   the Work or Derivative Works thereof, You may choose to offer,
   and charge a fee for, acceptance of support, warranty, indemnity,
   or other liability obligations and/or rights consistent with this
   License. However, in accepting such obligations, You may act only
   on Your own behalf and on Your sole responsibility, not on behalf
   of any other Contributor, and only if You agree to indemnify,
   defend, and hold each Contributor harmless for any liability
   incurred by, or claims asserted against, such Contributor by reason
   of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS
This software is made available under the terms of *either* of the licenses
found in LICENSE.APACHE or LICENSE.BSD. Contributions to this software is made
under the terms of *both* these licenses.
Copyright (c) Donald Stufft and individual contributors.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice,
   this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED
TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.303 tenacity 7.0.0

1.303.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain

separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without

modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include

the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.304 distlib 0.3.3

1.304.1 Available under license :

A. HISTORY OF THE SOFTWARE
==========

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see http://www.zope.com). In 2001, the Python Software
Foundation (PSF, see http://www.python.org/psf/) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member
of
the PSF.

All Python releases are Open Source (see http://www.opensource.org for

the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes

3.2	3.1	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

B. TERMS AND CONDITIONS FOR ACCESSING OR OTHERWISE USING PYTHON

PYTHON SOFTWARE FOUNDATION LICENSE VERSION 2

1. This LICENSE AGREEMENT is between the Python Software Foundation ("PSF"), and the Individual or Organization ("Licensee") accessing and otherwise using this software ("Python") in source or binary form and its associated documentation.

2. Subject to the terms and conditions of this License Agreement, PSF hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python alone or in any derivative version, provided, however, that PSF's License Agreement and PSF's notice of copyright, i.e., "Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010 Python Software Foundation; All Rights Reserved" are retained in Python alone or in any derivative version prepared by Licensee.

3. In the event Licensee prepares a derivative work that is based on or incorporates Python or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python.

4. PSF is making Python available to Licensee on an "AS IS"

basis. PSF MAKES NO REPRESENTATIONS
 OR WARRANTIES, EXPRESS OR
IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, PSF MAKES NO AND
DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS
FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON WILL NOT
INFRINGE ANY THIRD PARTY RIGHTS.

5. PSF SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON
FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS
A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON,
OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6. This License Agreement will automatically terminate upon a material
breach of its terms and conditions.

7. Nothing in this License Agreement shall be deemed to create any
relationship of agency, partnership, or joint venture between PSF and
Licensee. This License Agreement does not grant permission to use PSF
trademarks or trade name in a trademark sense to endorse or promote
products or services of Licensee, or any third party.

8. By copying, installing or otherwise
 using Python, Licensee
agrees to be bound by the terms and conditions of this License
Agreement.

BEOPEN.COM LICENSE AGREEMENT FOR PYTHON 2.0

BEOPEN PYTHON OPEN SOURCE LICENSE AGREEMENT VERSION 1

1. This LICENSE AGREEMENT is between BeOpen.com ("BeOpen"), having an
office at 160 Saratoga Avenue, Santa Clara, CA 95051, and the
Individual or Organization ("Licensee") accessing and otherwise using
this software in source or binary form and its associated
documentation ("the Software").

2. Subject to the terms and conditions of this BeOpen Python License
Agreement, BeOpen hereby grants Licensee a non-exclusive,
royalty-free, world-wide license to reproduce, analyze, test, perform
and/or display publicly, prepare derivative works, distribute, and
otherwise use the Software alone or in any derivative version,
provided, however, that the BeOpen Python License is retained in the
Software, alone or in any derivative version prepared by Licensee.

3.

BeOpen is making the Software available to Licensee on an "AS IS"
basis. BEOPEN MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, BEOPEN MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF THE SOFTWARE WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

4. BEOPEN SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF THE SOFTWARE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

5. This License Agreement will automatically terminate upon a material breach of its terms and conditions.

6. This License Agreement shall be governed by and interpreted in all respects by the law of the State of California, excluding conflict of law provisions. Nothing in this License Agreement shall be deemed to create any relationship of
agency, partnership, or joint venture
between BeOpen and Licensee. This License Agreement does not grant permission to use BeOpen trademarks or trade names in a trademark sense to endorse or promote products or services of Licensee, or any third party. As an exception, the "BeOpen Python" logos available at http://www.pythonlabs.com/logos.html may be used according to the permissions granted on that web page.

7. By copying, installing or otherwise using the software, Licensee agrees to be bound by the terms and conditions of this License Agreement.

CNRI LICENSE AGREEMENT FOR PYTHON 1.6.1
---

1. This LICENSE AGREEMENT is between the Corporation for National Research Initiatives, having an office at 1895 Preston White Drive, Reston, VA 20191 ("CNRI"), and the Individual or Organization ("Licensee") accessing and otherwise using Python 1.6.1 software in source or binary form and its associated documentation.

2. Subject to the terms and conditions
of this License Agreement, CNRI
hereby grants Licensee a nonexclusive, royalty-free, world-wide license to reproduce, analyze, test, perform and/or display publicly, prepare derivative works, distribute, and otherwise use Python 1.6.1 alone or in any derivative version, provided, however, that CNRI's License Agreement and CNRI's notice of copyright, i.e., "Copyright (c)

1995-2001 Corporation for National Research Initiatives; All Rights Reserved" are retained in Python 1.6.1 alone or in any derivative version prepared by Licensee. Alternately, in lieu of CNRI's License Agreement, Licensee may substitute the following text (omitting the quotes): "Python 1.6.1 is made available subject to the terms and conditions in CNRI's License Agreement. This Agreement together with Python 1.6.1 may be located on the Internet using the following unique, persistent identifier (known as a handle): 1895.22/1013. This Agreement may also be obtained from a proxy server on the Internet using the following
URL: http://hdl.handle.net/1895.22/1013".

3. In the event Licensee prepares a derivative work that is based on or incorporates Python 1.6.1 or any part thereof, and wants to make the derivative work available to others as provided herein, then Licensee hereby agrees to include in any such work a brief summary of the changes made to Python 1.6.1.

4. CNRI is making Python 1.6.1 available to Licensee on an "AS IS" basis. CNRI MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED. BY WAY OF EXAMPLE, BUT NOT LIMITATION, CNRI MAKES NO AND DISCLAIMS ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR THAT THE USE OF PYTHON 1.6.1 WILL NOT INFRINGE ANY THIRD PARTY RIGHTS.

5. CNRI SHALL NOT BE LIABLE TO LICENSEE OR ANY OTHER USERS OF PYTHON 1.6.1 FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR LOSS AS A RESULT OF MODIFYING, DISTRIBUTING, OR OTHERWISE USING PYTHON 1.6.1, OR ANY DERIVATIVE THEREOF, EVEN IF ADVISED OF THE POSSIBILITY THEREOF.

6.
This License Agreement will automatically terminate upon a material breach of its terms and conditions.

7. This License Agreement shall be governed by the federal intellectual property law of the United States, including without limitation the federal copyright law, and, to the extent such U.S. federal law does not apply, by the law of the Commonwealth of Virginia, excluding Virginia's conflict of law provisions. Notwithstanding the foregoing, with regard to derivative works based on Python 1.6.1 that incorporate non-separable material that was previously distributed under the GNU General Public License (GPL), the law of the Commonwealth of Virginia shall govern this License Agreement only as to issues arising under or with respect to Paragraphs 4, 5, and 7 of this License Agreement. Nothing in this License Agreement shall be deemed to create any relationship of agency, partnership, or joint venture between CNRI and Licensee. This License Agreement does not grant permission

to use CNRI trademarks or
trade name in a trademark sense to endorse or promote products or
services of Licensee, or any third party.

8. By clicking on the "ACCEPT" button where indicated, or by copying,
installing or otherwise using Python 1.6.1, Licensee agrees to be
bound by the terms and conditions of this License Agreement.

ACCEPT

CWI LICENSE AGREEMENT FOR PYTHON 0.9.0 THROUGH 1.2

Copyright (c) 1991 - 1995, Stichting Mathematisch Centrum Amsterdam,
The Netherlands. All rights reserved.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Stichting Mathematisch
Centrum or CWI not be used in advertising or publicity pertaining to
distribution of the software
without specific, written prior
permission.

STICHTING MATHEMATISCH CENTRUM DISCLAIMS ALL WARRANTIES WITH REGARD TO
THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS, IN NO EVENT SHALL STICHTING MATHEMATISCH CENTRUM BE LIABLE
FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT
OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
==========
Distutils2 Contributors
==========

The Distutils2 project was started by Tarek Ziad and is currently
maintained by ric Araujo. Many people have contributed to the project.

distlib has started off using some of the code from distutil2.

If you're making a patch, please add your name below in alphabetical order,
and welcome into the Fellowship of the Packaging!

Thanks to:

- Rajiv Abraham
- Ali Afshar
- David Barnett
- Pior Bastida
- Anthony Baxter
- Erik Bray
- C. Titus Brown
- Francisco Martn Brugu
- Nicolas Cadou
- Godefroid Chapelle
- Julien Courteau
- Christophe Combelles
- Jason R. Coombs
- Pierre-Yves David
- Ned Deily
- Konrad Delong
- Josip Djolonga
- John Edmonds
- Andr Espaze
- Boris Feld
- Andrew Francis
- Hallvard B Furuseth
- Patrice Gauthier
- Yannick Gingras
- Filip Gruszczyski
- Walker Hale IV
- Alexandre Hamelin
- Kelsey Hightower
- Thomas Holmes
- Preston Holmes
- Christian Hudon
- Julien Jehannet
- Jeremy Kloth
- Thomas Kluyver
-
Amos Latteier
- Mathieu Leduc-Hamel
- Pierre Paul Lefebvre
- Tshepang Lekhonkhobe
- Alain Leufroy
- Janusz Lewandowski
- Martin von Lwis
- Hugo Lopes Tavares
- Guillermo Lpez-Anglada
- Justin Love
- Simon Mathieu
- Carl Meyer
- Alexis Mtaireau

- Julien Miotte
- Zubin Mithra
- Derek McTavish Mounce
- Paul Moore
- Michael Mulich
- Louis Munro
- Gal Pasgrimaud
- George Peristerakis
- Mathieu Perreault
- Guillaume Pratte
- Sean Reifschneider
- Antoine Reversat
- Arc Riley
- C. Anthony Risinger
- Elson Rodriguez
- Luis Rojas
- Erik Rose
- Brian Rosner
- Vinay Sajip
- Victor Stinner
- Alexandre Vassalotti
- Nadeem Vawda

Copyright (C) 2013 by Test User.

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of Vinay Sajip
not be used in advertising or publicity pertaining to distribution
of the software without specific, written prior permission.

VINAY SAJIP DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING
ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL
VINAY SAJIP BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR
ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN
AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR
IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
BSD-licensed.

1.305 jsonreference 0.21.0

1.305.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions

to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the

content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.306 swag 0.23.0

1.306.1 Available under license :

MIT License

Copyright (c) 2017 Eason Lin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

1.307 idna 2.10

1.307.1 Available under license :

No license file was found, but licenses were detected in source scan.

Metadata-Version: 1.2
Name: idna
Version: 2.10
Summary: Internationalized Domain Names in Applications (IDNA)
Home-page: https://github.com/kjd/idna
Author: Kim Davies
Author-email: kim@cynosure.com.au
License: BSD-like
Description: Internationalized Domain Names in Applications (IDNA)
==========

Support for the Internationalised Domain Names in Applications
(IDNA) protocol as specified in `RFC 5891 <http://tools.ietf.org/html/rfc5891>`_.
This is the latest version of the protocol and is sometimes referred to as
“IDNA 2008”.

This library also provides support for Unicode Technical Standard 46,
`Unicode IDNA Compatibility Processing <http://unicode.org/reports/tr46/>`_.

This acts as a suitable replacement for the “encodings.idna” module that
comes with the Python standard library,
but only supports the
old, deprecated IDNA specification (`RFC 3490 <http://tools.ietf.org/html/rfc3490>`_).

Basic functions are simply executed:

.. code-block:: pycon

Python 3
>>> import idna
>>> idna.encode('.')
b'xn--eckwd4c7c.xn--zckzah'
>>> print(idna.decode('xn--eckwd4c7c.xn--zckzah'))
.

Python 2
>>> import idna
>>> idna.encode(u'.')
'xn--eckwd4c7c.xn--zckzah'
>>> print idna.decode('xn--eckwd4c7c.xn--zckzah')
.

Packages

The latest tagged release version is published in the PyPI repository:

.. image:: https://badge.fury.io/py/idna.svg
  :target: http://badge.fury.io/py/idna

Installation

To install this library,
you can use pip:

.. code-block:: bash

  $ pip install idna

Alternatively, you can install the package using the bundled setup script:

.. code-block:: bash

  $ python setup.py install

This library works with Python 2.7 and Python 3.4 or later.

Usage

For typical usage, the ``encode`` and ``decode`` functions will take a domain
name argument and perform a conversion to A-labels or U-labels respectively.

.. code-block:: pycon

  # Python 3
  >>> import idna
  >>> idna.encode('.')
  b'xn--eckwd4c7c.xn--zckzah'
  >>> print(idna.decode('xn--eckwd4c7c.xn--zckzah'))
  .

You may use the codec encoding and decoding methods using the
``idna.codec`` module:

.. code-block:: pycon

  # Python 2
  >>> import idna.codec
  >>> print u'.'.encode('idna')

```
xn--80ahd1agd.xn--80akhbyknj4f
>>> print 'xn--80ahd1agd.xn--80akhbyknj4f'.decode('idna')
.
```

Conversions can be applied at a per-label basis using the ``ulabel`` or ``alabel`` functions if necessary:

.. code-block:: pycon

```
# Python 2
>>> idna.alabel(u'')
'xn--0zwm56d'
```

Compatibility Mapping (UTS #46)
++++++++++++++++++++++++++++++++

As described in `RFC 5895 <http://tools.ietf.org/html/rfc5895>`_, the IDNA specification no longer normalizes input from different potential ways a user may input a domain name. This functionality, known as a “mapping”, is now considered by the specification to be a local user-interface issue distinct from IDNA conversion functionality.

This library provides one such mapping, that was developed by the Unicode Consortium. Known as `Unicode IDNA Compatibility Processing <http://unicode.org/reports/tr46/>`_, it provides for both a regular mapping for typical applications, as well as a transitional mapping to help migrate from older IDNA 2003 applications.

For example, “Königsgäßchen” is not a permissible label as *LATIN CAPITAL LETTER K* is not allowed (nor are capital letters in general). UTS 46 will convert this into lower case prior to applying the IDNA conversion.

.. code-block:: pycon

```
# Python 3
>>> import idna
>>> idna.encode(u'Königsgäßchen')
...
idna.core.InvalidCodepoint: Codepoint U+004B at position 1 of 'Königsgäßchen' not allowed
>>> idna.encode('Königsgäßchen', uts46=True)
b'xn--knigsgchen-b4a3dun'
>>> print(idna.decode('xn--knigsgchen-b4a3dun'))
 königsgäßchen
```

Transitional processing provides conversions to help transition from the older 2003 standard to the current standard. For example, in the original IDNA specification, the *LATIN SMALL LETTER SHARP S* (ß) was converted into two *LATIN SMALL LETTER S* (ss), whereas in the current IDNA specification this

conversion is not performed.

.. code-block:: pycon

  # Python 2
  >>> idna.encode(u'Königsgäßchen', uts46=True, transitional=True)
  'xn--knigsgsschen-lcb0w'

Implementors should use transitional processing with caution, only in rare
cases where conversion from legacy labels to current labels must be performed
(i.e. IDNA implementations that pre-date 2008). For typical applications
that just need to convert labels, transitional processing is unlikely to be
beneficial and could produce
unexpected incompatible results.

``encodings.idna`` Compatibility
++++++++++++++++++++++++++++++++

Function calls from the Python built-in ``encodings.idna`` module are
mapped to their IDNA 2008 equivalents using the ``idna.compat`` module.
Simply substitute the ``import`` clause in your code to refer to the
new module name.

Exceptions

All errors raised during the conversion following the specification should
raise an exception derived from the ``idna.IDNAError`` base class.

More specific exceptions that may be generated as ``idna.IDNABidiError``
when the error reflects an illegal combination of left-to-right and right-to-left
characters in a label; ``idna.InvalidCodepoint`` when a specific codepoint is
an illegal character in an IDN label (i.e. INVALID); and ``idna.InvalidCodepointContext``
when the codepoint is
illegal based on its positional context (i.e. it is CONTEXTO
or CONTEXTJ but the contextual requirements are not satisfied.)

Building and Diagnostics

The IDNA and UTS 46 functionality relies upon pre-calculated lookup tables for
performance. These tables are derived from computing against eligibility criteria
in the respective standards. These tables are computed using the command-line
script ``tools/idna-data``.

This tool will fetch relevant tables from the Unicode Consortium and perform the
required calculations to identify eligibility. It has three main modes:

* ``idna-data make-libdata``. Generates ``idnadata.py`` and ``uts46data.py``,
  the pre-calculated lookup tables using for IDNA and UTS 46 conversions. Implementors
  who wish to track this library against a different Unicode version may use this tool
  to manually
generate a different version of the ``idnadata.py`` and ``uts46data.py``
  files.

* ``idna-data make-table``. Generate a table of the IDNA disposition
  (e.g. PVALID, CONTEXTJ, CONTEXTO) in the format found in Appendix B.1 of RFC
  5892 and the pre-computed tables published by `IANA <http://iana.org/>`_.

* ``idna-data U+0061``. Prints debugging output on the various properties
  associated with an individual Unicode codepoint (in this case, U+0061), that are
  used to assess the IDNA and UTS 46 status of a codepoint. This is helpful in debugging
  or analysis.

The tool accepts a number of arguments, described using ``idna-data -h``. Most notably,
the ``--version`` argument allows the specification of the version of Unicode to use
in computing the table data. For example, ``idna-data --version 9.0.0 make-libdata``
will generate library data against Unicode 9.0.0.

Note that this script requires Python 3, but all generated library data will work
in Python 2.7.

Testing

The library has a test suite based on each rule of the IDNA specification, as
well as tests that are provided as part of the Unicode Technical Standard 46,
`Unicode IDNA Compatibility Processing <http://unicode.org/reports/tr46/>`_.

The tests are run automatically on each commit at Travis CI:

.. image:: https://travis-ci.org/kjd/idna.svg?branch=master
  :target: https://travis-ci.org/kjd/idna

Platform: UNKNOWN
Classifier: Development Status :: 5 - Production/Stable
Classifier: Intended Audience :: Developers
Classifier: Intended Audience :: System Administrators
Classifier: License :: OSI Approved :: BSD License
Classifier: Operating System :: OS Independent
Classifier: Programming Language :: Python
Classifier: Programming Language
 :: Python :: 2
Classifier: Programming Language :: Python :: 2.7
Classifier: Programming Language :: Python :: 3

Classifier: Programming Language :: Python :: 3.4
Classifier: Programming Language :: Python :: 3.5
Classifier: Programming Language :: Python :: 3.6
Classifier: Programming Language :: Python :: 3.7
Classifier: Programming Language :: Python :: 3.8
Classifier: Programming Language :: Python :: Implementation :: CPython
Classifier: Programming Language :: Python :: Implementation :: PyPy
Classifier: Topic :: Internet :: Name Service (DNS)
Classifier: Topic :: Software Development :: Libraries :: Python Modules
Classifier: Topic :: Utilities
Requires-Python: >=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*

Found in path(s):
* /idna-2-10-1-tar-gz/idna-2.10/PKG-INFO
* /idna-2-10-1-tar-gz/idna-2.10/idna.egg-info/PKG-INFO
No license file was found, but licenses were detected in source scan.

License

License: bsd-3-clause

Copyright (c) 2013-2020, Kim Davies. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

#. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

#. Redistributions in binary form must reproduce the above
  copyright notice, this list of conditions and the following
  disclaimer in the documentation and/or other materials provided with
  the distribution.

#. Neither the name of the copyright holder nor the names of the
  contributors may be used to endorse or promote products derived
  from this software without specific prior written permission.

#. THIS SOFTWARE IS PROVIDED BY THE CONTRIBUTORS "AS IS" AND ANY
  EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
  IMPLIED
 WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
  PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR
  CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
  SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
  LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
  DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Found in path(s):
* /idna-2-10-1-tar-gz/idna-2.10/LICENSE.rst
No license file was found, but licenses were detected in source scan.

"""
A library to support the Internationalised Domain Names in Applications
(IDNA) protocol as specified in RFC 5890 et.al. This new methodology,
known as IDNA 2008, can generate materially different results to the
previous standard. The library can act as a drop-in replacement for
the "encodings.idna" module.
"""

```
import io, sys
from setuptools import setup


def main():

  python_version = sys.version_info[:2]
  if python_version < (2,7):
     raise SystemExit("Sorry, Python 2.7 or newer required")

  package_data = {}
  exec(open('idna/package_data.py').read(), package_data)

  arguments = {
     'name': 'idna',
     'packages': ['idna'],
     'version': package_data['__version__'],
     'description': 'Internationalized Domain Names in Applications (IDNA)',
     'long_description': io.open("README.rst", encoding="UTF-8").read(),
     'author': 'Kim Davies',
     'author_email': 'kim@cynosure.com.au',
      'license': 'BSD-like',
     'url': 'https://github.com/kjd/idna',
     'classifiers': [
        'Development Status :: 5 - Production/Stable',
        'Intended Audience :: Developers',
        'Intended Audience :: System Administrators',
        'License :: OSI Approved :: BSD License',
        'Operating System :: OS Independent',
        'Programming Language :: Python',
        'Programming Language :: Python :: 2',
```

```
        'Programming Language :: Python :: 2.7',
        'Programming Language :: Python :: 3',
        'Programming Language :: Python :: 3.4',
        'Programming Language :: Python :: 3.5',
        'Programming Language :: Python :: 3.6',
        'Programming Language :: Python :: 3.7',
        'Programming Language :: Python :: 3.8',
        'Programming Language :: Python :: Implementation :: CPython',
        'Programming Language :: Python :: Implementation :: PyPy',
         'Topic :: Internet :: Name Service (DNS)',
        'Topic :: Software Development :: Libraries :: Python Modules',
        'Topic :: Utilities',
    ],
    'python_requires': '>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*',
}

setup(**arguments)

if __name__ == '__main__':
  main()
```

Found in path(s):
* /idna-2-10-1-tar-gz/idna-2.10/setup.py

1.308 spdystream 0.5.0

1.308.1 Available under license :

SpdyStream
Copyright 2014-2021 Docker Inc.

This product includes software developed at
Docker Inc. (https://www.docker.com/).

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its

distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.309 ca-certificates 20241121-r1

1.309.1 Available under license :

/* c_rehash.c - Create hash symlinks for certificates
* C implementation based on the original Perl and shell versions
*
* Copyright (c) 2013-2014 Timo Teräs <timo.teras@iki.fi>
* All rights reserved.
*
* This software is licensed under the MIT License.
* Full license available at: http://opensource.org/licenses/MIT
*/
Contributor: Sören Tempel <soeren+alpine@soeren-tempel.net>
Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=ca-certificates
pkgver=20241121
pkgrel=1
pkgdesc="Common CA certificates PEM files from Mozilla"
url="https://www.mozilla.org/en-US/about/governance/policies/security-group/certs/"
arch="all"
There is a GPL-2.0-or-later script inside the source but it is not shipped
license="MPL-2.0 AND MIT"
makedepends_build="perl"
Mozilla Public License
Version 2.0
1. Definitions
1.1. “Contributor”
means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. “Contributor Version”
means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor’s Contribution.

1.3. “Contribution”
means Covered Software of a particular Contributor.

1.4. “Covered Software”
means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. “Incompatible With Secondary Licenses”
means

that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. “Executable Form”
means
any form of the work other than Source Code Form.

1.7. “Larger Work”
means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. “License”
means this document.

1.9. “Licensable”
means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. “Modifications”
means any of the following:

any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

any new file in Source Code Form that contains any Covered Software.

1.11. “Patent Claims” of a Contributor
means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer
of either its Contributions or its Contributor Version.

1.12. “Secondary License”
means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. “Source Code Form”
means the form of the work preferred for making modifications.

1.14. “You” (or “Your”)
means an individual or a legal entity exercising rights under this License. For legal entities, “You” includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, “control” means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

for any code that a Contributor has removed from Covered Software; or

for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to

be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent,
then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an “as is” basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes
an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party’s negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so
this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party’s ability to bring cross-claims or counter-claims.

9. Miscellaneous
This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License
10.1. New Versions
Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other
than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions
You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions
If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses
If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in
Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice
This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain one at https://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - “Incompatible With Secondary Licenses” Notice
This Source Code Form is “Incompatible With Secondary Licenses”, as defined by the Mozilla Public License, v. 2.0.

1.310 json 0.0.0-20241014173422-cfa47c3a1cc8

1.310.1 Available under license :

Files other than internal/golang/* licensed under:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived
from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes

of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication
on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.
Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices
contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional
or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify

the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You
may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---

internal/golang/* files licensed under:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.311 gnostic-models 0.6.9

1.311.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only

on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.312 kubernetes-utils 0.0.0-20241210054802-24370beab758

1.312.1 Available under license :

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above

copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate

comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.313 k8s-io-kube-openapi 0.0.0-20241212222426-2c72e554b1e7

1.313.1 Available under license :

```
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//    http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

// License information for the exposed API.
//
// For more information: http://goo.gl/8us55a#licenseObject
type License struct {
 Name string `json:"name,omitempty"`
 URL  string `json:"url,omitempty"`
}
```

```
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//    http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

import "testing"

func TestIntegrationLicense(t *testing.T) {
 license := License{Name: "the name", URL: "the url"}
 const licenseJSON = `{"name":"the name","url":"the url"}`
 const licenseYAML = "name: the name\nurl: the url\n"

 assertSerializeJSON(t, license, licenseJSON)
 assertParsesJSON(t, licenseJSON, license)
}
```

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership

of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or

documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.314 githubcommailrueasyjson 0.9.0

1.314.1 Available under license :

Copyright (c) 2016 Mail.Ru Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.315 github.com/google/gnostic-models 0.6.9

1.315.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one

of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.316 futures Child component of Python 3.9

1.316.1 Available under license :

Copyright (c) 2013-2024 Python Charmers, Australia

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2010 by Armin Ronacher.

Some rights reserved.

Redistribution and use in source and binary forms of the theme, with or
without modification, are permitted provided that the following conditions
are met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer in the documentation and/or other materials provided
with the distribution.

* The names of the contributors may not be used to endorse or
promote products derived from this software without specific
prior written permission.

We kindly ask you to only use these themes in an unmodified manner just
for Flask and Flask-related products, not for unrelated projects. If you
like the visual style and want to use it for your own projects, please
consider making some larger changes to the themes (such as changing

font
faces, sizes, colors or margins).

THIS THEME IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS THEME, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.317 kubernetes-csi-api 0.5.0

1.317.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,

each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided

that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
   the Work or Derivative Works thereof, You may choose to offer,
   and charge a fee for, acceptance of support, warranty, indemnity,
   or other liability obligations and/or rights consistent with this
   License. However, in accepting such obligations, You may act only
   on Your own behalf and on Your sole responsibility, not on behalf
   of any other Contributor, and only if You agree to indemnify,
   defend, and hold each Contributor harmless for any liability
    incurred by, or claims asserted against, such Contributor by reason
   of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

   To apply the Apache License to your work, attach the following
   boilerplate notice, with the fields enclosed by brackets "{}"
   replaced with your own identifying information. (Don't include
   the brackets!) The text should be enclosed in the appropriate
   comment syntax for the file format. We also recommend that a
   file or class name and description of purpose be included on the
   same "printed page" as the copyright notice for easier
   identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

    http://www.apache.org/licenses/LICENSE-2.0

 Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.318 busybox 1.37.0-r12

1.318.1 Available under license :

bzip2 applet in busybox is based on lightly-modified source
of bzip2 version 1.0.4. bzip2 source is distributed
under the following conditions (copied verbatim from LICENSE file)
==

This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2006 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
  not claim that you wrote the original software. If you use this
  software in a product, an acknowledgment in the product
  documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
  not be misrepresented
 as being the original software.

4. The name of the author may not be used to endorse or promote
  products derived from this software without specific prior written
  permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, Cambridge, UK.
jseward@bzip.org
bzip2/libbzip2 version 1.0.4 of 20 December 2006
--- A note on GPL versions

BusyBox is distributed under version 2 of the General Public License (included
in its entirety, below). Version 2 is the only version of this license which
this version of BusyBox (or modified versions derived from this one) may be
distributed under.

    GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original

authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1

above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution
of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections

1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the

Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict
the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity
of the free software distribution system, which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the

original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make
exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED
ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER

PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may

be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of
 Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.319 ssl-client 1.37.0-r12

1.319.1 Available under license :

```
# Automatically generated by apkbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=10
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
 PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
  INSTALLDIRS=vendor \
  NO_PACKLIST=1 \
```

```
 NO_PERLLOCAL=1
 make
}

check() {
 export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
 make test
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"
bzip2 applet in busybox is based on lightly-modified source
of bzip2 version 1.0.4. bzip2 source is distributed
under the following conditions (copied verbatim from LICENSE file)
============================================================


This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2006 Julian R Seward.  All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
  not claim that you wrote the original software.  If you use this
  software in a product, an acknowledgment in the product
  documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
  not be misrepresented
 as being the original software.

4. The name of the author may not be used to endorse or promote
  products derived from this software without specific prior written
  permission.
```

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, Cambridge, UK.
jseward@bzip.org
bzip2/libbzip2 version 1.0.4 of 20 December 2006
--- A note on GPL versions

BusyBox is distributed under version 2 of the General Public License (included
in its entirety, below). Version 2 is the only version of this license which
this version of BusyBox (or modified versions derived from this one) may be
distributed under.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's
software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it

if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for
a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent
this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution
of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed
under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the

operating system on which the
executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Program or
its derivative works. These actions are
prohibited by law if you do not accept this License. Therefore, by
modifying or distributing the Program (or any work based on the
Program), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the
Program), the recipient automatically receives a license from the
original licensor to copy, distribute or modify the Program subject to
these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties to
this License.

7. If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict
the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Program at all. For example, if a patent
license would not permit royalty-free redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity
of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make

exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED
ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice
like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of
Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.
Contributor: Maxim Karasev <begs@disroot.org>
Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2

```
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
 0001-bsd-games-scores-dir.patch
 "
options="!check" # no tests

build() {
 # some GNU autoconf options are ignored, but it works
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr \
  --sysconfdir=/etc \
  --mandir=/usr/share/man \
  --scoredir=/usr/share/$pkgname
 make
}

package() {
 make DESTDIR="$pkgdir" install
 install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
  bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6  0001-bsd-games-scores-dir.patch
"
```

MIT License

Copyright (c) 2023 Leaf Corcoran

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Vintage Dreams Waves v 2.0. for Creative Labs' AWE Soundcards
(EMU Soundfont 2 Format)

Copyright (c) Ian Wilson, 1996 (Updated January 1998)

This soundfont is freeware. You may freely use and/or redistribute it subject
to the following terms:
1. It is not altered, edited, modified, ripped, or converted to other formats,
except for private use only.
2. It is distributed with this copyright notice.

This soundfont is distributed WITHOUT WARRANTY, and without the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. No liability
or damages can be inferred upon the said copyright owner, Ian Wilson.

Any feedback, contact Ian Wilson.
vintagedreamworks@hotmail.com
http://www.geocities.com/SiliconValley/Campus/8645/index.html
http://members.nbci.com/silicon39/
http://www.mp3.com/silicon39
https://analoguesque.x10host.com/
Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2
"

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
update_config_sub

```
 default_prepare
}

build() {
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr
 make
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020  libart_lgpl-2.3.21.tar.bz2"
```

mini_sendmail - accept email on behalf of real sendmail

Copyright 1999,2015 by Jef Poskanzer <jef@mail.acme.com>.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING,
 BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.26.0
pkgrel=0
```

```
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdfnt rdfturtle rdfxml template text"

for type in $_types; do
 subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
 mkdir -p "$pkgdir"
}

_subpkg() {
 local type=${subpkgname/$pkgname-/}
 pkgdesc="$pkgdesc ($type)"
 install_if="$pkgname=$pkgver-r$pkgrel"
 mkdir -p "$subpkgdir"/usr/share/spdx
 cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
 pkgdesc="$pkgdesc (licence list)"
 mkdir -p "$subpkgdir"/usr/share/spdx
 local i; for i in "$builddir"/text/*.txt;
 do
  local license=${i##*/}
  echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
 done
}

sha512sums="
67e618d4642dfe4f366935d9514d6f7941d3711e77c49bc1b340ac572d36015981b8f10c72a9f80f1d83e132ae7e5093c
0155e0c0e786e4777ee16d1cb7b885a  license-list-data-3.26.0.tar.gz
"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
```

```
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
 cdefs.h
 queue.h
 tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
 mkdir -p "$pkgdir"
 install -Dm644 -t "$pkgdir"/usr/include/sys \
  cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178  cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750  queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3  tree.h
"
```

Original Copyright (c) 1985 by Supoj Sutanthavibul
Parts Copyright (c) 1989-2012 by Brian V. Smith
Parts Copyright (c) 1991 by Paul King
Other Copyrights may be found in various files

Main Xfig copyright notice:

Any party obtaining a copy of these files is granted, free of charge, a full and unrestricted irrevocable, world-wide, paid up, royalty-free, nonexclusive right and license to deal in this software and documentation files (the "Software"), including without limitation the rights to use, copy, modify, merge, publish and/or distribute copies of the Software, and to permit persons who receive copies from any such party to do so, with the only requirement being that this copyright notice remain intact.

No representations are made about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Parts Copyright (C) 1993 by Alan Richardson (mppa3@uk.ac.sussex.syma)
The text rotation code in w_rottext.c was written by Alan Richardson.
 The above copyright notice holds for this work as well.

Parts Copyright (c) 1994 by Anthony Dekker
The Kohonen neural network code for color optimization was written by Anthony Dekker.

Parts Copyright (c) 1995 by C. Blanc and C. Schlick
The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-

```
bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a
student practice (Universite Bordeaux, France). For additional information about X-splines, see:
"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html
# Contributor: Dhruvin Gandhi <contact@dhru.vin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.1
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/$_pkgname/$_pkgname-$pkgver.tar.gz"
builddir="$srcdir/$_pkgname-$pkgver"

build() {
 gpep517 build-wheel \
  --wheel-dir .dist \
  --output-fd 3 3>&1 >&2
}

check() {
 python3 -m venv --clear --without-pip --system-site-packages .testenv
 .testenv/bin/python3 -m installer .dist/*.whl
 .testenv/bin/python3 -m pytest
}

package() {
 python3 -m installer -d "$pkgdir" \
  .dist/*.whl
}

sha512sums="
114c630f098939757e49187e35b4e54883266a2ee9ca283724992420ef4c860f9606a8342da0ab74d93627c10805f312
fda3f699cbc7c4fbd47a71e220440fb0
  license_expression-30.4.1.tar.gz
"
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
```

```
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/$_pkgname/$_pkgname-$pkgver.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"                  # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
 gpep517 build-wheel \
  --wheel-dir .dist \
  --output-fd 3 3>&1 >&2
}

package() {
 gpep517 install-wheel --destdir "$pkgdir" \
  .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
  flake8-copyright-0.2.4.tar.gz
"
# Maintainer: fossdd <fossdd@pwned.life>
pkgname=cargo-license
pkgver=0.6.1
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
 default_prepare

 cargo fetch --target="$CTARGET" --locked
}
```

```
build() {
 cargo auditable build --release --frozen
}

check() {
 cargo test --frozen
}

package() {
 install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
36215145e79965be090ae2f5ce6f5eb208465eb67a94c26bed1fe70a131c46c6dc35695e30852759b7366883fbc3caf00
272d796ac634f0a5e1d49232b6b29d5  cargo-license-0.6.1.tar.gz
"
```

1.320 ca-certificates-bundle 20241121-r1

1.320.1 Available under license :

```
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
 cdefs.h
 queue.h
 tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
 mkdir -p "$pkgdir"
 install -Dm644 -t "$pkgdir"/usr/include/sys \
  cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178  cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750  queue.h
```

```
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3  tree.h
"
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check"  # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2
 "

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
 update_config_sub
 default_prepare
}

build() {
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr
 make
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020  libart_lgpl-2.3.21.tar.bz2"
```

1.321 alpine-baselayout-data 3.6.8-r1

1.321.1 Available under license :

```
# Automatically generated by apkbuild-cpan, template 1
# Contributor: Francesco Colista <francesco.colista@gmail.com>
# Maintainer: Francesco Colista <francesco.colista@gmail.com>
pkgname=perl-software-license
_pkgreal=Software-License
pkgver=0.103004
```

```
pkgrel=0
pkgdesc="packages that provide templated software licenses"
url="http://search.cpan.org/dist/Software-License/"
arch="noarch"
license="GPL PerlArtistic"
cpandepends="perl-text-template perl-data-section perl-sub-install"
cpanmakedepends="    "
depends="$cpandepends"
makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/R/RJ/RJBS/$_pkgreal-$pkgver.tar.gz"

_builddir="$srcdir/$_pkgreal-$pkgver"

prepare() {
 cd "$_builddir"
 export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}'`
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

build() {
 cd "$_builddir"
 export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}'`
 make && make test
}

package() {
 cd "$_builddir"
 make
 DESTDIR="$pkgdir" install || return 1
 find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

md5sums="0c5fd53d93818566234578b27d667b35  Software-License-0.103004.tar.gz"
```

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials
(collectively, the "Software") until you have carefully read the
following terms and conditions. By loading or using the Software, you
agree to the terms of this Agreement. If you do not wish to so agree,
do not install or use the Software.

1. COPYRIGHT NOTICE
Some or all of this work - Copyright 1999-2011, Intel Corp. All
rights reserved.

2. LICENSE

2.1. This is your license from Intel Corp. under its intellectual

property rights. You may have additional license terms from the party that provided you this software, covering your right to use that party's intellectual property rights.

2.2. Intel grants, free of charge, to any person ("Licensee") obtaining a copy of the source code appearing in this file ("Covered Code") an irrevocable, perpetual, worldwide license under Intel's copyrights in the base code distributed originally by Intel ("Original Intel
Code") to copy, make derivatives, distribute, use and display any portion of the Covered Code in any form, with the right to sublicense such rights; and

2.3. Intel grants Licensee a non-exclusive and non-transferable patent license (with the right to sublicense), under only those claims of Intel patents that are infringed by the Original Intel Code, to make, use, sell, offer to sell, and import the Covered Code and derivative works thereof solely to the minimum extent necessary to exercise the above copyright license, and in no event shall the patent license extend to any additions to or modifications of the Original Intel Code. No other license or right is granted directly or by implication, estoppel or otherwise; The above copyright and patent license is granted only if the following conditions are met:

3. CONDITIONS

3.1. Redistribution of Source with Rights to Further Distribute Source. Redistribution of source code of any substantial portion of the Covered Code or
modification with rights to further distribute
source must include the above Copyright Notice, the above License, this list of Conditions, and the following Disclaimer and Export Compliance provision. In addition, Licensee must cause all Covered Code to which Licensee contributes to contain a file documenting the changes Licensee made to create that Covered Code and the date of any change. Licensee must include in that file the documentation of any changes made by any predecessor Licensee. Licensee must include a prominent statement that the modification is derived, directly or indirectly, from Original Intel Code.

3.2. Redistribution of Source with no Rights to Further Distribute Source. Redistribution of source code of any substantial portion of the Covered Code or modification without rights to further distribute source must include the following Disclaimer and Export Compliance provision in the documentation and/or other materials provided with distribution. In addition,
Licensee may not authorize further
sublicense of source of any portion of the Covered Code, and must

include terms to the effect that the license from Licensee to its licensee is limited to the intellectual property embodied in the software Licensee provides to its licensee, and not to intellectual property embodied in modifications its licensee may make.

3.3. Redistribution of Executable. Redistribution in executable form of any substantial portion of the Covered Code or modification must reproduce the above Copyright Notice, and the following Disclaimer and Export Compliance provision in the documentation and/or other materials provided with the distribution.

3.4. Intel retains all right, title, and interest in and to the Original Intel Code.

3.5. Neither the name Intel nor any other trademark owned or controlled by Intel shall be used in advertising or otherwise to promote the sale, use or other dealings in products derived from or relating to the Covered
Code without prior written authorization from Intel.

4. DISCLAIMER AND EXPORT COMPLIANCE

4.1. INTEL MAKES NO WARRANTY OF ANY KIND REGARDING ANY SOFTWARE PROVIDED HERE. ANY SOFTWARE ORIGINATING FROM INTEL OR DERIVED FROM INTEL SOFTWARE IS PROVIDED "AS IS," AND INTEL WILL NOT PROVIDE ANY SUPPORT, ASSISTANCE, INSTALLATION, TRAINING OR OTHER SERVICES. INTEL WILL NOT PROVIDE ANY UPDATES, ENHANCEMENTS OR EXTENSIONS. INTEL SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE.

4.2. IN NO EVENT SHALL INTEL HAVE ANY LIABILITY TO LICENSEE, ITS LICENSEES OR ANY OTHER THIRD PARTY, FOR ANY LOST PROFITS, LOST DATA, LOSS OF USE OR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, UNDER ANY CAUSE OF ACTION OR THEORY OF LIABILITY, AND IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. THESE LIMITATIONS
SHALL APPLY NOTWITHSTANDING THE
FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

4.3. Licensee shall not export, either directly or indirectly, any of this software or system incorporating such software without first obtaining any required license or other approval from the U. S. Department of Commerce or any other agency or department of the United States Government. In the event Licensee exports any such software from the United States or re-exports any such software from a foreign destination, Licensee shall ensure that the distribution and

export/re-export of the software is in compliance with all laws,
regulations, orders, or other restrictions of the U.S. Export
Administration Regulations. Licensee agrees that neither it nor any of
its subsidiaries will export/re-export any technical data, process,
software, or service, directly or indirectly, to any country for which
the United States government or any agency thereof requires an export
license, other governmental
approval, or letter of assurance, without
first obtaining such license, approval or letter.
/*
* Copyright (c) 1983, 1988 Regents of the University of California.
* All rights reserved.
*
* Redistribution and use in source and binary forms are permitted
* provided that the above copyright notice and this paragraph are
* duplicated in all such forms and that any documentation,
* advertising materials, and other materials related to such
* distribution and use acknowledge that the software was developed
* by the University of California, Berkeley. The name of the
* University may not be used to endorse or promote products derived
* from this software without specific prior written permission.
* THIS SOFTWARE IS PROVIDED ``AS IS'' AND WITHOUT ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED
* WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.
*/
INTEL SOFTWARE LICENSE AGREEMENT

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively,
the "Software") until you have carefully read the following terms and
conditions. By loading or using the Software, you agree to the terms of this
Agreement. If you do not wish to so agree, do not install or use the Software.

LICENSES: Please Note:
- If you are a network administrator, the "Site License" below shall
apply to you.
- If you are an end user, the "Single User License" shall apply to you.
- If you are an original equipment manufacturer (OEM), the "OEM License"
shall apply to you.

SITE LICENSE. You may copy the Software onto your organization's computers
for your organization's use, and you may make a reasonable number of
back-up copies of the Software, subject to these conditions:

1. This Software is licensed for use only in conjunction with Intel
component products. Use of the Software in conjunction with non-Intel
component

products is not licensed hereunder.
2. You may not copy, modify, rent, sell, distribute or transfer any part of the Software except as provided in this Agreement, and you agree to prevent unauthorized copying of the Software.
3. You may not reverse engineer, decompile, or disassemble the Software.
4. You may not sublicense or permit simultaneous use of the Software by more than one user.
5. The Software may include portions offered on terms in addition to those set out here, as set out in a license accompanying those portions.

SINGLE USER LICENSE. You may copy the Software onto a single computer for your personal, noncommercial use, and you may make one back-up copy of the Software, subject to these conditions:

1. This Software is licensed for use only in conjunction with Intel component products. Use of the Software in conjunction with non-Intel component products is not licensed hereunder.
2. You may not copy, modify, rent, sell, distribute or transfer any part of
the Software except as provided in this Agreement, and you agree to prevent unauthorized copying of the Software.
3. You may not reverse engineer, decompile, or disassemble the Software.
4. You may not sublicense or permit simultaneous use of the Software by more than one user.
5. The Software may include portions offered on terms in addition to those set out here, as set out in a license accompanying those portions.

OEM LICENSE: You may reproduce and distribute the Software only as an integral part of or incorporated in Your product or as a standalone Software maintenance update for existing end users of Your products, excluding any other standalone products, subject to these conditions:

1. This Software is licensed for use only in conjunction with Intel component products. Use of the Software in conjunction with non-Intel component products is not licensed hereunder.
2. You may not copy, modify, rent, sell, distribute or transfer any part of the Software except as provided in this
Agreement, and you agree to
prevent unauthorized copying of the Software.
3. You may not reverse engineer, decompile, or disassemble the Software.
4. You may only distribute the Software to your customers pursuant to a written license agreement. Such license agreement may be a "break-the-seal" license agreement. At a minimum such license shall safeguard Intel's ownership rights to the Software.
5. The Software may include portions offered on terms in addition to those set out here, as set out in a license accompanying those portions.

NO OTHER RIGHTS. No rights or licenses are granted by Intel to You, expressly

or by implication, with respect to any proprietary information or patent, copyright, mask work, trademark, trade secret, or other intellectual property right owned or controlled by Intel, except as expressly provided in this Agreement.

OWNERSHIP OF SOFTWARE AND COPYRIGHTS. Title to all copies of the Software remains with Intel or its suppliers. The Software is copyrighted and protected by the laws of the United States and other countries, and international treaty provisions. You may not remove any copyright notices from the Software. Intel may make changes to the Software, or to items referenced therein, at any time without notice, but is not obligated to support or update the Software. Except as otherwise expressly provided, Intel grants no express or implied right under Intel patents, copyrights, trademarks, or other intellectual property rights. You may transfer the Software only if the recipient agrees to be fully bound by these terms and if you retain no copies of the Software.

LIMITED MEDIA WARRANTY. If the Software has been delivered by Intel on physical media, Intel warrants the media to be free from material physical defects for a period of ninety days after delivery by Intel. If such a defect is found, return the media to Intel for replacement or alternate delivery of the Software as Intel may select.

EXCLUSION OF OTHER WARRANTIES. EXCEPT AS PROVIDED ABOVE, THE SOFTWARE IS PROVIDED "AS IS" WITHOUT ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND INCLUDING WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT, OR FITNESS FOR A PARTICULAR PURPOSE. Intel does not warrant or assume responsibility for the accuracy or completeness of any information, text, graphics, links or other items contained within the Software.

LIMITATION OF LIABILITY. IN NO EVENT SHALL INTEL OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, LOST PROFITS, BUSINESS INTERRUPTION, OR LOST INFORMATION) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE, EVEN IF INTEL HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME JURISDICTIONS PROHIBIT EXCLUSION OR LIMITATION OF LIABILITY FOR IMPLIED WARRANTIES OR CONSEQUENTIAL OR INCIDENTAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. YOU MAY ALSO HAVE OTHER LEGAL RIGHTS THAT VARY FROM JURISDICTION TO JURISDICTION.

TERMINATION OF THIS AGREEMENT. Intel may terminate this Agreement at any time if you violate its terms. Upon termination, you will immediately destroy the Software or return all copies of the Software to Intel.

APPLICABLE LAWS. Claims arising under this Agreement shall be governed by the laws of California, excluding its principles of conflict of laws and the

United Nations Convention on Contracts for the Sale of Goods. You may not
export the Software in violation of applicable export laws and regulations.
Intel is not obligated under any other agreements unless they are in writing
and signed by an authorized representative of Intel.

GOVERNMENT RESTRICTED RIGHTS. The Software is provided with "RESTRICTED
RIGHTS." Use, duplication, or disclosure by the Government is subject to
restrictions as set forth in FAR52.227-14 and DFAR252.227-7013 et seq. or its
successor. Use of the Software by the Government constitutes acknowledgment
of Intel's proprietary rights therein. Contractor or Manufacturer is Intel
2200 Mission College Blvd., Santa Clara, CA
95052.
Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.0
pkgrel=0
pkgdesc="Extension for flake8 which checks for copyrights"
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="flake8"
makedepends="python3-dev"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/$_pkgname/$_pkgname-$pkgver.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

build() {
cd "$builddir"
python3 setup.py build || return 1
}

package() {
cd "$builddir"
python3 setup.py install --prefix=/usr --root="$pkgdir" || return 1
}

md5sums="c6348990c6d74933bf5d5f6a55a14bdf flake8-copyright-0.2.0.tar.gz"
sha256sums="aeef26eb4d5223c9cd5b101e68175fcef6d2b353bf36da688fdde62fccfe2b73 flake8-copyright-
0.2.0.tar.gz"
sha512sums="bab1bfaeed3a525ac3c7da12b1f2ec338c204cc69b72d05cd39560e528faff5d586c3b1be9570f4a977a7e
2417b586e543bfba12abce256b2023c8c4993eeb90
 flake8-copyright-0.2.0.tar.gz"
SQLite Copyright
SQLite is in the
Public Domain

All of the deliverable code in SQLite has been dedicated to the public domain by the authors. All code authors, and representatives of the companies they work for, have signed affidavits dedicating their contributions to the public domain and originals of those signed affidavits are stored in a firesafe at the main offices of Hwaci. Anyone is free to copy, modify, publish, use, compile, sell, or distribute the original SQLite code, either in source code form or as a compiled binary, for any purpose, commercial or non-commercial, and by any means.

The previous paragraph applies to the deliverable code in SQLite - those parts of the SQLite library that you actually bundle and ship with a larger application. Portions of the documentation and some code used as part of the build process might fall under other licenses. The details here are unclear. We do not worry about the licensing of the documentation and build code so much because none
of these things are part of the core deliverable SQLite library.

All of the deliverable code in SQLite has been written from scratch. No code has been taken from other projects or from the open internet. Every line of code can be traced back to its original author, and all of those authors have public domain dedications on file. So the SQLite code base is clean and is uncontaminated with licensed code from other projects.
Obtaining An Explicit License To Use SQLite

Even though SQLite is in the public domain and does not require a license, some users want to obtain a license anyway. Some reasons for obtaining a license include:
You are using SQLite in a jurisdiction that does not recognize the public domain.
You are using SQLite in a jurisdiction that does not recognize the right of an author to dedicate their work to the public domain.
You want to hold a tangible legal document as evidence that you have the legal right to use and distribute SQLite.
Your legal department tells
you that you have to purchase a license.

If you feel like you really have to purchase a license for SQLite, Hwaci, the company that employs the architect and principal developers of SQLite, will sell you one.
Contributed Code

In order to keep SQLite completely free and unencumbered by copyright, all new contributors to the SQLite code base are asked to dedicate their contributions to the public domain. If you want to send a patch or enhancement for possible inclusion in the SQLite source tree, please accompany the patch with the following statement:
The author or authors of this code dedicate any and all copyright interest in this code to the public domain. We make this dedication for the benefit of the public at large and to the detriment of our heirs and successors. We intend this dedication to be an overt act of relinquishment in perpetuity of all present and future rights to this code under copyright law.

We are not able to accept patches or changes to SQLite that are not accompanied
by a statement such as the above. In addition, if you make changes or enhancements as an employee, then a simple statement such as the above is insufficient. You must also send by surface mail a copyright release signed by a company officer. A signed original of the copyright release should be mailed to:
Hwaci
6200 Maple Cove Lane
Charlotte, NC 28269
USA

A template copyright release is available in PDF or HTML. You can use this release to make future changes.

see http://www.sqlite.org/copyright.html
Copyright (c) 2016 The Khronos Group Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software source and associated documentation files (the "Materials"),
to deal in the Materials without restriction, including without limitation
the rights to use, copy, modify, compile, merge, publish, distribute,
sublicense, and/or sell copies of the Materials, and to permit persons to
whom the Materials are furnished to do so, subject the following terms and
conditions:

All modifications to the Materials used to create a binary that is
distributed to third parties shall be provided to Khronos with an
unrestricted license to use for the purposes of implementing bug fixes and
enhancements to the Materials;

If the binary is used as part of an OpenCL(TM) implementation, whether binary
is distributed together with or separately to that implementation, then
recipient must become an OpenCL Adopter and follow the published OpenCL
conformance process for that implementation,
details at:
http://www.khronos.org/conformance/;

The above copyright notice, the OpenCL trademark license, and this permission
notice shall be included in all copies or substantial portions of the
Materials.

THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.

OpenCL is a trademark of Apple Inc. used under license by Khronos.
mini_sendmail - accept email on behalf of real sendmail

Copyright 1999,2015 by Jef Poskanzer <jef@mail.acme.com>.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING,
 BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

```
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=5
pkgdesc="A library for high-performance 2D graphics"
url="http://www.levien.com/libart/"
arch="all"
license="LGPL"
depends=
makedepends=
subpackages="$pkgname-dev"
source="http://ftp.gnome.org/pub/GNOME/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2
 "

_builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
 cd "$_builddir"
 update_config_sub || return 1
}
build() {
 cd "$_builddir"
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr \
  || return 1
 make || return 1
}

package() {
 cd "$_builddir"
```

```
 make DESTDIR="$pkgdir" install || return 1
}

md5sums="08559ff3c67fd95d57b0c5e91a6b4302  libart_lgpl-2.3.21.tar.bz2"
# Automatically generated by apkbuild-cpan, template 1
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Valery Kartel <valery.kartel@gmail.com>
pkgname=perl-bsd-resource
_pkgreal=BSD-Resource
pkgver=1.2909
pkgrel=1
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="http://search.cpan.org/dist/BSD-Resource/"
arch="all"
license="GPL PerlArtistic"
cpandepends=""
cpanmakedepends="    "
depends="$cpandepends"
makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/J/JH/JHI/$_pkgreal-$pkgver.tar.gz"

_builddir="$srcdir/$_pkgreal-$pkgver"

prepare() {
 cd "$_builddir"
 export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}'`
 PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

build() {
 cd "$_builddir"
 export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}'`
 make && make test || return 1
}

package() {
 cd "$_builddir"
 make DESTDIR="$pkgdir" install || return 1
 find "$pkgdir"
 \( -name perllocal.pod -o -name .packlist \) -delete
}

md5sums="3c6dd2fa953088aa87e263f40818d012  BSD-Resource-1.2909.tar.gz"
sha256sums="c47d460e2bd00d8d049f6ff4a0f1f61957e289e8de45af5fc79e851e2e855e06  BSD-Resource-
1.2909.tar.gz"
sha512sums="5f489eaac5089e82081b7cf51d62638750e443751b49415407354da96b17771819b5e6e85529faa41ddd
85743363750157943c7f7700276cce2bd40a429fa430  BSD-Resource-1.2909.tar.gz"
```

1.322 gorilla-mux 1.8.1

1.322.1 Available under license :

Copyright (c) 2023 The Gorilla Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.323 gorilla-websocket 1.5.3

1.323.1 Available under license :

Copyright (c) 2013 The Gorilla WebSocket Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation

and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.324 libcomps 0.1.18

1.324.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights.

These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program).

Whether that is true depends on what the
Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the

entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as

distribution of the source
code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For
example, if a patent
license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

1.325 bzip2 1.0.8-10.el9_5

1.325.1 Available under license :

This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2019 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
  not claim that you wrote the original software. If you use this
  software in a product, an acknowledgment in the product
  documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
  not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote
  products derived from this software without specific
 prior written
  permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@acm.org
bzip2/libbzip2 version 1.0.8 of 13 July 2019

1.326 spf13-pflag 1.0.6

1.326.1 Available under license :

Copyright (c) 2012 Alex Ogier. All rights reserved.
Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.327 tzdata 2025a-1.el9

1.327.1 Available under license :

Unless specified below, all files in the tz code and data (including
this LICENSE file) are in the public domain.

If the files date.c, newstrftime.3, and strftime.c are present, they
contain material derived from BSD and use the BSD 3-clause license.
/* Copyright 1985, 1987, 1988 The Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE. */

1.328 x-time 0.10.0

1.328.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.329 protobuf-go 1.36.5

1.329.1 Available under license :

Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

 * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
 * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
 * Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.330 protobuf 1.36.5

1.330.1 Available under license :

Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

 * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
 * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the

distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.331 x-time-rate 0.10.0

1.331.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
 FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT

(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.332 openssl 3.3.3-r0

1.332.1 Available under license :

```
/*
* Copyright 2006-2020 The OpenSSL Project Authors. All Rights Reserved.
*
* Licensed under the Apache License 2.0 (the "License").  You may not use
* this file except in compliance with the License.  You can obtain a copy
* in the file LICENSE in the source distribution or at
* https://www.openssl.org/source/license.html
*/
```

Apache License
Version 2.0, January 2004
https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but

not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this
License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,

where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and

may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this

License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.333 libcrypto3 3.3.3-r0

1.333.1 Available under license :

This software is copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software; you can redistribute it and/or modify it under
the same terms as the Perl 5 programming language system itself.

Terms of the Perl programming language system itself

a) the GNU General Public License as published by the Free
Software Foundation; either version 1, or (at your option) any
later version, or
b) the "Artistic License"

--- The GNU General Public License, Version 1, February 1989 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The GNU General Public License, Version 1, February 1989

GNU GENERAL PUBLIC LICENSE
Version 1, February 1989

Copyright (C) 1989 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The license agreements of most software companies try to keep users
at the mercy of those companies. By contrast, our General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. The

General Public License applies to the Free Software Foundation's
software and to any other program whose authors commit to using it.
You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not
price. Specifically, the General Public License is designed to make
sure that you have the freedom to give away or sell copies of free
software, that you receive source code or can get it if you want it,
that you can change the software or use pieces of it in new free
programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender
the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of a such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must tell them their rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

The precise terms and conditions
for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any program or other work which
contains a notice placed by the copyright holder saying it may be
distributed under the terms of this General Public License. The
"Program", below, refers to any such program or work, and a "work based
on the Program" means either the Program or any work containing the
Program or a portion of it, either verbatim or with modifications. Each
licensee is addressed as "you".

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this General Public License and to the absence of any warranty; and give any other recipients of the
Program a copy of this General Public License
along with the Program. You may charge a fee for the physical act of transferring a copy.

2. You may modify your copy or copies of the Program or any portion of it, and copy and distribute such modifications under the terms of Paragraph 1 above, provided that you also do the following:

a) cause the modified files to carry prominent notices stating that you changed the files and the date of any change; and

b) cause the whole of any work that you distribute or publish, that in whole or in part contains the Program or any part thereof, either with or without modifications, to be licensed at no charge to all third parties under the terms of this General Public License (except that you may choose to grant warranty protection to some or all third parties, at your option).

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive
use
in the simplest and most usual way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this General Public License.

d) You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Mere aggregation of another independent work with the Program (or its derivative) on a volume of a storage or distribution medium does not bring the other work under the scope of these terms.

3. You may copy and distribute the Program (or a portion or derivative of it, under Paragraph 2) in object code or executable form under the terms of Paragraphs 1 and 2 above provided that you also do one of the following:

a) accompany it with the complete corresponding

machine-readable
source code, which must be distributed under the terms of
Paragraphs 1 and 2 above; or,

b) accompany it with a written offer, valid for at least three
years, to give any third party free (except for a nominal charge
for the cost of distribution) a complete machine-readable copy of the
corresponding source code, to be distributed under the terms of
Paragraphs 1 and 2 above; or,

c) accompany it with the information you received as to where the
corresponding source code may be obtained. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code or executable form alone.)

Source code for a work means the preferred form of the work for making
modifications to it. For an executable file, complete source code means
all the source code for all modules it contains; but, as a special
exception, it need not include source code for modules which are standard
libraries that
accompany the operating system on which the executable
file runs, or for standard header files or definitions files that
accompany that operating system.

4. You may not copy, modify, sublicense, distribute or transfer the
Program except as expressly provided under this General Public License.
Any attempt otherwise to copy, modify, sublicense, distribute or transfer
the Program is void, and will automatically terminate your rights to use
the Program under this License. However, parties who have received
copies, or rights to use copies, from you under this General Public
License will not have their licenses terminated so long as such parties
remain in full compliance.

5. By copying, distributing or modifying the Program (or any work based
on the Program) you indicate your acceptance of this license to do so,
and all its terms and conditions.

6. Each time you redistribute the Program (or any work based on the
Program), the recipient automatically receives a license from the
original
licensor to copy, distribute or modify the Program subject to these
terms and conditions. You may not impose any further restrictions on the
recipients' exercise of the rights granted herein.

7. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of the license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the license, you may choose any version ever published by the Free Software Foundation.

8. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

9. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

10. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to humanity, the best way to achieve this is to make it free software which everyone can redistribute and change under these

terms.

To do so,
attach the following notices to the program. It is safest to
attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 1, or (at your option)
any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free
Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19xx name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the
appropriate parts of the General Public License. Of course, the
commands you use may be called something other than `show w' and `show
c'; they could even be mouse-clicks or menu items--whatever suits your
program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here a sample; alter
the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

That's all there is to it!

--- The Artistic License 1.0 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The Artistic License 1.0

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package
may be copied, such that the Copyright Holder maintains some semblance of
artistic control over the development of the package, while giving the users of
the package the right to use and distribute the Package in a more-or-less
customary fashion, plus the right to make reasonable modifications.

Definitions:

- "Package" refers to the collection of files distributed by the Copyright
  Holder, and derivatives of that collection
of files created through
  textual modification.
- "Standard Version" refers to such a Package if it has not been modified,
  or has been modified in accordance with the wishes of the Copyright
  Holder.
- "Copyright Holder" is whoever is named in the copyright or copyrights for
  the package.
- "You" is you, if you're thinking about copying or distributing this Package.
- "Reasonable copying fee" is whatever you can justify on the basis of media
  cost, duplication charges, time of people involved, and so on. (You will
  not be required to justify it to the Copyright Holder, but only to the
  computing community at large as a market that must bear the fee.)
- "Freely Available" means that no fee is charged for the item itself, though
  there may be fees involved in handling the item. It also means that
  recipients of the item may redistribute it under the same conditions they
  received it.

1. You may make and give away verbatim copies of
the source form of the
Standard Version of this Package without restriction, provided that you
duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived
from the Public Domain or from the Copyright Holder. A Package modified in such
a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that
you insert a prominent notice in each changed file stating how and when you
changed that file, and provided that you do at least ONE of the following:

a) place your modifications in the Public Domain or otherwise make them
Freely Available, such as by posting said modifications to Usenet or an
equivalent medium, or placing the modifications on a major archive site
such as ftp.uu.net, or by allowing the Copyright Holder to include your
modifications in the Standard Version of the Package.

b) use the modified
Package only within your corporation or organization.

c) rename any non-standard executables so the names do not conflict with
standard executables, which must also be provided, and provide a separate
manual page for each non-standard executable that clearly documents how it
differs from the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable
form, provided that you do at least ONE of the following:

a) distribute a Standard Version of the executables and library files,
together with instructions (in the manual page or equivalent) on where to
get the Standard Version.

b) accompany the distribution with the machine-readable source of the Package
with your modifications.

c) accompany any non-standard executables with their corresponding Standard
Version executables, giving the non-standard executables non-standard
names,
and clearly documenting the differences in manual pages (or
equivalent), together with instructions on where to get the Standard
Version.

d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own.

6. The scripts and library files supplied as input to or produced as output from the programs of this Package do not automatically fall under the copyright of this Package, but belong to whomever generated them, and may be sold commercially, and may be aggregated with this Package.

7. C or perl subroutines supplied by you and linked into this Package shall not
be considered part of this Package.

8. The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

9. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Apache License
Version 2.0, January 2004
https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership

of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or

documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.334 libssl3 3.3.3-r0

1.334.1 Available under license :

This software is copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software; you can redistribute it and/or modify it under
the same terms as the Perl 5 programming language system itself.

Terms of the Perl programming language system itself

a) the GNU General Public License as published by the Free
Software Foundation; either version 1, or (at your option) any
later version, or
b) the "Artistic License"

--- The GNU General Public License, Version 1, February 1989 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The GNU General Public License, Version 1, February 1989

GNU GENERAL PUBLIC LICENSE
Version 1, February 1989

Copyright (C) 1989 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The license agreements of most software companies try to keep users at the mercy of those companies. By contrast, our General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. The General Public License applies to the Free Software Foundation's software and to any other program whose authors commit to using it. You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not price. Specifically, the General Public License is designed to make sure that you have the freedom to give away or sell copies of free software, that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of a such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must tell them their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

The precise terms and conditions
for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any work containing the Program or a portion of it, either verbatim or with modifications. Each licensee is addressed as "you".

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this General Public License and to the absence of any warranty; and give any other recipients of the
Program a copy of this General Public License
along with the Program. You may charge a fee for the physical act of transferring a copy.

2. You may modify your copy or copies of the Program or any portion of it, and copy and distribute such modifications under the terms of Paragraph 1 above, provided that you also do the following:

a) cause the modified files to carry prominent notices stating that you changed the files and the date of any change; and

b) cause the whole of any work that you distribute or publish, that in whole or in part contains the Program or any part thereof, either with or without modifications, to be licensed at no charge to all third parties under the terms of this General Public License (except that you may choose to grant warranty protection to some or all third parties, at your option).

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive
use
in the simplest and most usual way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this General Public License.

d) You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in

exchange for a fee.

Mere aggregation of another independent work with the Program (or its derivative) on a volume of a storage or distribution medium does not bring the other work under the scope of these terms.

3. You may copy and distribute the Program (or a portion or derivative of it, under Paragraph 2) in object code or executable form under the terms of Paragraphs 1 and 2 above provided that you also do one of the following:

a) accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Paragraphs 1 and 2 above; or,

b) accompany it with a written offer, valid for at least three years, to give any third party free (except for a nominal charge for the cost of distribution) a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Paragraphs 1 and 2 above; or,

c) accompany it with the information you received as to where the corresponding source code may be obtained. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form alone.)

Source code for a work means the preferred form of the work for making modifications to it. For an executable file, complete source code means all the source code for all modules it contains; but, as a special exception, it need not include source code for modules which are standard libraries that accompany the operating system on which the executable file runs, or for standard header files or definitions files that accompany that operating system.

4. You may not copy, modify, sublicense, distribute or transfer the Program except as expressly provided under this General Public License. Any attempt otherwise to copy, modify, sublicense, distribute or transfer the Program is void, and will automatically terminate your rights to use the Program under this License. However, parties who have received copies, or rights to use copies, from you under this General Public License will not have their licenses terminated so long as such parties remain in full compliance.

5. By copying, distributing or modifying the Program (or any work based on the Program) you indicate your acceptance of this license to do so, and all its terms and conditions.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

7. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of the license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the license, you may choose any version ever published by the Free Software Foundation.

8. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

9. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

10. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY

YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to humanity, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so,
attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 1, or (at your option)
any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free
Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) 19xx name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here a sample; alter
the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision' (a program to direct compilers to make passes at assemblers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

That's all there is to it!

--- The Artistic License 1.0 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The Artistic License 1.0

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications.

Definitions:

- "Package" refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection
of files created through
textual modification.
- "Standard Version" refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder.

- "Copyright Holder" is whoever is named in the copyright or copyrights for the package.
- "You" is you, if you're thinking about copying or distributing this Package.
- "Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)
- "Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1. You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

b) use the modified Package only within your corporation or organization.

c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b) accompany the distribution with the machine-readable source of the Package
with your modifications.

c) accompany any non-standard executables with their corresponding Standard
Version executables, giving the non-standard executables non-standard
names,
and clearly documenting the differences in manual pages (or
equivalent), together with instructions on where to get the Standard
Version.

d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this
Package. You may charge any fee you choose for support of this Package. You
may not charge a fee for this Package itself. However, you may distribute this
Package in aggregate with other (possibly commercial) programs as part of a
larger (possibly commercial) software distribution provided that you do not
advertise this Package as a product of your own.

6. The scripts and library files supplied as input to or produced as output
from the programs of this Package do not automatically fall under the copyright
of this Package, but belong to whomever generated them, and may be sold
commercially, and may be aggregated with this Package.

7. C or perl subroutines supplied by you and linked into this Package
shall not
be considered part of this Package.

8. The name of the Copyright Holder may not be used to endorse or promote
products derived from this software without specific prior written permission.

9. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED
WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF
MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Apache License
Version 2.0, January 2004
https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions

of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.335 openssl 3.2.2-6.el9_5.1

1.335.1 Available under license :

This software is copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software; you can redistribute it and/or modify it under the same terms as the Perl 5 programming language system itself.

Terms of the Perl programming language system itself

a) the GNU General Public License as published by the Free Software Foundation; either version 1, or (at your option) any later version, or
b) the "Artistic License"

--- The GNU General Public License, Version 1, February 1989 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

The GNU General Public License, Version 1, February 1989

GNU GENERAL PUBLIC LICENSE
Version 1, February 1989

Copyright (C) 1989 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The license agreements of most software companies try to keep users at the mercy of those companies. By contrast, our General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. The General Public License applies to the Free Software Foundation's software and to any other program whose authors commit to using it. You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not price. Specifically, the General Public License is designed to make sure that you have the freedom to give away or sell copies of free software, that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of a such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must tell them their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any work containing the Program or a portion of it, either verbatim or with modifications. Each licensee is addressed as "you".

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this General Public License and to the absence of any warranty; and give any other recipients of the Program a copy of this General Public License along with the Program. You may charge a fee for the physical act of transferring a copy.

2. You may modify your copy or copies of the Program or any portion of it, and copy and distribute such modifications under the terms of Paragraph 1 above, provided that you also do the following:

a) cause the modified files to carry prominent notices stating that you changed the files and the date of any change; and

b) cause the whole of any work that you distribute or publish, that in whole or in part contains the Program or any part thereof, either with or without modifications, to be licensed at no charge to all third parties under the terms of this General Public License (except that you may choose to grant warranty protection to some or all third parties, at your option).

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive

use
in the simplest and most usual way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this General Public License.

d) You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Mere aggregation of another independent work with the Program (or its derivative) on a volume of a storage or distribution medium does not bring the other work under the scope of these terms.

3. You may copy and distribute the Program (or a portion or derivative of it, under Paragraph 2) in object code or executable form under the terms of Paragraphs 1 and 2 above provided that you also do one of the following:

a) accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Paragraphs 1 and 2 above; or,

b) accompany it with a written offer, valid for at least three years, to give any third party free (except for a nominal charge for the cost of distribution) a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Paragraphs 1 and 2 above; or,

c) accompany it with the information you received as to where the corresponding source code may be obtained. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form alone.)

Source code for a work means the preferred form of the work for making modifications to it. For an executable file, complete source code means all the source code for all modules it contains; but, as a special exception, it need not include source code for modules which are standard libraries that accompany the operating system on which the executable file runs, or for standard header files or definitions files that accompany that operating system.

4. You may not copy, modify, sublicense, distribute or transfer the Program except as expressly provided under this General Public License. Any attempt otherwise to copy, modify, sublicense, distribute or transfer

the Program is void, and will automatically terminate your rights to use the Program under this License. However, parties who have received copies, or rights to use copies, from you under this General Public License will not have their licenses terminated so long as such parties remain in full compliance.

5. By copying, distributing or modifying the Program (or any work based on the Program) you indicate your acceptance of this license to do so, and all its terms and conditions.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original
licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein.

7. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of the license which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the license, you may choose any version ever published by the Free Software Foundation.

8. If you wish to incorporate parts of the Program into other free programs whose distribution
conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

9. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE

PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

10. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to humanity, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so,
attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) 19yy <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 1, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free
Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) 19xx name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the
appropriate parts of the General Public License. Of course, the
commands you use may be called something other than `show w' and `show
c'; they could even be mouse-clicks or menu items--whatever suits your
program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here a sample; alter
 the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 program `Gnomovision' (a program to direct compilers to make passes
 at assemblers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

That's all there is to it!

--- The Artistic License 1.0 ---

This software is Copyright (c) 2013 by Mark Jason Dominus <mjd@cpan.org>.

This is free software, licensed under:

 The Artistic License 1.0

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package
may be copied, such that the Copyright Holder maintains some semblance of
artistic control over the development of the package, while giving the users of
the package the right to use and distribute the Package in a more-or-less
customary fashion, plus the right to make reasonable modifications.

Definitions:

- "Package" refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection of files created through textual modification.
- "Standard Version" refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder.
- "Copyright Holder" is whoever is named in the copyright or copyrights for the package.
- "You" is you, if you're thinking about copying or distributing this Package.
- "Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)
- "Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1. You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

b) use the modified Package only within your corporation or organization.

c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b) accompany the distribution with the machine-readable source of the Package with your modifications.

c) accompany any non-standard executables with their corresponding Standard Version executables, giving the non-standard executables non-standard names,
and clearly documenting the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.

d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own.

6. The scripts and library files supplied as input to or produced as output from the programs of this Package do not automatically fall under the copyright of this Package, but belong to whomever generated them, and may be sold commercially, and may be aggregated with this Package.

7. C or perl subroutines supplied by you and linked into this Package shall not
be considered part of this Package.

8. The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

9. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Apache License

Version 2.0, January 2004
https://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,

except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

1.336 alpine-base 3.21.3-r0

1.336.1 Available under license :

The MIT License

Copyright <YEAR> <COPYRIGHT HOLDER>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Contributor: Natanael Copa <ncopa@alpinelinux.org>
Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=alpine-base
pkgver=3.21.3
pkgrel=0
pkgdesc="Meta package for minimal alpine base"
url="https://alpinelinux.org"
arch="noarch"
license="MIT"
depends="

1.337 musl-utils 1.2.5-r9

1.337.1 Available under license :

musl as a whole is licensed under the following standard MIT license:

Copyright 2005-2020 Rich Felker, et al.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Authors/contributors include:

A. Wilcox
Ada Worcester
Alex Dowad
Alex Suykov
Alexander Monakov
Andre McCurdy
Andrew Kelley
Anthony G. Basile
Aric Belsito
Arvid Picciani
Bartosz Brachaczek
Benjamin Peterson
Bobby Bingham
Boris Brezillon
Brent Cook
Chris Spiegel
Clment Vasseur
Daniel Micay
Daniel Sabogal
Daurnimator
David Carlier
David Edelsohn
Denys Vlasenko
Dmitry Ivanov
Dmitry V. Levin
Drew DeVault
Emil Renner Berthing
Fangrui Song
Felix Fietkau
Felix Janda
Gianluca Anzolin
Hauke Mehrtens
He X
Hiltjo Posthuma
Isaac Dunham
Jaydeep Patil
Jens Gustedt
Jeremy Huntwork
Jo-Philipp Wich

Joakim Sindholt
John Spencer
Julien Ramseier
Justin Cormack
Kaarle Ritvanen
Khem Raj
Kylie McClain
Leah Neukirchen
Luca Barbato
Luka
Perkov
M Farkas-Dyck (Strake)
Mahesh Bodapati
Markus Wichmann
Masanori Ogino
Michael Clark
Michael Forney
Mikhail Kremnyov
Natanael Copa
Nicholas J. Kain
orc
Pascal Cuoq
Patrick Oppenlander
Petr Hosek
Petr Skocik
Pierre Carrier
Reini Urban
Rich Felker
Richard Pennington
Ryan Fairfax
Samuel Holland
Segev Finer
Shiz
sin
Solar Designer
Stefan Kristiansson
Stefan O'Rear
Szabolcs Nagy
Timo Ters
Trutz Behn
Valentin Ochs
Will Dietz
William Haddon
William Pitcock

Portions of this software are derived from third-party works licensed
under terms compatible with the above MIT license:

The TRE regular expression implementation (src/regex/reg* and
src/regex/tre*) is Copyright 2001-2008 Ville Laurikari and licensed
under a 2-clause BSD license (license text in the source files). The
included version has been heavily modified by Rich Felker in 2012, in
the interests of size, simplicity, and namespace cleanliness.

Much of the math library code (src/math/* and src/complex/*) is
Copyright 1993,2004
 Sun Microsystems or
Copyright 2003-2011 David Schultz or
Copyright 2003-2009 Steven G. Kargl or
Copyright 2003-2009 Bruce D. Evans or
Copyright 2008 Stephen L. Moshier or
Copyright 2017-2018 Arm Limited
and labelled as such in comments in the individual source files. All
have been licensed under extremely permissive terms.

The ARM memcpy code (src/string/arm/memcpy.S) is Copyright 2008
The Android Open Source Project and is licensed under a two-clause BSD
license. It was taken from Bionic libc, used on Android.

The AArch64 memcpy and memset code (src/string/aarch64/*) are
Copyright 1999-2019, Arm Limited.

The implementation of DES for crypt (src/crypt/crypt_des.c) is
Copyright 1994 David Burren. It is licensed under a BSD license.

The implementation of blowfish crypt (src/crypt/crypt_blowfish.c) was
originally written by Solar Designer and placed into the public
domain. The code also comes with a fallback permissive license for use
in jurisdictions that may not recognize the
 public domain.

The smoothsort implementation (src/stdlib/qsort.c) is Copyright 2011
Valentin Ochs and is licensed under an MIT-style license.

The x86_64 port was written by Nicholas J. Kain and is licensed under
the standard MIT terms.

The mips and microblaze ports were originally written by Richard
Pennington for use in the ellcc project. The original code was adapted
by Rich Felker for build system and code conventions during upstream
integration. It is licensed under the standard MIT terms.

The mips64 port was contributed by Imagination Technologies and is
licensed under the standard MIT terms.

The powerpc port was also originally written by Richard Pennington,

and later supplemented and integrated by John Spencer. It is licensed under the standard MIT terms.

All other files which have no copyright comments are original works produced specifically for use as part of this library, written either by Rich Felker, the main author of the library, or by one or more contibutors listed
above. Details on authorship of individual files
can be found in the git version control history of the project. The omission of copyright and license comments in each file is in the interest of source tree size.

In addition, permission is hereby granted for all public header files (include/* and arch/*/bits/*) and crt files intended to be linked into applications (crt/*, ldso/dlstart.c, and arch/*/crt_arch.h) to omit the copyright notice and permission notice otherwise required by the license, and to use these files without any requirement of attribution. These files include substantial contributions from:

Bobby Bingham
John Spencer
Nicholas J. Kain
Rich Felker
Richard Pennington
Stefan Kristiansson
Szabolcs Nagy

all of whom have explicitly granted such permission.

This file previously contained text expressing a belief that most of the files covered by the above exception were sufficiently trivial not to be subject to copyright, resulting in confusion over whether it negated
the permissions granted in the license. In the spirit of permissive licensing, and of not having licensing issues being an obstacle to adoption, that text has been removed.

1.338 apk-tools 2.14.6-r3

1.338.1 Available under license :

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's

free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification
follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice
placed by the copyright holder saying it may be distributed under
the terms
of this General Public License. The "Program", below, refers to any such program
or work, and a "work based on the Program" means either the Program or any
derivative work under copyright law: that is to say, a work containing the
Program or a portion of it, either verbatim or with modifications and/or translated
into another language. (Hereinafter, translation is included without limitation
in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered
by this License; they are outside its scope. The act of running the Program
is not restricted, and the output from the Program is covered only if its
contents constitute a work based on the Program (independent of having been
made by running the Program). Whether that is true depends on what the Program
does.

1. You may copy and distribute verbatim copies of the Program's source code
as you receive it, in any medium, provided that you conspicuously
and appropriately
publish on each copy an appropriate copyright notice and disclaimer of warranty;
keep intact all the notices that refer to this License and to the absence
of any warranty; and give any other recipients of the Program a copy of this
License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you
may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it,
thus forming a work based on the Program, and copy and distribute such modifications
or work under the terms of Section 1 above, provided that you also meet all
of these conditions:

a) You must cause the modified files to carry prominent notices stating that
you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or
in part contains or is derived from the Program or any part thereof, to be
licensed as a whole at no charge
to all third parties under the terms of this
License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works.
But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it
with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute

corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means
all
the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program
is void, and will automatically terminate
your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may
not impose any further restrictions on the recipients' exercise of
the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the

conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of
this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted
in certain
countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version
number of this License, you may choose
any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs
whose distribution conditions are different, write to the author to ask for
permission. For software which is copyrighted by the Free Software Foundation,
write to the Free Software Foundation; we sometimes make exceptions for this.
Our decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing and reuse
of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR
THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE
STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM
"AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING,
BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR
A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE
OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE
OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA
OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES
OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH
HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible
use to the public, the best
way to achieve this is to make it free software
which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach
them to the start of each source file to most effectively convey the exclusion
of warranty; and each file should have at least the "copyright" line and a
pointer to where the full notice is found.

<one line to give the program's name and an idea of what it does.>

Copyright (C)< yyyy> <name of author>

This program is free software; you can redistribute it and/or modify it under

the terms of the GNU General Public License as published by the Free Software
Foundation; either version 2 of the License, or (at your option) any later
version.

This program is distributed in the hope that it will be useful, but WITHOUT
ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS
FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a
 copy of the GNU General Public License along with
this program; if not, write to the Free Software Foundation, Inc., 51 Franklin
Street, Fifth Floor, Boston, MA 02110-1301, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when
it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes
with ABSOLUTELY NO WARRANTY; for details type `show w'. This is free software,
and you are welcome to redistribute it under certain conditions; type `show
c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may be
called something other than `show w' and `show c'; they could even be mouse-clicks
or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school,
if any, to sign a "copyright
 disclaimer" for the program, if necessary. Here
is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program `Gnomovision'
(which makes passes at compilers) written by James Hacker.

<signature of Ty Coon >, 1 April 1989 Ty Coon, President of Vice This General
Public License does not permit incorporating your program into proprietary
programs. If your program is a subroutine library, you may consider it more
useful to permit linking proprietary applications with the library. If this
is what you want to do, use the GNU Lesser General Public License instead
of this License.

1.339 file 5.39-16.el9

1.339.1 Available under license :

Copyright (c) Ian F. Darwin 1986-1995.
Software written by Ian F. Darwin and others;
maintained 1995-present by Christos Zoulas and others.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice immediately at the beginning of the file, without modification,
  this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT,
 INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.
$File: COPYING,v 1.2 2018/09/09 20:33:28 christos Exp $
Copyright (c) Ian F. Darwin 1986, 1987, 1989, 1990, 1991, 1992, 1994, 1995.
Software written by Ian F. Darwin and others;
maintained 1994- Christos Zoulas.

This software is not subject to any export provision of the United States
Department of Commerce, and may be exported to any country or planet.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
  notice immediately at the beginning of the file, without modification,
  this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED

WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

1.340 errors 0.9.1

1.340.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only

on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2018 autoserver <founder@autoserver.io>

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Apache License 2.0

1.341 gogo-protobuf 1.3.2

1.341.1 Available under license :

Copyright (c) 2013, The GoGo Authors. All rights reserved.

Protocol Buffers for Go with Gadgets

Go support for Protocol Buffers - Google's data interchange format

Copyright 2010 The Go Authors. All rights reserved.
https://github.com/golang/protobuf

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS"
 AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Anton Povarov <anton.povarov@gmail.com>
Brian Goff <cpuguy83@gmail.com>
Clayton Coleman <ccoleman@redhat.com>
Denis Smirnov <denis.smirnov.91@gmail.com>
DongYun Kang <ceram1000@gmail.com>
Dwayne Schultz <dschultz@pivotal.io>
Georg Apitz <gapitz@pivotal.io>
Gustav Paul <gustav.paul@gmail.com>
Johan Brandhorst <johan.brandhorst@gmail.com>
John Shahid <jvshahid@gmail.com>
John Tuley <john@tuley.org>
Laurent <laurent@adyoulike.com>
Patrick Lee <patrick@dropbox.com>
Peter Edge <peter.edge@gmail.com>
Roger Johansson <rogeralsing@gmail.com>
Sam Nguyen <sam.nguyen@sendgrid.com>
Sergio Arbeo <serabe@gmail.com>
Stephen J Day <stephen.day@docker.com>
Tamir Duberstein <tamird@gmail.com>
Todd Eisenberger <teisenberger@dropbox.com>
Tormod Erevik Lea <tormodlea@gmail.com>
Vyacheslav Kim <kane@sendgrid.com>
Walter Schulze <awalterschulze@gmail.com>

1.342 logr 1.4.2

1.342.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.343 cpp 11.5.0-5.el9_5

1.343.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not

price. Our General Public Licenses are designed
 to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

 To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

 For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

 We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
 and/or modify the software.

 Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

 Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

 The precise terms and conditions for copying, distribution and
modification follow.

     GNU GENERAL PUBLIC LICENSE
  TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

 0. This License applies to any program or other work
 which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably
considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code
or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any

associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you

may not distribute the Program at all. For example, if a patent
license would not permit royalty-free
redistribution of the Program by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under
any particular circumstance, the balance of the section is intended to
apply and the section as a whole is intended to apply in other
circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system, which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Program under this License
may add an explicit geographical distribution limitation excluding
those countries, so that distribution is permitted only in or among
countries not thus excluded. In such case, this License incorporates
the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions
of the General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the Program
specifies a version
number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the
License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2010 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
  not claim that you wrote the original software. If you use this
  software in a product, an acknowledgment in the product
  documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
  not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote
  products derived from this software without specific
 prior written
  permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide
to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether
gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal

permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the

free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control

compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any

application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably
considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding

machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse

engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the
work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly
with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is

normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you
do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the

Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will
be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

That's all there is to it!

==========

The LLVM Project is under the Apache License v2.0 with LLVM Exceptions:

==========

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the
power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached
to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct

or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work
includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional
attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,

any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License
does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including
negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such
obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---- LLVM Exceptions to the Apache 2.0 License ----

As an exception, if, as a result of your compiling your source code, portions
of this Software are embedded into an Object form of such source code, you
may redistribute such embedded portions in such Object form without complying
with the conditions of Sections 4(a), 4(b) and 4(d) of the License.

In addition, if you combine or link compiled
forms of this Software with
software that is licensed under the GPLv2 ("Combined Software") and if a
court of competent jurisdiction determines that the patent provision (Section
3), the indemnity provision (Section 9) or other Section of the License
conflicts with the conditions of the GPLv2, you may retroactively and
prospectively choose to deem waived or otherwise exclude such Section(s) of
the License, but only in their entirety and only with respect to the Combined
Software.

==========
Software from third parties included in the LLVM Project:
==========

The LLVM Project contains third party software which is under different license
terms. All such code will be identified clearly using at least one of two
mechanisms:
1) It will be in a separate directory tree with its own `LICENSE.txt` or
  `LICENSE` file at the top containing the specific
 license and restrictions
  which apply to that software, or
2) It will contain specific license and restriction terms at the top of every
  file.

==
Legacy LLVM License (https://llvm.org/docs/DeveloperPolicy.html#legacy):
==

The software contained in this directory tree is dual licensed under both the
University of Illinois "BSD-Like" license and the MIT license. As a user of
this code you may choose to use it under either license. As a contributor,
you agree to allow your code to be used under both.

Full text of the relevant licenses is included below.

==

University of Illinois/NCSA
Open Source License

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:
   Threading Runtimes Team
   Intel Corporation
    http://www.intel.com

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

   * Redistributions of source code must retain the above copyright notice,
     this list of conditions and the following disclaimers.

   * Redistributions in binary form must reproduce the above copyright notice,
     this list of conditions and the following disclaimers in the
     documentation and/or other materials provided with the distribution.

* Neither the names of Intel Corporation Threading Runtimes Team nor the
names of its contributors may be used to endorse or promote products
derived from
this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==========

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software,
and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's

complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based

on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or

linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable

source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate properly with a modified version of the library, if
the
user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally distributed (in either source or binary form) with
the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot

distribute
so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system which is
implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by

the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively

convey the exclusion of warranty; and each file should have at least the
"copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative

works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a

copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with

the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

Copyright (C) 2009 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

This GCC Runtime Library Exception ("Exception") is an additional
permission under section 7 of the GNU General Public License, version
3 ("GPLv3"). It applies to a given file (the "Runtime Library") that
bears a notice placed by the copyright holder of the file stating that
the file is governed by GPLv3 along with this Exception.

When you use GCC to compile a program, GCC may combine portions of
certain GCC header files and runtime libraries with the compiled
program. The purpose of this Exception is to allow compilation of
non-GPL (including proprietary) programs to use, in this way, the

header files and runtime libraries covered by this Exception.

0. Definitions.

A file is an "Independent Module" if it either requires the Runtime Library
for execution after a Compilation Process, or makes use of an interface provided by the Runtime Library, but is not otherwise based on the Runtime Library.

"GCC" means a version of the GNU Compiler Collection, with or without modifications, governed by version 3 (or a specified later version) of the GNU General Public License (GPL) with the option of using any subsequent versions published by the FSF.

"GPL-compatible Software" is software whose conditions of propagation, modification and use would permit combination with GCC in accord with the license of GCC.

"Target Code" refers to output from any compiler for a real or virtual target processor architecture, in executable form or suitable for input to an assembler, loader, linker and/or execution phase. Notwithstanding that, Target Code does not include data in any format that is used as a compiler intermediate representation, or used for producing a compiler intermediate representation.

The "Compilation Process" transforms code
entirely represented in
non-intermediate languages designed for human-written code, and/or in Java Virtual Machine byte code, into Target Code. Thus, for example, use of source code generators and preprocessors need not be considered part of the Compilation Process, since the Compilation Process can be understood as starting with the output of the generators or preprocessors.

A Compilation Process is "Eligible" if it is done using GCC, alone or with other GPL-compatible software, or if it is done without using any work based on GCC. For example, using non-GPL-compatible Software to optimize any GCC intermediate representations would not qualify as an Eligible Compilation Process.

1. Grant of Additional Permission.

You have permission to propagate a work of Target Code formed by combining the Runtime Library with Independent Modules, even if such propagation would otherwise violate the terms of GPLv3, provided that all Target Code was generated by Eligible Compilation Processes. You may

then convey such a combination under terms of your choice,
consistent with the licensing of the Independent Modules.

2. No Weakening of GCC Copyleft.

The availability of this Exception does not imply any general
presumption that third-party software is unaffected by the copyleft
requirements of the license of GCC.
libffi - Copyright (c) 1996-2014 Anthony Green, Red Hat, Inc and others.
See source files for details.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
DRuntime: Runtime Library for the D Programming Language
==========

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED
"AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we

stand
ready to extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to
avoid the special danger that patents applied to a free program could
make it effectively proprietary. To prevent this, the GPL assures that
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this
License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work
in a fashion requiring copyright permission, other than the making of an
exact copy. The resulting work is called a "modified version" of the
earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based
on the Program.

To "propagate" a work means to do anything with it that, without
permission, would make you directly or secondarily liable for
infringement under applicable copyright law, except executing it on a
computer or modifying a private copy. Propagation includes copying,
distribution (with or without modification), making available to the
public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other
parties to make or receive copies. Mere interaction with a user through
a computer network, with no transfer of a copy, is
not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding

Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not

used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is

available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates

for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or

authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is

reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that

any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or

arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License,

section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE

USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.

Defining a subclass of a class defined by the Library is
deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data

structure
layouts and accessors, or small macros, inline functions and templates
(ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the
Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license
document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that,
taken together, effectively do not restrict modification of the
portions of the Library contained in the Combined Work and reverse
engineering for debugging such modifications, if you also do each of
the following:

a) Give prominent notice with each copy of the Combined Work that
the Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license
document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible

with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is
necessary to install and execute a modified version of the
Combined Work produced by recombining or relinking the
Application with a modified version of the Linked Version. (If
you use option 4d0, the Installation Information must accompany
the Minimal Corresponding Source and Corresponding Application
Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,
conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it
is a work based on the Library, and explaining where to find the
accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions
of the GNU Lesser General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the
Library as you received it specifies that a certain numbered version
of the GNU Lesser General Public License "or any later version"
applies to it, you have the option of following
the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser

General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.

==========

compiler_rt License

==========

The compiler_rt library is dual licensed under both the University of Illinois
"BSD-Like" license and the MIT license. As a user of this code you may choose
to use it under either license. As a contributor, you agree to allow your code
to be used under both.

Full text of the relevant licenses is included below.

==========

University of Illinois/NCSA
Open Source License

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:

LLVM Team

University of Illinois at Urbana-Champaign

http://llvm.org

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction,
including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimers in the

documentation and/or other materials provided with the distribution.

* Neither the names of the LLVM Team, University of Illinois at
Urbana-Champaign, nor the names of its contributors may be used to
endorse or promote products derived from this Software without specific
prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or
substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==

Copyrights and Licenses for Third Party Software Distributed with LLVM:

==

The LLVM software contains code written by third parties. Such software will
have its own individual LICENSE.TXT file in the directory in which it appears.
This file will describe the copyrights, license, and restrictions which apply
to that code.

The disclaimer of

warranty in the University of Illinois Open Source License
applies to all code in the LLVM Distribution, and nothing in any of the
other licenses gives permission to use the names of the LLVM Team or the
University of Illinois to endorse or promote products derived from this
Software.

The following pieces of software have additional or alternate copyrights,
licenses, and/or restrictions:

Program	Directory
mach_override	lib/interception/mach_override

UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF
YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA
FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a
copy of the Unicode data files and any associated documentation (the "Data
Files") or Unicode software and any associated documentation (the "Software")
to deal in the Data Files or Software without restriction, including without
limitation the rights to use, copy, modify, merge, publish, distribute, and/or
sell copies of the Data Files or Software, and to permit persons to whom the
Data Files or Software are furnished to do so, provided that (a) the above
copyright notice(s) and this permission notice appear with all copies of the
Data Files or Software, (b) both the above copyright notice(s) and this
permission notice appear in associated documentation, and (c) there is clear
notice in each modified Data File or in the Software as well as in the
documentation associated with the Data File(s) or Software

that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
Copyright (c) 2019 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.344 libxml2 2.9.13-6.el9_5.1

1.344.1 Available under license :

Except where otherwise noted in the source code (e.g. the files hash.c,
list.c and the trio files, which are covered by a similar licence but
with different Copyright notices) all the files are:

Copyright (C) 1998-2012 Daniel Veillard. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is fur-
nished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FIT-
NESS FOR A PARTICULAR PURPOSE
 AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.345 libgcc 11.5.0-5.el9_5

1.345.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software

Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim
copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a

notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Program,
and can be reasonably
considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work
based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code

or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version

number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

  <one line to give the program's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This program is free software; you can redistribute it and/or modify
  it under the terms of the GNU General Public License as published by
  the Free Software Foundation; either version 2 of the
License, or
  (at your option) any later version.

  This program is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
  GNU General Public License for more details.

  You should have received a copy of the GNU General Public License
  along with this program; if not, write to the Free Software
  Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

  Gnomovision version 69, Copyright (C) year name of author
  Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
  This is free software, and you are welcome to redistribute it
  under certain conditions; type `show c' for details.

The hypothetical commands
 `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the program
 `Gnomovision' (which makes passes at compilers) written by James Hacker.

 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2010 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
  not claim that you wrote the original software. If you use this
  software in a product, an acknowledgment in the product
  documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
  not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote
  products derived from this software without specific
 prior written
  permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide

complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to

encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the
free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
"work based on the library" and a "work that uses the library". The
former contains code derived from the library, whereas the latter must
be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other
program which contains a notice placed by the copyright holder or
other authorized party saying it may be distributed under the terms of
this Lesser General Public License (also called "this License").
Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work
which has been distributed under these terms. A "work based on the
Library" means either the Library or any derivative work under
copyright law: that is to say, a work containing the Library or a
portion of it, either verbatim or with modifications and/or translated
straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of

its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or

link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you
do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and

all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License

may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING

RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the

library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
==========
The LLVM Project is under the Apache License v2.0 with LLVM Exceptions:
==========

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the
power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a

copyright notice that is included in or attached
to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition,
"submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative
Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You

institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work
includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional
attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with

the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License
does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including
negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such
obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---- LLVM Exceptions to the Apache 2.0 License ----

As an exception, if, as a result of your compiling your source code, portions
of this Software are embedded into an Object form of such source code, you
may redistribute such embedded portions in such Object form without complying
with the conditions of Sections 4(a), 4(b) and 4(d) of the License.

In addition, if you combine or link compiled
forms of this Software with
software that is licensed under the GPLv2 ("Combined Software") and if a
court of competent jurisdiction determines that the patent provision (Section
3), the indemnity provision (Section 9) or other Section of the License
conflicts with the conditions of the GPLv2, you may retroactively and
prospectively choose to deem waived or otherwise exclude such Section(s) of
the License, but only in their entirety and only with respect to the Combined
Software.

==
Software from third parties included in the LLVM Project:
==
The LLVM Project contains third party software which is under different license
terms. All such code will be identified clearly using at least one of two
mechanisms:
1) It will be in a separate directory tree with its own `LICENSE.txt` or
  `LICENSE` file at the top containing the specific
 license and restrictions
  which apply to that software, or
2) It will contain specific license and restriction terms at the top of every
  file.

==
Legacy LLVM License (https://llvm.org/docs/DeveloperPolicy.html#legacy):
==

The software contained in this directory tree is dual licensed under both the
University of Illinois "BSD-Like" license and the MIT license. As a user of
this code you may choose to use it under either license. As a contributor,
you agree to allow your code to be used under both.

Full text of the relevant licenses is included below.

==

University of Illinois/NCSA
Open Source License

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:
  Threading Runtimes Team
  Intel Corporation
   http://www.intel.com

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

  * Redistributions of source code must retain the above copyright notice,
    this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimers in the
documentation and/or other materials provided with the distribution.

* Neither the names of Intel Corporation Threading Runtimes Team nor the
names of its contributors may be used to endorse or promote products
derived from
this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==========

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software,
and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts

as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we
suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the
recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original

author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU

operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does

and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,

then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License
to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be
distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot

use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues),

conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and

conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the
"copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including

the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their

Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

Copyright (C) 2009 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

This GCC Runtime Library Exception ("Exception") is an additional
permission under section 7 of the GNU General Public License, version
3 ("GPLv3"). It applies to a given file (the "Runtime Library") that
bears a notice placed by the copyright holder of the file stating that
the file is governed by GPLv3 along with this Exception.

When you use GCC to compile a program, GCC may combine portions of
certain GCC header files and runtime libraries with the compiled

program. The purpose of this Exception is to allow compilation of
non-GPL (including proprietary) programs to use, in this way, the
header files and runtime libraries covered by this Exception.

0. Definitions.

A file is an "Independent Module" if it either requires the Runtime
Library
 for execution after a Compilation Process, or makes use of an
interface provided by the Runtime Library, but is not otherwise based
on the Runtime Library.

"GCC" means a version of the GNU Compiler Collection, with or without
modifications, governed by version 3 (or a specified later version) of
the GNU General Public License (GPL) with the option of using any
subsequent versions published by the FSF.

"GPL-compatible Software" is software whose conditions of propagation,
modification and use would permit combination with GCC in accord with
the license of GCC.

"Target Code" refers to output from any compiler for a real or virtual
target processor architecture, in executable form or suitable for
input to an assembler, loader, linker and/or execution
phase. Notwithstanding that, Target Code does not include data in any
format that is used as a compiler intermediate representation, or used
for producing a compiler intermediate representation.

The "Compilation Process" transforms code
 entirely represented in
non-intermediate languages designed for human-written code, and/or in
Java Virtual Machine byte code, into Target Code. Thus, for example,
use of source code generators and preprocessors need not be considered
part of the Compilation Process, since the Compilation Process can be
understood as starting with the output of the generators or
preprocessors.

A Compilation Process is "Eligible" if it is done using GCC, alone or
with other GPL-compatible software, or if it is done without using any
work based on GCC. For example, using non-GPL-compatible Software to
optimize any GCC intermediate representations would not qualify as an
Eligible Compilation Process.

1. Grant of Additional Permission.

You have permission to propagate a work of Target Code formed by
combining the Runtime Library with Independent Modules, even if such
propagation would otherwise violate the terms of GPLv3, provided that

all Target Code was generated by Eligible Compilation Processes. You
may
then convey such a combination under terms of your choice,
consistent with the licensing of the Independent Modules.

2. No Weakening of GCC Copyleft.

The availability of this Exception does not imply any general
presumption that third-party software is unaffected by the copyleft
requirements of the license of GCC.
libffi - Copyright (c) 1996-2014 Anthony Green, Red Hat, Inc and others.
See source files for details.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
DRuntime: Runtime Library for the D Programming Language
==========

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative

works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED
"AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE
FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you
want it, that you can change the software or use pieces of it in new
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you
these rights or asking you to surrender the rights. Therefore, you have
certain responsibilities if you distribute copies of the software, or if
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must pass on to the recipients the same
freedoms that you received. You must make sure that they, too, receive
or can get the source code. And you must show them these terms so they
know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1)
assert copyright on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we

have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is

not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users
can regenerate automatically from other parts of the Corresponding
Source.

The Corresponding Source for a work in source code form is that
same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of
copyright on the Program, and are irrevocable provided the stated
conditions are met. This License explicitly affirms your unlimited
permission to run the unmodified Program. The output from running a
covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your
rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of

technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution

medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the

Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of

rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this

License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS

THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated

material is not limited to numerical parameters, data
structure
layouts and accessors, or small macros, inline functions and templates
(ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the
Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license
document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that,
taken together, effectively do not restrict modification of the
portions of the Library contained in the Combined Work and reverse
engineering for debugging such modifications, if you also do each of
the following:

a) Give prominent notice with each copy of the Combined Work that
the Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license
document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible

with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following
the terms and
conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser

General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.

==========

compiler_rt License

==========

The compiler_rt library is dual licensed under both the University of Illinois
"BSD-Like" license and the MIT license. As a user of this code you may choose
to use it under either license. As a contributor, you agree to allow your code
to be used under both.

Full text of the relevant licenses is included below.

==========

University of Illinois/NCSA
Open Source License

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:

LLVM Team

University of Illinois at Urbana-Champaign

http://llvm.org

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction,
including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimers in the

documentation and/or other materials provided with the distribution.

* Neither the names of the LLVM Team, University of Illinois at
Urbana-Champaign, nor the names of its contributors may be used to
endorse or promote products derived from this Software without specific
prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or
substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==

Copyrights and Licenses for Third Party Software Distributed with LLVM:

==

The LLVM software contains code written by third parties. Such software will
have its own individual LICENSE.TXT file in the directory in which it appears.
This file will describe the copyrights, license, and restrictions which apply
to that code.

The disclaimer of

warranty in the University of Illinois Open Source License
applies to all code in the LLVM Distribution, and nothing in any of the
other licenses gives permission to use the names of the LLVM Team or the
University of Illinois to endorse or promote products derived from this
Software.

The following pieces of software have additional or alternate copyrights,
licenses, and/or restrictions:

Program	Directory
mach_override	lib/interception/mach_override

UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF
YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA
FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a
copy of the Unicode data files and any associated documentation (the "Data
Files") or Unicode software and any associated documentation (the "Software")
to deal in the Data Files or Software without restriction, including without
limitation the rights to use, copy, modify, merge, publish, distribute, and/or
sell copies of the Data Files or Software, and to permit persons to whom the
Data Files or Software are furnished to do so, provided that (a) the above
copyright notice(s) and this permission notice appear with all copies of the
Data Files or Software, (b) both the above copyright notice(s) and this
permission notice appear in associated documentation, and (c) there is clear
notice in each modified Data File or in the Software as well as in the
documentation associated with the Data File(s) or Software

that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
Copyright (c) 2019 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.346 libstdc++ 11.5.0-5.el9_5

1.346.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running the Program is not restricted, and the output from the Program
is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim
copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in

whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably
considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work

based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code
or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary
form) with the major components (compiler, kernel, and so on) of the
operating system on which the executable runs, unless that component
itself accompanies the executable.

If distribution of executable or object code is made by offering
access to copy from a designated place, then offering equivalent
access to copy the source code from the same place counts as
distribution of the source code, even though third parties are not
compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program
except as expressly provided under this License. Any attempt
otherwise to copy, modify, sublicense or distribute the Program is
void, and will automatically terminate your rights under this License.
However, parties who have received copies, or rights, from you under
this License will not have their licenses terminated so long as such
parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free
redistribution of the Program by
all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version
number of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING

WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author

Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

This program, "bzip2", the associated library "libbzip2", and all
documentation, are copyright (C) 1996-2010 Julian R Seward. All
rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must
not claim that you wrote the original software. If you use this
software in a product, an acknowledgment in the product
documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must
not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote

products derived from this software without specific
prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide
to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations
below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion

of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under

the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a

derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the
work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a

copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you
do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either

version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James
Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
==========
The LLVM Project is under the Apache License v2.0 with LLVM Exceptions:
==========

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the

power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached
to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition,
"submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and

subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not

pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional
attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License
does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including

negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such
obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and

limitations under the License.

---- LLVM Exceptions to the Apache 2.0 License ----

As an exception, if, as a result of your compiling your source code, portions
of this Software are embedded into an Object form of such source code, you
may redistribute such embedded portions in such Object form without complying
with the conditions of Sections 4(a), 4(b) and 4(d) of the License.

In addition, if you combine or link compiled
forms of this Software with
software that is licensed under the GPLv2 ("Combined Software") and if a
court of competent jurisdiction determines that the patent provision (Section
3), the indemnity provision (Section 9) or other Section of the License
conflicts with the conditions of the GPLv2, you may retroactively and
prospectively choose to deem waived or otherwise exclude such Section(s) of
the License, but only in their entirety and only with respect to the Combined
Software.

==
Software from third parties included in the LLVM Project:
==
The LLVM Project contains third party software which is under different license
terms. All such code will be identified clearly using at least one of two
mechanisms:
1) It will be in a separate directory tree with its own `LICENSE.txt` or
`LICENSE` file at the top containing the specific
license and restrictions
which apply to that software, or
2) It will contain specific license and restriction terms at the top of every
file.

==
Legacy LLVM License (https://llvm.org/docs/DeveloperPolicy.html#legacy):
==

The software contained in this directory tree is dual licensed under both the
University of Illinois "BSD-Like" license and the MIT license. As a user of
this code you may choose to use it under either license. As a contributor,
you agree to allow your code to be used under both.

Full text of the relevant licenses is included below.

==

University of Illinois/NCSA
Open Source License

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:
Threading Runtimes Team
Intel Corporation
http://www.intel.com

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal with the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimers in the documentation and/or other materials provided with the distribution.

* Neither the names of Intel Corporation Threading Runtimes Team nor the names of its contributors may be used to endorse or promote products derived from
this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==========

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software,
and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we
suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these

rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it

does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work

which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified
Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves,
then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License
to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be
distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered
by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any
executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the
user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying
or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish revised and/or new
versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision will be guided by the two goals of preserving the free
status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN

WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You

should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE
FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any

risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

Copyright (C) 2009 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

This GCC Runtime Library Exception ("Exception") is an additional
permission under section 7 of the GNU General Public License, version
3 ("GPLv3"). It applies to a given file (the "Runtime Library") that
bears a notice placed by the copyright holder of the file stating that
the file is governed by GPLv3 along with this Exception.

When you use GCC to compile a program, GCC may combine portions of
certain GCC header files and runtime libraries with the compiled
program. The purpose of this Exception is to allow compilation of
non-GPL (including proprietary) programs to use, in this way, the
header files and runtime libraries covered by this Exception.

0. Definitions.

A file is an "Independent Module" if it either requires the Runtime
Library
for execution after a Compilation Process, or makes use of an
interface provided by the Runtime Library, but is not otherwise based
on the Runtime Library.

"GCC" means a version of the GNU Compiler Collection, with or without
modifications, governed by version 3 (or a specified later version) of
the GNU General Public License (GPL) with the option of using any
subsequent versions published by the FSF.

"GPL-compatible Software" is software whose conditions of propagation,
modification and use would permit combination with GCC in accord with
the license of GCC.

"Target Code" refers to output from any compiler for a real or virtual
target processor architecture, in executable form or suitable for
input to an assembler, loader, linker and/or execution
phase. Notwithstanding that, Target Code does not include data in any
format that is used as a compiler intermediate representation, or used

for producing a compiler intermediate representation.

The "Compilation Process" transforms code
entirely represented in
non-intermediate languages designed for human-written code, and/or in
Java Virtual Machine byte code, into Target Code. Thus, for example,
use of source code generators and preprocessors need not be considered
part of the Compilation Process, since the Compilation Process can be
understood as starting with the output of the generators or
preprocessors.

A Compilation Process is "Eligible" if it is done using GCC, alone or
with other GPL-compatible software, or if it is done without using any
work based on GCC. For example, using non-GPL-compatible Software to
optimize any GCC intermediate representations would not qualify as an
Eligible Compilation Process.

1. Grant of Additional Permission.

You have permission to propagate a work of Target Code formed by
combining the Runtime Library with Independent Modules, even if such
propagation would otherwise violate the terms of GPLv3, provided that
all Target Code was generated by Eligible Compilation Processes. You
may
then convey such a combination under terms of your choice,
consistent with the licensing of the Independent Modules.

2. No Weakening of GCC Copyleft.

The availability of this Exception does not imply any general
presumption that third-party software is unaffected by the copyleft
requirements of the license of GCC.
libffi - Copyright (c) 1996-2014 Anthony Green, Red Hat, Inc and others.
See source files for details.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
DRuntime: Runtime Library for the D Programming Language
==========

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED
"AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE
FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether

gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this

License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major

Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction

and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is

released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years
and valid for as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the

product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the

additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For
purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read

<http://www.gnu.org/philosophy/why-not-lgpl.html>.

GNU LESSER GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates the terms and conditions of version 3 of the GNU General Public License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser General Public License, and the "GNU GPL" refers to version 3 of the GNU General Public License.

"The Library" refers to a covered work governed by this License, other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided by the Library, but which is not otherwise based on the Library. Defining a subclass of a class defined by the Library is deemed a mode of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

a) Give prominent notice with each copy of the Combined Work that the Library is used in it and that the Library and its use are covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is
necessary to install and execute a modified version of the
Combined Work produced by recombining or relinking the
Application with a modified version of the Linked Version. (If
you use option 4d0, the Installation Information must accompany
the Minimal Corresponding Source and Corresponding Application
Code. If you use option 4d1, you must provide the Installation
Information in the manner specified by section 6 of the GNU GPL
for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the
Library side by side in a single library together with other library
facilities that are not Applications and are not covered by this
License, and convey such a combined library under
terms of your
choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based
on the Library, uncombined with any other library facilities,

conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it
is a work based on the Library, and explaining where to find the
accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions
of the GNU Lesser General Public License from time to time. Such new
versions will be similar in spirit to the present version, but may
differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the
Library as you received it specifies that a certain numbered version
of the GNU Lesser General Public License "or any later version"
applies to it, you have the option of following
the terms and
conditions either of that published version or of any later version
published by the Free Software Foundation. If the Library as you
received it does not specify a version number of the GNU Lesser
General Public License, you may choose any version of the GNU Lesser
General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide
whether future versions of the GNU Lesser General Public License shall
apply, that proxy's public statement of acceptance of any version is
permanent authorization for you to choose that version for the
Library.

==========

compiler_rt License

==========

The compiler_rt library is dual licensed under both the University of Illinois
"BSD-Like" license and the MIT license. As a user of this code you may choose
to use it under either license. As a contributor, you agree to allow your code
to be used under both.

Full text of the relevant licenses is included below.

==========

University of Illinois/NCSA
Open Source License

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:

LLVM Team

University of Illinois at Urbana-Champaign

http://llvm.org

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal with the Software without restriction,
including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimers in the documentation and/or other materials provided with the distribution.

* Neither the names of the LLVM Team, University of Illinois at Urbana-Champaign, nor the names of its contributors may be used to endorse or promote products derived from this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or
substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==
Copyrights and Licenses for Third Party Software Distributed with LLVM:
==
The LLVM software contains code written by third parties. Such software will
have its own individual LICENSE.TXT file in the directory in which it appears.
This file will describe the copyrights, license, and restrictions which apply
to that code.

The disclaimer of
warranty in the University of Illinois Open Source License
applies to all code in the LLVM Distribution, and nothing in any of the
other licenses gives permission to use the names of the LLVM Team or the
University of Illinois to endorse or promote products derived from this
Software.

The following pieces of software have additional or alternate copyrights,
licenses, and/or restrictions:

Program Directory
------- ---------
mach_override lib/interception/mach_override
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF

YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a copy of the Unicode data files and any associated documentation (the "Data Files") or Unicode software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that (a) the above copyright notice(s) and this permission notice appear with all copies of the Data Files or Software, (b) both the above copyright notice(s) and this permission notice appear in associated documentation, and (c) there is clear notice in each modified Data File or in the Software as well as in the documentation associated with the Data File(s) or Software
that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
Copyright (c) 2019 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer

in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.347 libgomp 11.5.0-5.el9_5

1.347.1 Available under license :

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price. Our General Public Licenses are designed
 to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it

if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you this license which gives you legal permission to copy,
distribute
and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and
modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work
which contains
a notice placed by the copyright holder saying it may be distributed
under the terms of this General Public License. The "Program", below,
refers to any such program or work, and a "work based on the Program"
means either the Program or any derivative work under copyright law:
that is to say, a work containing the Program or a portion of it,
either verbatim or with modifications and/or translated into another
language. (Hereinafter, translation is included without limitation in
the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably

considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work
based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete
machine-readable copy of the corresponding source code, to be
distributed under the terms of Sections 1 and 2 above on a medium
customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer
to distribute corresponding source code. (This alternative is
allowed only for noncommercial distribution and only if you
received the program in object code
or executable form with such
an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for
making modifications to it. For an executable work, complete source
code means all the source code for all modules it contains, plus any
associated interface definition files, plus the scripts used to
control compilation and installation of the executable. However, as a
special exception, the source code distributed need not include
anything that is normally distributed (in either source or binary

form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy
the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6.
Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free
redistribution of the Program by
all those who receive copies directly or indirectly through you, then

the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through
any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version
number of this License which applies to it and "any
later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free

Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE
LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the

License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands
`show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

This program, "bzip2", the associated library "libbzip2", and all

documentation, are copyright (C) 1996-2010 Julian R Seward. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.

3. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.

4. The name of the author may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is

modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it
becomes a de-facto standard. To achieve this, non-free programs must
be allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the
free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of

free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to
run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another
language. (Hereinafter, translation is
included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from

such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Library, and can be reasonably
considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the

source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses
the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
distribute the object
code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
link a "work that uses the Library" with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the

copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will
be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE
LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest

possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms
of the ordinary General Public License).

 To apply these terms, attach the following notices to the library.
It is safest to attach them to the start of each source file to most
effectively
 convey the exclusion of warranty; and each file should
have at least the "copyright" line and a pointer to where the full
notice is found.

  <one line to give the library's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This library is free software; you can redistribute it and/or
  modify it under the terms of the GNU Lesser General Public
  License as published by the Free Software Foundation; either
  version 2.1 of the License, or (at your option) any later version.

  This library is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
  Lesser General Public License for more details.

  You should have received a copy of the GNU Lesser General Public
  License along with this library; if not, write to the Free Software
  Foundation, Inc., 51 Franklin St, Fifth Floor, Boston, MA 02110-1301
 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or
your school, if any, to sign a "copyright disclaimer" for the library,
if necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James
 Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
==
The LLVM Project is under the Apache License v2.0 with LLVM Exceptions:
==

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the
power, direct or indirect, to cause the
direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached
to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition,
"submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative
Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work
includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional
attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License
does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including
negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such
obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include

the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---- LLVM Exceptions to the Apache 2.0 License ----

As an exception, if, as a result of your compiling your source code, portions
of this Software are embedded into an Object form of such source code, you
may redistribute such embedded portions in such Object form without complying
with the conditions of Sections 4(a), 4(b) and 4(d) of the License.

In addition, if you combine or link compiled
forms of this Software with
software that is licensed under the GPLv2 ("Combined Software") and if a
court of competent jurisdiction determines that the patent provision (Section
3), the indemnity provision (Section 9) or other Section of the License
conflicts with the conditions of the GPLv2, you may retroactively and
prospectively choose to deem waived or otherwise exclude such Section(s) of
the License, but only in their entirety and only with respect to the Combined
Software.

==
Software from third parties included in the LLVM Project:
==
The LLVM Project contains third party software which is under different license
terms. All such code will be identified clearly using at least one of two
mechanisms:
1) It will be in a separate directory tree with its own `LICENSE.txt` or
`LICENSE` file at the top containing the specific
license and restrictions
which apply to that software, or

2) It will contain specific license and restriction terms at the top of every
file.

==
Legacy LLVM License (https://llvm.org/docs/DeveloperPolicy.html#legacy):
==

The software contained in this directory tree is dual licensed under both the
University of Illinois "BSD-Like" license and the MIT license. As a user of
this code you may choose to use it under either license. As a contributor,
you agree to allow your code to be used under both.

Full text of the relevant licenses is included below.

==

University of Illinois/NCSA
Open Source License

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:
Threading Runtimes Team
Intel Corporation
http://www.intel.com

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimers.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimers in the
documentation and/or other materials provided with the distribution.

* Neither the names of Intel Corporation Threading Runtimes Team nor the
names of its contributors may be used to endorse or promote products
derived from
this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==========

Copyright (c) 2017-2019 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software,
and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a

"work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish
on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public
License instead of this License
to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be
distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the

library". The executable is therefore covered
by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any
executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable
source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood

that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to

refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our

decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS

FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

Copyright (C) 2009 Free Software Foundation, Inc. <http://fsf.org/>

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

This GCC Runtime Library Exception ("Exception") is an additional
permission under section 7 of the GNU General Public License, version
3 ("GPLv3"). It applies to a given file (the "Runtime Library") that
bears a notice placed by the copyright holder of the file stating that
the file is governed by GPLv3 along with this Exception.

When you use GCC to compile a program, GCC may combine portions of
certain GCC header files and runtime libraries with the compiled
program. The purpose of this Exception is to allow compilation of
non-GPL (including proprietary) programs to use, in this way, the
header files and runtime libraries covered by this Exception.

0. Definitions.

A file is an "Independent Module" if it either requires the Runtime
Library

for execution after a Compilation Process, or makes use of an interface provided by the Runtime Library, but is not otherwise based on the Runtime Library.

"GCC" means a version of the GNU Compiler Collection, with or without modifications, governed by version 3 (or a specified later version) of the GNU General Public License (GPL) with the option of using any subsequent versions published by the FSF.

"GPL-compatible Software" is software whose conditions of propagation, modification and use would permit combination with GCC in accord with the license of GCC.

"Target Code" refers to output from any compiler for a real or virtual target processor architecture, in executable form or suitable for input to an assembler, loader, linker and/or execution phase. Notwithstanding that, Target Code does not include data in any format that is used as a compiler intermediate representation, or used for producing a compiler intermediate representation.

The "Compilation Process" transforms code entirely represented in non-intermediate languages designed for human-written code, and/or in Java Virtual Machine byte code, into Target Code. Thus, for example, use of source code generators and preprocessors need not be considered part of the Compilation Process, since the Compilation Process can be understood as starting with the output of the generators or preprocessors.

A Compilation Process is "Eligible" if it is done using GCC, alone or with other GPL-compatible software, or if it is done without using any work based on GCC. For example, using non-GPL-compatible Software to optimize any GCC intermediate representations would not qualify as an Eligible Compilation Process.

1. Grant of Additional Permission.

You have permission to propagate a work of Target Code formed by combining the Runtime Library with Independent Modules, even if such propagation would otherwise violate the terms of GPLv3, provided that all Target Code was generated by Eligible Compilation Processes. You may then convey such a combination under terms of your choice, consistent with the licensing of the Independent Modules.

2. No Weakening of GCC Copyleft.

The availability of this Exception does not imply any general

presumption that third-party software is unaffected by the copyleft
requirements of the license of GCC.
libffi - Copyright (c) 1996-2014 Anthony Green, Red Hat, Inc and others.
See source files for details.

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
``Software''), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED ``AS IS'', WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF
 CONTRACT,
TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
DRuntime: Runtime Library for the D Programming Language
==========

Boost Software License - Version 1.0 - August 17th, 2003

Permission is hereby granted, free of charge, to any person or organization
obtaining a copy of the software and accompanying documentation covered by
this license (the "Software") to use, reproduce, display, distribute,
execute, and transmit the Software, and to prepare derivative works of the
Software, and to permit third-parties to whom the Software is furnished to
do so, all subject to the following:

The copyright notices in the Software and this entire statement, including
the above license grant, this restriction and the following disclaimer,
must be included in all copies of the Software, in whole or in part, and
all derivative works of the Software, unless such copies or derivative
works are solely in the form of machine-executable object code generated by
a source language processor.

THE SOFTWARE IS PROVIDED
 "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT
SHALL THE COPYRIGHT HOLDERS OR ANYONE DISTRIBUTING THE SOFTWARE BE LIABLE

FOR ANY DAMAGES OR OTHER LIABILITY, WHETHER IN CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the

GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of

software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If

the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately

publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no

charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright

holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered

work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF

SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
GNU LESSER GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

This version of the GNU Lesser General Public License incorporates
the terms and conditions of version 3 of the GNU General Public
License, supplemented by the additional permissions listed below.

0. Additional Definitions.

As used herein, "this License" refers to version 3 of the GNU Lesser
General Public License, and the "GNU GPL" refers to version 3 of the GNU
General Public License.

"The Library" refers to a covered work governed by this License,
other than an Application or a Combined Work as defined below.

An "Application" is any work that makes use of an interface provided
by the Library, but which is not otherwise based on the Library.
Defining a subclass of a class defined by the Library is
deemed a mode
of using an interface provided by the Library.

A "Combined Work" is a work produced by combining or linking an Application with the Library. The particular version of the Library with which the Combined Work was made is also called the "Linked Version".

The "Minimal Corresponding Source" for a Combined Work means the Corresponding Source for the Combined Work, excluding any source code for portions of the Combined Work that, considered in isolation, are based on the Application, and not on the Linked Version.

The "Corresponding Application Code" for a Combined Work means the object code and/or source code for the Application, including any data and utility programs needed for reproducing the Combined Work from the Application, but excluding the System Libraries of the Combined Work.

1. Exception to Section 3 of the GNU GPL.

You may convey a covered work under sections 3 and 4 of this License without being bound by section 3 of the GNU GPL.

2. Conveying
Modified Versions.

If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or

b) under the GNU GPL, with none of the additional permissions of this License applicable to that copy.

3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data
structure
layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

a) Give prominent notice with each copy of the object code that the

Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the object code with a copy of the GNU GPL and this license
document.

4. Combined Works.

You may convey a Combined Work under terms of your choice that,
taken together, effectively do not restrict modification of the
portions of the Library contained in the Combined Work and reverse
engineering for debugging such modifications, if you also do each of
the following:

a) Give prominent notice with each copy of the Combined Work that
the Library is used in it and that the Library and its use are
covered by this License.

b) Accompany the Combined Work with a copy of the GNU GPL and this license
document.

c) For a Combined Work that displays copyright
notices during
execution, include the copyright notice for the Library among
these notices, as well as a reference directing the user to the
copies of the GNU GPL and this license document.

d) Do one of the following:

0) Convey the Minimal Corresponding Source under the terms of this
License, and the Corresponding Application Code in a form
suitable for, and under terms that permit, the user to
recombine or relink the Application with a modified version of
the Linked Version to produce a modified Combined Work, in the
manner specified by section 6 of the GNU GPL for conveying
Corresponding Source.

1) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (a) uses at run time
a copy of the Library already present on the user's computer
system, and (b) will operate properly with a modified version
of the Library that is interface-compatible
with the Linked
Version.

e) Provide Installation Information, but only if you would otherwise
be required to provide such information under section 6 of the
GNU GPL, and only to the extent that such information is

necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

5. Combined Libraries.

You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities, conveyed under the terms of this License.

b) Give prominent notice with the combined library that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

6. Revised Versions of the GNU Lesser General Public License.

The Free Software Foundation may publish revised and/or new versions of the GNU Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library as you received it specifies that a certain numbered version of the GNU Lesser General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that published version or of any later version published by the Free Software Foundation. If the Library as you received it does not specify a version number of the GNU Lesser General Public License, you may choose any version of the GNU Lesser General Public License ever published by the Free Software Foundation.

If the Library as you received it specifies that a proxy can decide whether future versions of the GNU Lesser General Public License shall apply, that proxy's public statement of acceptance of any version is permanent authorization for you to choose that version for the

Library.
==
compiler_rt License
==

The compiler_rt library is dual licensed under both the University of Illinois
"BSD-Like" license and the MIT license. As a user of this code you may choose
to use it under either license. As a contributor, you agree to allow your code
to be used under both.

Full text of the relevant licenses is included below.

==

University of Illinois/NCSA
Open Source License

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

All rights reserved.

Developed by:

  LLVM Team

  University of Illinois at Urbana-Champaign

  http://llvm.org

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal with
the Software without restriction,
 including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

  * Redistributions of source code must retain the above copyright notice,
    this list of conditions and the following disclaimers.

  * Redistributions in binary form must reproduce the above copyright notice,
    this list of conditions and the following disclaimers in the
    documentation and/or other materials provided with the distribution.

  * Neither the names of the LLVM Team, University of Illinois at
    Urbana-Champaign, nor the names of its contributors may be used to
    endorse or promote products derived from this Software without specific
    prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

==========

Copyright (c) 2009-2012 by the contributors listed in CREDITS.TXT

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or
substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

==========

Copyrights and Licenses for Third Party Software Distributed with LLVM:

==========

The LLVM software contains code written by third parties. Such software will
have its own individual LICENSE.TXT file in the directory in which it appears.
This file will describe the copyrights, license, and restrictions which apply
to that code.

The disclaimer of
warranty in the University of Illinois Open Source License
applies to all code in the LLVM Distribution, and nothing in any of the
other licenses gives permission to use the names of the LLVM Team or the
University of Illinois to endorse or promote products derived from this
Software.

The following pieces of software have additional or alternate copyrights,
licenses, and/or restrictions:

Program	Directory
mach_override	lib/interception/mach_override

UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF
YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA
FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a
copy of the Unicode data files and any associated documentation (the "Data
Files") or Unicode software and any associated documentation (the "Software")
to deal in the Data Files or Software without restriction, including without
limitation the rights to use, copy, modify, merge, publish, distribute, and/or
sell copies of the Data Files or Software, and to permit persons to whom the
Data Files or Software are furnished to do so, provided that (a) the above
copyright notice(s) and this permission notice appear with all copies of the
Data Files or Software, (b) both the above copyright notice(s) and this
permission notice appear in associated documentation, and (c) there is clear
notice in each modified Data File or in the Software as well as in the
documentation associated with the Data File(s) or Software
that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY
KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD
PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN

THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
Copyright (c) 2019 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.348 kubernetes-api 0.32.2

1.348.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally

submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the

content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.349 kubernetes-apimachinery 0.32.2

1.349.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate

comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.350 kubernetes-client 0.32.2

1.350.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.351 alpine-release 3.21.3-r0

1.351.1 Available under license :

```
# Automatically generated by apkbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=10
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
 export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
```

```
 PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
  INSTALLDIRS=vendor \
  NO_PACKLIST=1 \
  NO_PERLLOCAL=1
 make
}

check() {
 export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
 make test
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"
# Maintainer: fossdd <fossdd@pwned.life>
pkgname=cargo-license
pkgver=0.6.1
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
 default_prepare

 cargo fetch --target="$CTARGET" --locked
}

build() {
 cargo auditable build --release --frozen
}

check() {
 cargo test --frozen
}

package() {
 install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
```

}

sha512sums="
36215145e79965be090ae2f5ce6f5eb208465eb67a94c26bed1fe70a131c46c6dc35695e30852759b7366883fbc3caf00
272d796ac634f0a5e1d49232b6b29d5 cargo-license-0.6.1.tar.gz
"
MIT
MIT License

Copyright 2019-2021 Caleb Porzio and contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
 OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Contributor: Dhruvin Gandhi <contact@dhru.vin>
Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.0
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/$_pkgname/$_pkgname-$pkgver.tar.gz"
builddir="$srcdir/$_pkgname-$pkgver"

build() {
 gpep517 build-wheel \

```
  --wheel-dir .dist \
  --output-fd 3 3>&1 >&2
}

check() {
 python3 -m venv --clear --without-pip --system-site-packages .testenv
 .testenv/bin/python3 -m installer .dist/*.whl
 .testenv/bin/python3 -m pytest
}

package() {
 python3 -m installer -d "$pkgdir" \
  .dist/*.whl
}

sha512sums="
cc7cd6b5bd8ea4c99b66f074871ffd7cc78b3e8b1b0d3afd9b95efdb7147c8293db2fac977d684fc34d3d60bd79066a06
dc2bff0a38b130d9d83c63538502db1
  license_expression-30.4.0.tar.gz
"
```

Vintage Dreams Waves v 2.0. for Creative Labs' AWE Soundcards
(EMU Soundfont 2 Format)

Copyright (c) Ian Wilson, 1996 (Updated January 1998)

This soundfont is freeware. You may freely use and/or redistribute it subject
to the following terms:
1. It is not altered, edited, modified, ripped, or converted to other formats,
except for private use only.
2. It is distributed with this copyright notice.

This soundfont is distributed WITHOUT WARRANTY, and without the implied
warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. No liability
or damages can be inferred upon the said copyright owner, Ian Wilson.

Any feedback, contact Ian Wilson.
vintagedreamworks@hotmail.com
http://www.geocities.com/SiliconValley/Campus/8645/index.html
http://members.nbci.com/silicon39/
http://www.mp3.com/silicon39
https://analoguesque.x10host.com/
MIT License

Copyright (c) 2023 Leaf Corcoran

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
mini_sendmail - accept email on behalf of real sendmail

Copyright 1999,2015 by Jef Poskanzer <jef@mail.acme.com>.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING,
BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.
Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"

```
options="!check"  # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2
 "

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
 update_config_sub
 default_prepare
}

build() {
 ./configure \
  --build=$CBUILD \
  --host=$CHOST \
  --prefix=/usr
 make
}

package() {
 make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020  libart_lgpl-2.3.21.tar.bz2"
```

1.352 github.com/openshift/client-go 0.0.0-20250131180035-f7ec47e2d87a

1.352.1 Available under license :

```
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

   * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
   * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
   * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
```

this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only

on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.353 openshift-client-go 0.0.0-20250131180035-f7ec47e2d87a

1.353.1 Available under license :

The MIT License (MIT)

Copyright (c) 2015 Andrew Gallant

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2012 Alex Ogier. All rights reserved.
Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Timon Wong

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 Iskander (Alex) Sharipov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 Alif Rachmawadi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2012-2016 The go-diff Authors. All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included
in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2024 Gabriel Augendre

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Data model artifacts for Prometheus.
Copyright 2012-2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).
MIT License

Copyright (c) 2020 Denis Krivak

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all

other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must

include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2021 Fernandez Ludovic

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the
creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but
not also under the terms of a
Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its

Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of

such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some

reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License
may be brought only in the courts of
a jurisdiction where the defendant maintains its principal place of business
and such litigation shall be governed by laws of that jurisdiction, without
reference to its conflict-of-law provisions. Nothing in this Section shall
prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter
hereof. If any provision of this License is held to be unenforceable, such
provision shall be reformed only to the extent necessary to make it
enforceable. Any law or regulation which provides that the language of a
contract shall be construed against the drafter shall not be used to construe
this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section
10.3, no one other than the license steward has the right to modify or
publish new versions of this License. Each version will be given a
distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of
the License under which You originally received the Covered Software, or
under the terms of any subsequent version published by the license
steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to
create a new license for such software, you may create and use a modified
version of this License if you rename the license and remove any
references to the name of the license steward (except to note that such
modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses
If You choose to distribute Source Code Form that is Incompatible With
Secondary Licenses under the terms of this version of the License,

the
notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then
You may include the notice in a location (such as a LICENSE file in a relevant
directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible
With Secondary Licenses, as defined by
the Mozilla Public License, v. 2.0.
The MIT License (MIT)

Copyright (c) 2015 Jonathan Gautheron

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
This is free and unencumbered software released into the public domain.

Anyone is free to copy, modify, publish, use, compile, sell, or

distribute this software, either in source code form or as a compiled
binary, for any purpose, commercial or non-commercial, and by any
means.

In jurisdictions that recognize copyright laws, the author or authors
of this software dedicate any and all copyright interest in the
software to the public domain. We make this dedication for the benefit
of the public at large and to the detriment of our heirs and
successors. We intend this dedication to be an overt act of
relinquishment in perpetuity of all present and future rights to this
software under copyright law.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

For more information, please refer to <http://unlicense.org/>
The MIT License (MIT)

Copyright (c) 2017, Adrian Stoewer <adrian.stoewer@rz.ifi.lmu.de>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2018 Takuya Ueda

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 Fatih Arslan

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Steve Francia

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their

Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

The MIT License (MIT)

Copyright (c) 2019 polyfloyd

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

The MIT License (MIT)

Copyright (c) 2013 Mitchell Hashimoto

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

Copyright (c) 2012 Pter Surnyi. Portions Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2021 Florian Bosdorff

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Files other than internal/golang/* licensed under:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived
from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes

of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication
on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.
Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices
contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional
or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify

the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing
the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor
be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and
hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You
may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

---

internal/golang/* files licensed under:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2020 Kunwardeep Bedi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2015, Gengo, Inc.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice,
  this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

* Neither the name of Gengo, Inc. nor the names of its
  contributors may be used to endorse or promote products derived from this
  software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO
EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2021 Lucas Bremgartner

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2016-2017 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
MIT License

Copyright (c) 2019 Seiji Takahashi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2011 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR

CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2017 Mike Farah

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2012-2020 Mat Ryer, Tyler Bunnell and contributors.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,

ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Ryan Currah

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Yusuke Inuzuka

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2020 Red Hat, Inc.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) Nathan Button

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE
OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) Yasuhiro MATSUMOTO <mattn.jp@gmail.com>

MIT License (Expat)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2017 Alex Kohler

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Prometheus instrumentation library for Go applications
Copyright 2012-2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).

The following components are included in this product:

perks - a fork of https://github.com/bmizerany/perks

https://github.com/beorn7/perks
Copyright 2013-2015 Blake Mizerany, Bjrn Rabenstein
See https://github.com/beorn7/perks/blob/master/README.md for license details.

Go support for Protocol Buffers - Google's data interchange format
http://github.com/golang/protobuf/
Copyright 2010 The Go Authors
See source code for license details.

Support for streaming Protocol Buffer messages for the Go language (golang).
https://github.com/matttproud/golang_protobuf_extensions
Copyright 2013 Matt T. Proud
Licensed under the Apache License, Version 2.0
The MIT License (MIT)

Copyright (c) 2015 Jinzhu

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2015 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. "Contributor"

means each individual or legal entity that creates, contributes to the
creation of, or owns Covered Software.

1.2. "Contributor Version"

means the combination of the Contributions of others (if any) used by a

Contributor and that particular Contributor's Contribution.

1.3. "Contribution"

means Covered Software of a particular Contributor.

1.4. "Covered Software"

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. "Executable Form"

means any form of the work other than Source Code Form.

1.7. "Larger Work"

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"

means this document.

1.9. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"

means the form of the work preferred for making modifications.

1.14. "You" (or "Your")

means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or
management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its

Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under

applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered

Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into

compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an "as is" basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this

exclusion and limitation may
not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward.
Except as provided in Section
10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary

Licenses If You choose to distribute Source
Code Form that is
Incompatible With Secondary Licenses under the terms of this version of
the License, the notice described in Exhibit B of this License must be
attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file,
then You may include the notice in a location (such as a LICENSE file in a
relevant directory) where a recipient would be likely to look for such a
notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

This Source Code Form is "Incompatible
With Secondary Licenses", as defined by
the Mozilla Public License, v. 2.0.
Copyright (c) 2013 rjan Persson. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER

OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2019 Cloudflare. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Cloudflare nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following

disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY
OF SUCH DAMAGE.
MIT License

Copyright (c) 2024 Ryosei Karaki

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"

means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2022 Alan Shreve (@inconshreveable)

Licensed under the Apache License, Version 2.0 (the "License");

you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright 2024 Skeema LLC and the Skeema Knownhosts authors

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2018 Grigory Zubankov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2017 envsubst contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Vladislav Fursov (GhostIAm)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Masaaki Goshima

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2012,2013 Ernest Micklei

MIT License

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
BSD 3-Clause License

Copyright (c) 2021, Iskander (Alex) Sharipov

Originally based on the Daniel Mart code | Copyright (c) 2017, Daniel Mart. All rights reserved.
See https://github.com/mvdan/gogrep

All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its
  contributors may be used to endorse or promote products derived from
  this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS
 OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Sasha Melentyev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
 WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2023 Leigh McCulloch

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
BSD 2-Clause License

Copyright (c) 2020, Nishanth Shanmugham
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT
OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2019 Marat Reymers

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Cenk Alt

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of
the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright 2019 Andrew Shannon Brown

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright 2016, Google Inc.
All rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS
BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

MIT License

Copyright (c) 2016 json-iterator

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2023 Roman Chaliy

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
This license applies to simplelru/list.go

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Dario Casta. All rights reserved.
Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE

ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2019, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2014 Alex Saskevich

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2016 Felix Geisendrfer (felix@debuggable.com)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the

direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding

those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise,

unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2024 Fernandez Ludovic

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This project is dual-licensed under the Unlicense and MIT licenses.

You may use this code under the terms of either license.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent

to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works

that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2018 Sourced Technologies, S.L.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2015, Emir Pasic
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

AVL Tree:

Copyright (c) 2017 Benjamin Scher Purcell <benjapurcell@gmail.com>

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES

WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER
IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Common libraries shared by Prometheus Go components.
Copyright 2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).
Copyright (c) 2017, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (C) 2014-2019, Matt Butcher and Matt Farina

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
ISC License

Copyright (c) 2012-2016 Dave Collins <dave@davec.name>

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Copyright (c) 2014, Evan Phoenix
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.
* Neither the name of the Evan Phoenix nor the names of its contributors
 may be used to endorse or promote products derived from this software
 without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,

OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The bulk of github.com/pelletier/go-toml is distributed under the MIT license
(see below), with the exception of localtime.go and localtime.test.go.
Those two files have been copied over from Google's civil library at revision
ed46f5086358513cf8c25f8e3f022cb838a49d66, and are distributed under the Apache
2.0 license (see below).

github.com/pelletier/go-toml:

The MIT License (MIT)

Copyright (c) 2013 - 2021 Thomas Pelletier, Eric Anderton

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE
SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

localtime.go, localtime_test.go:

Originals:
  https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/civil/civil.go
  https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/civil/civil_test.go
Changes:
  * Renamed files from civil* to localtime*.
  * Package changed from civil to toml.
  * 'Local' prefix added to all structs.
License:

https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/LICENSE

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares,
or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and
for which the
editorial revisions, annotations, elaborations, or other modifications

represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing
lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms
and conditions of
this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within
such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license
terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of
the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You
for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor
harmless for any liability
incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the
License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This source code was written by the Go contributors.
The master list of contributors is in the main Go distribution,
visible at http://tip.golang.org/CONTRIBUTORS.
The MIT License (MIT)

Copyright (c) 2014 Simon Eskildsen

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF

OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Kensei Nakada

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 alingse

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 sonatard

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2015 Dmitri Shuralyov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of

protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy,
is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The
"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally
available free
programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require,

such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is
covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to

the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent

works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source

may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object
code is in no case prevented or interfered with solely because
modification has been made.

If you convey an object code work under this section in, or with, or
specifically for use in, a User Product, and the conveying occurs as
part of a transaction in which the right of possession and use of the
User Product is transferred to the recipient in perpetuity or for a
fixed term (regardless of how the transaction is characterized), the
Corresponding Source conveyed under this section must be accompanied
by the Installation Information. But this requirement does not apply
if neither you nor any third party retains the ability to install
modified object code on the User Product (for example, the work has

been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is
governed by this License along with a term that is a further
restriction, you may remove that term. If a license document contains
a further restriction but permits relicensing or conveying under this
License, you may add to a covered work material governed by the terms
of that license document, provided that the further restriction does
not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you
must place, in the relevant source files, a statement of the
additional terms that apply to those files, or a notice indicating
where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the
form of a separately written license, or stated as exceptions;
the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly
provided under this License. Any attempt otherwise to propagate or
modify it is void, and will automatically terminate your rights under
this License (including any patent licenses granted under the third
paragraph of section 11).

However, if you cease all violation of this License, then your
license from a particular copyright holder is reinstated (a)
provisionally, unless and until the copyright holder explicitly and

finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights

granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work

in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have

permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you
have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
MIT License

Copyright (c) 2016 Gordon Klaus and contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (C) 2014-2015 Docker Inc & Go Authors. All rights reserved.
Copyright (C) 2017 SUSE LLC. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2018 Simon Sawert

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google LLC nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2017 Iskander Sharipov / Quasilyte

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses

granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,

any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2021 sylvia.wang

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

MIT License

Copyright (c) 2021 sivchari

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2014 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version

1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus
claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether
by contract or
otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that
You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable

Form does not attempt to limit or alter the recipients rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates
Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who

distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to
create a new license for such software, you may create and use a modified
version of this License if you rename the license and remove any
references to the name of the license steward (except to note that such
modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses
If You choose to distribute Source Code Form that is Incompatible With
Secondary Licenses under the
terms of this version of the License, the
notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then
You may include the notice in a location (such as a LICENSE file in a relevant
directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible
With Secondary Licenses, as defined by
the Mozilla Public License, v. 2.0.
Mozilla Public License Version 2.0
==========

1. Definitions

1.1. "Contributor"
means each individual or legal entity that creates, contributes to
the creation of, or owns Covered Software.

1.2. "Contributor Version"
means the combination of the Contributions of others (if any) used
by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution"
means Covered Software of a particular Contributor.

1.4. "Covered Software"
means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

(a) that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

(b) that the Covered Software was made available under the terms of

version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. "Executable Form"
means any form of the work other than Source Code Form.

1.7. "Larger Work"
means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"
means this document.

1.9. "Licensable"
means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"
means any of the following:

(a) any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

(b) any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor
means any patent claim(s), including without limitation, method,

process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the

License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"
means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"
means the form of the work preferred for making modifications.

1.14. "You" (or "Your")
means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark)
Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

(b) under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes
such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

(a) for any code that a Contributor has removed from Covered Software; or

(b) for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

(c) under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes
additional grants as a result of Your choice to
distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

(a) such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

(b) You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of

the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

```
************************************************************************
*                                                                      *
*  6. Disclaimer of Warranty                                           *
*  -------------------------                                           *
*                                                                      *
*  Covered Software is provided under this License on an "as is"       *
*  basis, without warranty of any kind, either expressed, implied, or  *
*  statutory, including, without limitation, warranties that the       *
*  Covered Software is free of defects, merchantable, fit for a        *
*  particular purpose or non-infringing. The entire risk as to the     *
*  quality and performance of the Covered Software is with You.        *
*  Should any Covered Software prove defective in any respect, You     *
*  (not any Contributor) assume the cost of any necessary servicing,   *
*  repair, or correction. This disclaimer of warranty constitutes an   *
*  essential part of this License. No use of any Covered
 Software is   *
*  authorized under this License except under this disclaimer.         *
*                                                                      *
************************************************************************

************************************************************************
*                                                                      *
*  7. Limitation of Liability                                          *
*  --------------------------                                          *
*                                                                      *
*  Under no circumstances and under no legal theory, whether tort      *
*  (including negligence), contract, or otherwise, shall any           *
*  Contributor, or anyone who distributes Covered Software as          *
*  permitted above, be liable to You for any direct, indirect,         *
*  special, incidental, or consequential damages of any character      *
*  including, without limitation,
 damages for lost profits, loss of    *
*  goodwill, work stoppage, computer failure or malfunction, or any    *
*  and all other commercial damages or losses, even if such party      *
```

* shall have been informed of the possibility of such damages. This *
* limitation of liability shall not apply to liability for death or *
* personal injury resulting from such party's negligence to the *
* extent applicable law prohibits such limitation. Some *
* jurisdictions do not allow the exclusion or limitation of *
* incidental or consequential damages, so this exclusion and *
* limitation may not apply to You. *
* *
****

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place
of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2.
Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to
create a new license for such software, you may create and use a
modified version of this License if you rename the license and remove
any references to the name of the license steward (except to note that
such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary
Licenses

If You choose to distribute Source Code Form that is Incompatible With
Secondary Licenses under the terms of this version of the License, the
notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source
Code Form is subject to the terms of the Mozilla Public
License, v. 2.0. If a copy of the MPL was not distributed with this
file, You can obtain one at http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular
file, then You may include the notice in a location (such as a LICENSE
file in a relevant directory) where a recipient would be likely to look
for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

This Source Code Form is "Incompatible With Secondary Licenses", as
defined by the Mozilla Public License, v. 2.0.
Copyright 2021-2022 Maik Schreiber

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Matheus Macabu

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015-2017 Nick Galbreath

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by
combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2014 Unknwon

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2013 Frederik Zipp. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright owner nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

go-toml v2
Copyright (c) 2021 - 2023 Thomas Pelletier

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell

copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2012-2023 The ANTLR Project. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. Neither name of copyright holders nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS
OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2012 The Go Authors. All rights reserved.
Copyright fsnotify Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this
 list of conditions and the following disclaimer in the documentation and/or
 other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used
 to endorse or promote products derived from this software without specific
 prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
BSD 3-Clause License

Copyright (c) 2017, Nishanth Shanmugham
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

* Neither the name of the copyright holder nor the names of its
 contributors may be used to endorse or promote products derived from
 this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER

CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
BSD 3-Clause License

Copyright (c) 2020, Xiang Dai
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its
  contributors may be used to endorse or promote products derived from
  this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The forked go-yaml.v3 library under this project is covered by two different licenses (MIT and Apache):

MIT License

The following files were ported to Go from C files of libyaml, and thus are still covered by their original MIT license, with the additional copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go

writerc.go yamlh.go yamlprivateh.go

Copyright (c)
2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The forked go-yaml.v2 library under the project is covered by an
Apache license:

Apache License
Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND
CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall
mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative
Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding
communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section)
patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet

the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution
of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade

names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the

same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS"
BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

MIT License

Copyright (c) 2020 Djarvur

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

MIT License

Copyright (c) 2022 Abirdcfly

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2019 Tommy Muehle

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 Matous Dzivjak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct

or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising

permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration
files.

"Object" form shall mean any form resulting from mechanical transformation or
translation of a Source form, including but not limited to compiled object code,
generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made
available under the License, as indicated by a copyright notice that is included
in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that
is based on (or derived from) the Work and for which the editorial revisions,
annotations, elaborations, or other modifications represent, as a whole, an
original work of authorship. For the purposes of this License, Derivative Works
shall not include works that remain separable from, or merely link (or bind by
name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version
of the Work and any modifications or additions to that Work or Derivative Works
thereof, that is intentionally submitted to Licensor for inclusion in the Work
by the copyright owner or by an individual or Legal Entity authorized to submit
on behalf of the copyright owner. For the purposes of this definition,
"submitted" means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems, and
issue tracking systems that are managed by, or on behalf of, the Licensor for
the purpose of discussing and improving the Work, but excluding communication
that is conspicuously marked or otherwise designated in writing by the copyright
owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently
incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby
grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free,
irrevocable copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the Work and such
Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or

distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall
any Contributor be
liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to

offer, and charge a fee for, acceptance of support, warranty, indemnity, or
other liability obligations and/or rights consistent with this License. However,
in accepting such obligations, You may act only on Your own behalf and on Your
sole responsibility, not on behalf of any other Contributor, and only if You
agree to indemnify, defend, and hold each Contributor harmless for any liability
incurred by, or
claims asserted against, such Contributor by reason of your
accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate
notice, with the fields enclosed by brackets "[]" replaced with your own
identifying information. (Don't include the brackets!) The text should be
enclosed in the appropriate comment syntax for the file format. We also
recommend that a file or class name and description of purpose be included on
the same "printed page" as the copyright notice for easier identification within
third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to
in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2023 Yifei Liu

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.

Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright
on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains
that there is no warranty for this free software. For both users' and
authors' sake, the GPL requires that modified versions be marked as
changed, so that their problems will not be attributed erroneously to
authors of previous versions.

Some devices are designed to deny users access to install or run
modified versions of the software inside them, although the manufacturer
can do so. This is fundamentally incompatible with the aim of
protecting users' freedom to change the software. The systematic
pattern of such abuse occurs in the area of products for individuals to
use, which is precisely where it is most unacceptable. Therefore, we
have designed this version of the GPL to prohibit the practice for those
products. If such problems arise substantially in other domains, we
stand ready to
extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.
States should not allow patents to restrict development and use of
software on general-purpose computers, but in those that do, we wish to
avoid the special danger that patents applied to a free program could
make it effectively proprietary. To prevent this, the GPL assures that
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and
modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this
License. Each licensee is addressed as "you". "Licensees" and
"recipients"
may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries"
of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system

(if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs
which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License
only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10

makes
it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on
each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep
intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution medium, is
called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years and valid for
as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from

a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement
to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be
treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work,

for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions;

the above requirements apply
either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and
you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing
of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and

propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a

party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding
any other provision of this License, you have
permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the
option
of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a

later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation
of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice

is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright
(C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU
Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
MIT License

Copyright (c) 2022 Stephen Benjamin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright 2014 gRPC authors.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2016 go-xmlfmt

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2016 Caleb Spare

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Elliot Chance

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2019 Oliver Kuederle

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2017-2021 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");

```
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//    http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

// License information for the exposed API.
//
// For more information: http://goo.gl/8us55a#licenseObject
type License struct {
 Name string `json:"name,omitempty"`
 URL  string `json:"url,omitempty"`
}
```

Blackfriday is distributed under the Simplified BSD License:

```
> Copyright  2011 Russ Ross
> All rights reserved.
>
> Redistribution and use in source and binary forms, with or without
> modification, are permitted provided that the following conditions
> are met:
>
> 1.  Redistributions of source code must retain the above copyright
>     notice, this list of conditions and the following disclaimer.
>
> 2.  Redistributions in binary form must reproduce the above
>     copyright notice, this list of conditions and the following
>     disclaimer in the documentation and/or other materials provided with
>     the distribution.
>
> THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
> "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
> LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
> FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
> COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
> INCIDENTAL, SPECIAL, EXEMPLARY,
 OR CONSEQUENTIAL DAMAGES (INCLUDING,
> BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
> LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
> CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
> LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN
```

> ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
> POSSIBILITY OF SUCH DAMAGE.
This source code was written by the Go contributors.
The master list of contributors is in the main Go distribution,
visible at https://tip.golang.org/CONTRIBUTORS.
Copyright (c) 2014 Sourcegraph, Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH
 THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Portions adapted from python-unidiff:

Copyright (c) 2012 Matias Bordese

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2020 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all

other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must

include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright (c) 2018-2020, Dmitrij Koniajev (dimchansky@gmail.com)

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License
at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2024 Golangci-lint authors
Copyright (c) 2020 Isaev Denis

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (C) 2013 Blake Mizerany

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

Copyright (c) 2024 alingse

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2021 Hiroyuki Yagihashi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are

met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2016 Mail.Ru Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2016 Dominik Honnef

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to

permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (C) 2014 by Oleku Konko

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
People who have agreed to one of the CLAs and can contribute patches.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#
https://developers.google.com/open-source/cla/individual
https://developers.google.com/open-source/cla/corporate
#
Names should be added to this file as:
Name <email address>
Raul Silvera <rsilvera@google.com>
Tipp Moseley <tipp@google.com>
Hyoun Kyu Cho <netforce@google.com>
Martin Spier <spiermar@gmail.com>

Taco de Wolff <tacodewolff@gmail.com>
Andrew Hunter <andrewhhunter@gmail.com>
MIT License

Copyright (c) 2019 Lucas Bremgartner

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Apache License

Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and
distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright
owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities
that control, are controlled by, or are under common control with that entity.
For the purposes of this definition, "control" means (i) the power, direct or
indirect, to cause the direction or management of such entity, whether by
contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising

permissions granted by this License.

"Source" form shall mean
the preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration
files.

"Object" form shall mean any form resulting from mechanical transformation or
translation of a Source form, including but not limited to compiled object code,
generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made
available under the License, as indicated by a copyright notice that is included
in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that
is based on (or derived from) the Work and for which the editorial revisions,
annotations, elaborations, or other modifications represent, as a whole, an
original work of authorship. For the purposes of this License, Derivative Works
shall not include works that remain separable from, or merely link (or bind by
name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version
of the Work and any modifications or additions to that Work or Derivative Works
thereof, that is intentionally submitted to Licensor for inclusion in the Work
by the copyright owner or by an individual or Legal Entity authorized to submit
on behalf of the copyright owner. For the purposes of this definition,
"submitted" means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems, and
issue tracking systems that are managed by, or on behalf of, the Licensor for
the purpose of discussing and improving the Work, but excluding communication
that is conspicuously marked or otherwise designated in writing by the copyright
owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently
incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide,
non-exclusive, no-charge, royalty-free, irrevocable copyright license to
reproduce, prepare Derivative Works of, publicly display, publicly perform,
sublicense, and distribute the Work and such Derivative Works in Source or
Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by
combination of their Contribution(s) with the Work
to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and You must cause any modified files to carry prominent notices stating that You changed the files; and You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution
notices from the Source form of the Work, excluding those notices
that do not pertain to any part of the Derivative Works; and If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that
such
additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License. 5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or
product names of the Licensor, except as required
for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any
Contributor be liable to You for damages, including any
direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims
asserted against, such Contributor by reason of your accepting any
such warranty or additional liability.

END OF TERMS AND CONDITIONS
MIT License

Copyright (c) 2019 GoStaticAnalysis

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Aleksey Bakin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Tom Arrell

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their

Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf

of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2014 The Kubernetes Authors.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

MIT License

Copyright (c) 2019 Masaaki Goshima

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 moricho

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 go-toolsmith

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

BSD 3-Clause License

Copyright (c) 2022, Iskander (Alex) Sharipov / quasilyte
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2017, Fatih Arslan
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of structtag nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER
OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software includes some portions from Go. Go is used under the terms of the
BSD like license.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of
 conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE,
 EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The Go gopher was designed by Renee French. http://reneefrench.blogspot.com/ The design is licensed under the Creative Commons 3.0 Attributions license. Read this article for more details: https://blog.golang.org/gopher

Copyright (c) 2013-2014 Onsi Fakhouri

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2019 Nuruddin Ashr

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright 2010 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2018 Minko Gechev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2014 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. "Contributor"

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. "Contributor Version"

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution"

means Covered Software of a particular Contributor.

1.4. "Covered Software"

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. "Executable Form"

means any form of the work other than Source Code Form.

1.7. "Larger Work"

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"

means this document.

1.9. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"

means the form of the work preferred for making modifications.

1.14. "You" (or "Your")

means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or
management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if

permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an "as is" basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including

negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license

steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses If You choose to distribute Source
Code Form that is
Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

This Source Code Form is "Incompatible
With Secondary Licenses", as defined by
the Mozilla Public License, v. 2.0.
The MIT License (MIT)

Copyright (c) 2016 Yasuhiro Matsumoto

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2019 Mark Bates

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 David Brophy

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This package was forked from https://github.com/golang/go/tree/master/src/go/ast - original license:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Paul Borman <borman@google.com>
bmatsuo
shawnps
theory
jboverfelt
dsymonds
cd1
wallclockbuilder
dansouza

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of,

the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You

meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate

comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2013, The GoGo Authors. All rights reserved.

Protocol Buffers for Go with Gadgets

Go support for Protocol Buffers - Google's data interchange format

Copyright 2010 The Go Authors. All rights reserved.
https://github.com/golang/protobuf

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)

assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees"
and
"recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the

earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This

License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the

written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in
the same way through the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

A separable portion of the object code, whose source code is excluded
from the Corresponding Source
as a System Library, need not be
included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any
tangible personal property which is normally used for personal, family,
or household purposes, or (2) anything designed or sold for incorporation
into a dwelling. In determining whether a product is a consumer product,
doubtful cases shall be resolved in favor of coverage. For a particular
product received by a particular user, "normally used" refers to a
typical or common use of that class of product, regardless of the status
of the particular user or of the way in which the particular user
actually uses, or expects or is expected to use, the product. A product
is a consumer product regardless of whether the product has substantial
commercial, industrial or non-consumer uses, unless such uses represent
the only significant mode of use of the product.

"Installation Information" for a User Product means any methods,
procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from
a modified version of its Corresponding Source. The information must
suffice to ensure that the continued functioning of the modified object

code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above

requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright
holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible

for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a

patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
MIT License

Copyright (c) 2018-2021 go-critic team

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2021 Oleg Butuzov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2019 Montgomery Edwards and Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is

furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
This is the official list of people who can contribute
(and typically have contributed) code to the go-diff
repository.
#
The AUTHORS file lists the copyright holders; this file
lists people. For example, ACME Inc. employees would be listed here
but not in AUTHORS, because ACME Inc. would hold the copyright.
#
When adding J Random Contributor's name to this file,
either J's name or J's organization's name should be
added to the AUTHORS file.
#
Names should be added to this file like so:
Name <email address>
#
Please keep the list sorted.

Danny Yoo <dannyyoo@google.com>
James Kolb <jkolb@google.com>
Jonathan Amsterdam <jba@google.com>
Markus Zimmermann <markus.zimmermann@nethead.at> <markus.zimmermann@symflower.com> <zimmski@gmail.com>
Matt Kovars <akaskik@gmail.com>
rjan Persson <orjan@spotify.com>
Osman Masood <oamasood@gmail.com>
Robert Carlsen <rwcarlsen@gmail.com>
Rory Flynn <roryflynn@users.noreply.github.com>
Sergi Mansilla <sergi.mansilla@gmail.com>
Shatrugna
Sadhu <ssadhu@apcera.com>
Shawn Smith <shawnpsmith@gmail.com>
Stas Maksimov <maksimov@gmail.com>
Tor Arvid Lund <torarvid@gmail.com>
Zac Bergquist <zbergquist99@gmail.com>

MIT License

Copyright (c) 2022 Anton Telyshev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Juan Batiz-Benet

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 TOML authors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2015, Dave Cheney <dave@cheney.net>
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2019-present Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2011, Open Knowledge Foundation Ltd.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

Neither the name of the Open Knowledge Foundation Ltd. nor the
names of its contributors may be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

MIT License

Copyright (c) 2020 Liyan David Chang

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2020 Ryan R. Olds

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
procfs provides functions to retrieve system, kernel and process
metrics from the pseudo-filesystem proc.

Copyright 2014-2015 The Prometheus Authors

This product includes software developed at

SoundCloud Ltd. (http://soundcloud.com/).

This project is covered by two different licenses: MIT and Apache.

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

  apic.go emitterc.go parserc.go readerc.go scannerc.go
  writerc.go yamlh.go yamlprivateh.go

Copyright (c) 2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial
 portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

  http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software

distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR
 CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This is the official list of people who can contribute
(and typically have contributed) code to the repository.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#
The submission process automatically checks to make sure
that people submitting code are listed in this file (by email address).
#
Names should be added to this file only after verifying that
the individual or the individual's organization has agreed to
the appropriate Contributor License Agreement, found here:
#
https://cla.developers.google.com/about/google-individual
https://cla.developers.google.com/about/google-corporate
#
The CLA can be filled out on the web:
#
https://cla.developers.google.com/
#
When adding J Random Contributor's name to this file,
either J's name or J's organization's name should be
added to the AUTHORS file, depending on whether the
#
 individual or corporate CLA was used.

Names should be added to this file like so:
Name <email address>
#
An entry with two email addresses specifies that the
first address should be used in the submit logs and
that the second address should be recognized as the
same person when interacting with Rietveld.

Please keep the list sorted.

Alain Vongsouvanhalainv <alainv@google.com>
Andrew Gerrand <adg@golang.org>
Brad Fitzpatrick <bradfitz@golang.org>
Eric Koleda <ekoleda+devrel@googlers.com>
Francesc Campoy <campoy@golang.org>
Garrick Evans <garrick@google.com>
Glenn Lewis <gmlewis@google.com>

Ivan Krasin <krasin@golang.org>
Jason Hall <jasonhall@google.com>
Johan Euphrosine <proppy@google.com>
Kostik Shtoyk <kostik@google.com>
Kunpei Sakai <namusyaka@gmail.com>
Matthew Dolan <dolan@lightstep.com>
Matthew Whisenhunt <matt.whisenhunt@gmail.com>
Michael McGreevy <mcgreevy@golang.org>
Nick Craig-Wood <nickcw@gmail.com>
Robbie Trencheny <me@robbiet.us>
Ross Light <light@google.com>
Sarah
Adams <shadams@google.com>
Scott Van Woudenberg <scottvw@google.com>
Takashi Matsuo <tmatsuo@google.com>
Copyright 2018 Ultraware Consultancy and Development B.V.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 kyoh86

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE
OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2013, Patrick Mezard
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
The names of its contributors may not be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Anton Povarov <anton.povarov@gmail.com>
Brian Goff <cpuguy83@gmail.com>
Clayton Coleman <ccoleman@redhat.com>
Denis Smirnov <denis.smirnov.91@gmail.com>
DongYun Kang <ceram1000@gmail.com>
Dwayne Schultz <dschultz@pivotal.io>
Georg Apitz <gapitz@pivotal.io>
Gustav Paul <gustav.paul@gmail.com>
Johan Brandhorst <johan.brandhorst@gmail.com>
John Shahid <jvshahid@gmail.com>
John Tuley <john@tuley.org>
Laurent <laurent@adyoulike.com>
Patrick Lee <patrick@dropbox.com>
Peter Edge <peter.edge@gmail.com>
Roger Johansson <rogeralsing@gmail.com>

Sam Nguyen <sam.nguyen@sendgrid.com>
Sergio Arbeo <serabe@gmail.com>
Stephen J Day <stephen.day@docker.com>
Tamir Duberstein <tamird@gmail.com>
Todd Eisenberger <teisenberger@dropbox.com>
Tormod Erevik Lea <tormodlea@gmail.com>
Vyacheslav Kim <kane@sendgrid.com>
Walter Schulze <awalterschulze@gmail.com>
Copyright (C) 2013-2020 Masterminds

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Andrey Petrov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR

IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2013-2020, Frank Schroeder

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2017 Kevin Burke.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE

SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

==========

The lexer and parser borrow heavily from github.com/pelletier/go-toml. The
license for that project is copied below.

The MIT License (MIT)

Copyright (c) 2013 - 2017 Thomas Pelletier, Eric Anderton

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A
PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2023 Yusuke Kadowaki

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2024 raeperd

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2021 Salvador Cavadini

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

Copyright (c) Choko (choko@curioswitch.org)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 tdakkota

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
BSD 2-Clause License

Copyright (c) 2020, Ryo Nakao
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
 GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Names should be added to this file like so:
Name <email address>

Please keep the list sorted.

Frederik Zipp <fzipp@gmx.de>
Harshavardhana <harsha@harshavardhana.net>
MIT License

Copyright (c) 2019 Josh Bleecher Snyder

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Michal Bohuslvek

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Joshua Timmons

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2009 The Go Authors. All rights reserved.
Copyright (c) 2016 Dominik Honnef. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
 ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2021 Anton Telyshev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes

of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute

copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify

the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

Copyright (c) 2017 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Alec Thomas <alec@swapoff.org>
Guilhem Lettron <guilhem.lettron@optiflows.com>
Ivan Daniluk <ivan.daniluk@gmail.com>
Nimi Wariboko Jr <nimi@channelmeter.com>
Rbert Selvek <robert.selvek@gmail.com>

Staticcheck and its related tools make use of third party projects,
either by reusing their code, or by statically linking them into
resulting binaries. These projects are:

* The Go Programming Language - https://golang.org/
 golang.org/x/mod - https://github.com/golang/mod
 golang.org/x/tools - https://github.com/golang/tools
 golang.org/x/sys - https://github.com/golang/sys
 golang.org/x/xerrors - https://github.com/golang/xerrors

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY
OF SUCH DAMAGE.

* github.com/BurntSushi/toml - https://github.com/BurntSushi/toml

The MIT License (MIT)

Copyright (c) 2013 TOML authors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

* gogrep - https://github.com/mvdan/gogrep

Copyright (c) 2017, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* gosmith - https://github.com/dvyukov/gosmith

Copyright (c) 2014 Dmitry Vyukov. All rights reserved.

Redistribution and use in source
and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* The name of Dmitry Vyukov may be used to endorse or promote
products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2015 Microsoft

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN

CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (C) 2017-2022 Alec Thomas

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The MIT License (MIT)

Copyright (c) 2024 Clifton Kaznocha

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally

submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the

content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2017 Sourced Technologies S.L.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2016 Pter Surnyi.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Joshua Tacoma. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2017 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
// Package misspell corrects commonly misspelled English words in source files.
package misspell

// Legal provides licensing info.
const Legal = `
Except where noted below, the source code for misspell is
copyright Nick Galbreath and distribution is allowed under a
MIT license. See the following for details:

* https://github.com/client9/misspell/blob/master/LICENSE
* https://tldrlegal.com/license/mit-license

Misspell makes uses of the Golang standard library and
contains a modified version of Golang's strings.Replacer
which are covered under a BSD License.

* https://golang.org/pkg/strings/#Replacer
* https://golang.org/src/strings/replace.go
* https://github.com/golang/go/blob/master/LICENSE

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions
 and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY,
 WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.`
MIT License

Copyright (c) 2023 Catena cyber

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2018-2024, The Gofrs
Copyright (c) 2015-2020, Tim Heckman
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

* Neither the name of gofrs nor the names of its contributors may be used
to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN
NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Gaijin Entertainment

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License

Copyright (c) 2014 Benedikt Lang <github at benediktlang.de>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one

of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

==========

The common/types/pb/equal.go modification of proto.Equal logic
==========

Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions
 and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE,
 EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Nahshon Unna Tsameret

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 Marat Reymers

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Iskander (Alex) Sharipov / quasilyte

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT

OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Bartomiej Klimczak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License

Copyright (c) 2014 Stretchr, Inc.
Copyright (c) 2017-2018 objx contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT
OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2012 Jesse van den Kieboom. All rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

 * Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.
 * Redistributions in binary form must reproduce the above
   copyright notice, this list of conditions and the following disclaimer
   in the documentation and/or other materials provided with the
   distribution.
 * Neither the name of Google Inc. nor the names of its
   contributors may be used to endorse or promote products derived from
   this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Kamil Kisiel

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE

SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,

SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2016 Sergey Kamardin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 Leigh McCulloch

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2009,2014 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.354 kubernetes-metrics 0.32.2

1.354.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise

designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any

risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.355 k8s-io-api 0.32.2

1.355.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a

copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with

the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.356 k8s-io-client-go 0.32.2

1.356.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from

this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only

on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.357 k8s-io-apimachinery 0.32.2

1.357.1 Available under license :

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the

distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable

(except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,

and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.358 kubernetes/metrics 0.32.2

1.358.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent

to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works

that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.359 klauspost-compress v1.17.2

1.359.1 Available under license :

Copyright (c) 2015, Pierre Curto
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

* Neither the name of xxHash nor the names of its
 contributors may be used to endorse or promote products derived from
 this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR
 CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
This is the official list of people who can contribute
(and typically have contributed) code to the Snappy-Go repository.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#

The submission process automatically checks to make sure
that people submitting code are listed in this file (by email address).
#
Names should be added to this file only after verifying that
the individual or the individual's organization has agreed to
the appropriate Contributor License Agreement, found here:
#
http://code.google.com/legal/individual-cla-v1.0.html
http://code.google.com/legal/corporate-cla-v1.0.html
#
The agreement for individuals can be filled out on the web.
#
When adding J Random Contributor's name to this file,
either J's name or J's organization's name should be
added to the AUTHORS file, depending on whether the
individual or corporate
 CLA was used.

Names should be added to this file like so:
Name <email address>

Please keep the list sorted.

Alex Legg <alexlegg@google.com>
Damian Gryski <dgryski@gmail.com>
Eric Buth <eric@topos.com>
Jan Mercl <0xjnml@gmail.com>
Jonathan Swinney <jswinney@amazon.com>
Kai Backman <kaib@golang.org>
Klaus Post <klauspost@gmail.com>
Marc-Antoine Ruel <maruel@chromium.org>
Nigel Tao <nigeltao@golang.org>
Rob Pike <r@golang.org>
Rodolfo Carvalho <rhcarvalho@gmail.com>
Russ Cox <rsc@golang.org>
Sebastien Binet <seb.binet@gmail.com>
The MIT License (MIT)

Copyright (c) 2015 Klaus Post

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2016 Evan Huus
Copyright (c) 2023 Klaus Post

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2011 The Snappy-Go Authors. All rights reserved.
Copyright (c) 2019 Klaus Post. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from

this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2016 The filepathx Authors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition,

"control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and

subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding

those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise,

unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2016-2017 The New York Times Company

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2016 Caleb Spare

MIT License

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH
 THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012 The Go Authors. All rights reserved.
Copyright (c) 2019 Klaus Post. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
 ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,

DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Files: gzhttp/*

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work

(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version
of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received
by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s)
alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files;
and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally
appear. The contents
of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall
be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS
FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2016-2017 The New York Times Company

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Files: s2/cmd/internal/readahead/*

The MIT License
(MIT)

Copyright (c) 2015 Klaus Post

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Files: snappy/*
Files: internal/snapref/*

Copyright (c) 2011 The Snappy-Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Files: s2/cmd/internal/filepathx/*

Copyright 2016 The filepathx Authors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2011 The Snappy-Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.360 google-go-cmp 0.7.0

1.360.1 Available under license :

Copyright (c) 2017 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.361 x-sys 0.31.0

1.361.1 Available under license :

Copyright (c) 2013 unformatt

MIT License

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

1.362 golang 1.24.1

1.362.1 Notifications :

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
This product includes software written by Tim Hudson (tjh@cryptsoft.com).
This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/)

1.362.2 Available under license :

```
// Copyright 2024 The Go Authors. All rights reserved.
// Use of this source code is governed by a BSD-style
// license that can be found in the LICENSE file.

package copyright

import (
 "bytes"
 "internal/testenv"
 "io"
 "io/fs"
 "os"
 "path/filepath"
 "testing"
)

var copyright = []byte("Copyright")

var permitted = [][]byte{
 []byte("// Code generated by "),
 []byte("// Code generated from "),
 []byte("// Created by cgo -cdefs"),
 []byte("// DO NOT EDIT\n// generated by:"),
 []byte("// Empty assembly file"),
 []byte("// Generated using cgo"),
 []byte("// Original source:\n//\thttp://www.zorinaq.com/papers/md5-amd64.html"), // public domain crypto/md5
 []byte("// created by cgo -cdefs"),
 []byte("// go run mkasm.go"),
 []byte("// mkerrors"),
```

```
 []byte("// mksys"),
 []byte("// run\n// Code generated by"), // cmd/compile/internal/test/constFold_test.go
}

func TestCopyright(t *testing.T) {
 buf := make([]byte, 2048)
 filepath.WalkDir(filepath.Join(testenv.GOROOT(t), "src"), func(path string,
 d fs.DirEntry, err error) error {
  if d.IsDir() && (d.Name() == "testdata" || d.Name() == "vendor") {
   return filepath.SkipDir
  }
  switch filepath.Ext(d.Name()) {
  default:
   return nil
  case ".s", ".go":
   // check
  }

  f, err := os.Open(path)
  if err != nil {
   t.Error(err)
   return nil
  }
  defer f.Close()
  n, err := f.Read(buf)
  if err != nil && err != io.EOF {
   t.Error(err)
   return nil
  }
  b := buf[:n]
  if bytes.Contains(b, copyright) {
   return nil
  }
  for _, ok := range permitted {
   if bytes.HasPrefix(b, ok) {
    return nil
   }
  }
  t.Errorf("%s: missing copyright notice", path)
  return nil
 })
}
```

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The Go source code and supporting files in this directory
are covered by the usual Go license (see ../../../../LICENSE).

When building with GOEXPERIMENT=boringcrypto, the following applies.

The goboringcrypto_linux_amd64.syso object file is built
from BoringSSL source code by build/build.sh and is covered
by the BoringSSL license reproduced below and also at
https://boringssl.googlesource.com/boringssl/+/fips-20220613/LICENSE.

BoringSSL is a fork of OpenSSL. As such, large parts of it fall under OpenSSL
licensing. Files that are completely new have a Google copyright and an ISC
license. This license is reproduced at the bottom of this file.

Contributors to BoringSSL are required to follow the CLA rules for Chromium:
https://cla.developers.google.com/clas

Some files from Intel are under yet another license, which is also included
underneath.

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the
OpenSSL License and the original SSLeay license apply to the toolkit.
See below
for the actual license texts. Actually both licenses are BSD-style Open Source
licenses. In case of any license issues related to OpenSSL please contact
openssl-core@openssl.org.

The following are Google-internal bug numbers where explicit permission from
some authors is recorded for use of their work. (This is purely for our own
record keeping.)
 27287199
 27287880
 27287883

 OpenSSL License

/* ==
* Copyright (c) 1998-2011 The OpenSSL Project. All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
*
* 1. Redistributions of source code must retain the above copyright
*   notice, this list of conditions and the following disclaimer.
*
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following
 disclaimer in
*   the documentation and/or other materials provided with the
*   distribution.
*
* 3. All advertising materials mentioning features or use of this
*   software must display the following acknowledgment:
*   "This product includes software developed by the OpenSSL Project
*   for use in the OpenSSL Toolkit. (http://www.openssl.org/)"
*
* 4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to
*   endorse or promote products derived from this software without
*   prior written permission. For written permission, please contact
*   openssl-core@openssl.org.
*
* 5. Products derived from this software may not be called "OpenSSL"
*   nor may "OpenSSL" appear in their names without prior written
*   permission of the OpenSSL Project.
*
* 6. Redistributions of any form whatsoever must retain the following
*   acknowledgment:
*   "This product includes software developed by the OpenSSL Project
*   for use in the OpenSSL Toolkit
 (http://www.openssl.org/)"
*
* THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS'' AND ANY

* EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
* PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR
* ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
* SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
* LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
* ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
* OF THE POSSIBILITY OF SUCH DAMAGE.
* ==
*
* This product includes cryptographic software written by Eric Young
* (eay@cryptsoft.com). This product
 includes software written by Tim
* Hudson (tjh@cryptsoft.com).
*
*/

Original SSLeay License

/* Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
* All rights reserved.
*
* This package is an SSL implementation written
* by Eric Young (eay@cryptsoft.com).
* The implementation was written so as to conform with Netscapes SSL.
*
* This library is free for commercial and non-commercial use as long as
* the following conditions are aheared to. The following conditions
* apply to all code found in this distribution, be it the RC4, RSA,
* lhash, DES, etc., code; not just the SSL code. The SSL documentation
* included with this distribution is covered by the same copyright terms
* except that the holder is Tim Hudson (tjh@cryptsoft.com).
*
* Copyright remains Eric Young's, and as such any Copyright notices in
* the code are not to be removed.
* If this package is used in a product, Eric Young should be given attribution
* as the author of
 the parts of the library used.
* This can be in the form of a textual message at program startup or
* in documentation (online or textual) provided with the package.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:

* 1. Redistributions of source code must retain the copyright
*   notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
*   notice, this list of conditions and the following disclaimer in the
*   documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
*   must display the following acknowledgement:
*   "This product includes cryptographic software written by
*   Eric Young (eay@cryptsoft.com)"
*   The word 'cryptographic' can be left out if the rouines from the library
*   being used are
 not cryptographic related :-).
* 4. If you include any Windows specific code (or a derivative thereof) from
*   the apps directory (application code) you must include an acknowledgement:
*   "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"
*
* THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
 POSSIBILITY OF
* SUCH DAMAGE.
*
* The licence and distribution terms for any publically available version or
* derivative of this code cannot be changed. i.e. this code cannot simply be
* copied and put under another distribution licence
* [including the GNU Public Licence.]
*/

ISC license used for completely new code in BoringSSL:

/* Copyright (c) 2015, Google Inc.
*
* Permission to use, copy, modify, and/or distribute this software for any
* purpose with or without fee is hereby granted, provided that the above
* copyright notice and this permission notice appear in all copies.
*
* THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
* WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
* MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
* SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES

* WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION
* OF CONTRACT, NEGLIGENCE
OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
* CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE. */

Some files from Intel carry the following license:

Copyright (c) 2012, Intel Corporation
#
All rights reserved.
#
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:
#
* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
#
* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the
distribution.
#
* Neither the name of the Intel Corporation nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.
#
#
THIS SOFTWARE IS PROVIDED BY INTEL CORPORATION
""AS IS"" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL CORPORATION OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
People who have agreed to one of the CLAs and can contribute patches.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#
https://developers.google.com/open-source/cla/individual
https://developers.google.com/open-source/cla/corporate

#
Names should be added to this file as:
Name <email address>
Raul Silvera <rsilvera@google.com>
Tipp Moseley <tipp@google.com>
Hyoun Kyu Cho <netforce@google.com>
Martin Spier <spiermar@gmail.com>
Taco de Wolff <tacodewolff@gmail.com>
Andrew Hunter <andrewhhunter@gmail.com>
Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions

of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2015 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright 2015 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google LLC nor the names of its

contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2009-2017 Andrea Leofreddi <a.leofreddi@vleo.net>. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are
permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its
   contributors may be used to endorse or promote products derived from
   this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS AND CONTRIBUTORS ``AS IS" AND ANY
EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY
AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR
CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED
AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
IF
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The views and conclusions contained in the software and documentation are those of the
authors and should not be interpreted as representing official policies, either expressed
or implied, of Andrea Leofreddi.

1.363 stdlib go1.24.1

1.363.1 Notifications :

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).
This product includes software written by Tim Hudson (tjh@cryptsoft.com).
This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit
(http://www.openssl.org/)

1.363.2 Available under license :

```
// Copyright 2024 The Go Authors. All rights reserved.
// Use of this source code is governed by a BSD-style
// license that can be found in the LICENSE file.

package copyright

import (
 "bytes"
 "internal/testenv"
 "io"
 "io/fs"
 "os"
 "path/filepath"
 "testing"
)

var copyright = []byte("Copyright")

var permitted = [][]byte{
 []byte("// Code generated by "),
 []byte("// Code generated from "),
 []byte("// Created by cgo -cdefs"),
 []byte("// DO NOT EDIT\n// generated by:"),
 []byte("// Empty assembly file"),
 []byte("// Generated using cgo"),
 []byte("// Original source:\n//\thttp://www.zorinaq.com/papers/md5-amd64.html"), // public domain crypto/md5
 []byte("// created by cgo -cdefs"),
 []byte("// go run mkasm.go"),
 []byte("// mkerrors"),
 []byte("// mksys"),
 []byte("// run\n// Code generated by"), // cmd/compile/internal/test/constFold_test.go
}

func TestCopyright(t *testing.T) {
 buf := make([]byte, 2048)
 filepath.WalkDir(filepath.Join(testenv.GOROOT(t), "src"), func(path string,
 d fs.DirEntry, err error) error {
  if d.IsDir() && (d.Name() == "testdata" || d.Name() == "vendor") {
```

```
  return filepath.SkipDir
 }
 switch filepath.Ext(d.Name()) {
 default:
  return nil
 case ".s", ".go":
  // check
 }

 f, err := os.Open(path)
 if err != nil {
  t.Error(err)
  return nil
 }
 defer f.Close()
 n, err := f.Read(buf)
 if err != nil && err != io.EOF {
  t.Error(err)
  return nil
 }
 b := buf[:n]
 if bytes.Contains(b, copyright) {
  return nil
 }
 for _, ok := range permitted {
  if bytes.HasPrefix(b, ok) {
   return nil
  }
 }
 t.Errorf("%s: missing copyright notice", path)
 return nil
 })
}
```

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

  * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
  * Neither the name of Google LLC nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The Go source code and supporting files in this directory
are covered by the usual Go license (see ../../../../LICENSE).

When building with GOEXPERIMENT=boringcrypto, the following applies.

The goboringcrypto_linux_amd64.syso object file is built
from BoringSSL source code by build/build.sh and is covered
by the BoringSSL license reproduced below and also at
https://boringssl.googlesource.com/boringssl/+/fips-20220613/LICENSE.

BoringSSL is a fork of OpenSSL. As such, large parts of it fall under OpenSSL
licensing. Files that are completely new have a Google copyright and an ISC
license. This license is reproduced at the bottom of this file.

Contributors to BoringSSL are required to follow the CLA rules for Chromium:
https://cla.developers.google.com/clas

Some files from Intel are under yet another license, which is also included
underneath.

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the
OpenSSL License and the original SSLeay license apply to the toolkit.
See below
for the actual license texts. Actually both licenses are BSD-style Open Source
licenses. In case of any license issues related to OpenSSL please contact
openssl-core@openssl.org.

The following are Google-internal bug numbers where explicit permission from
some authors is recorded for use of their work. (This is purely for our own
record keeping.)
27287199
27287880
27287883

OpenSSL License

```
/* ====================================================================
* Copyright (c) 1998-2011 The OpenSSL Project.  All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
*
* 1. Redistributions of source code must retain the above copyright
*    notice, this list of conditions and the following disclaimer.
*
* 2. Redistributions in binary form must reproduce the above copyright
*    notice, this list of conditions and the following
 disclaimer in
*    the documentation and/or other materials provided with the
*    distribution.
*
* 3. All advertising materials mentioning features or use of this
*    software must display the following acknowledgment:
*    "This product includes software developed by the OpenSSL Project
*    for use in the OpenSSL Toolkit. (http://www.openssl.org/)"
*
* 4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to
*    endorse or promote products derived from this software without
*    prior written permission. For written permission, please contact
*    openssl-core@openssl.org.
*
* 5. Products derived from this software may not be called "OpenSSL"
*    nor may "OpenSSL" appear in their names without prior written
*    permission of the OpenSSL Project.
*
* 6. Redistributions of any form whatsoever must retain the following
*    acknowledgment:
*    "This product includes software developed by the OpenSSL Project
*    for use in the OpenSSL Toolkit
 (http://www.openssl.org/)"
*
* THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS" AND ANY
* EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
* PURPOSE ARE DISCLAIMED.  IN NO EVENT SHALL THE OpenSSL PROJECT OR
* ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
* SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
* LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)
```

* ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
* OF THE POSSIBILITY OF SUCH DAMAGE.
* ==
*
* This product includes cryptographic software written by Eric Young
* (eay@cryptsoft.com). This product
includes software written by Tim
* Hudson (tjh@cryptsoft.com).
*
*/

Original SSLeay License

/* Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
* All rights reserved.
*
* This package is an SSL implementation written
* by Eric Young (eay@cryptsoft.com).
* The implementation was written so as to conform with Netscapes SSL.
*
* This library is free for commercial and non-commercial use as long as
* the following conditions are aheared to. The following conditions
* apply to all code found in this distribution, be it the RC4, RSA,
* lhash, DES, etc., code; not just the SSL code. The SSL documentation
* included with this distribution is covered by the same copyright terms
* except that the holder is Tim Hudson (tjh@cryptsoft.com).
*
* Copyright remains Eric Young's, and as such any Copyright notices in
* the code are not to be removed.
* If this package is used in a product, Eric Young should be given attribution
* as the author of
the parts of the library used.
* This can be in the form of a textual message at program startup or
* in documentation (online or textual) provided with the package.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the copyright
* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
* documentation and/or other materials provided with the distribution.
* 3. All advertising materials mentioning features or use of this software
* must display the following acknowledgement:
* "This product includes cryptographic software written by
* Eric Young (eay@cryptsoft.com)"

* The word 'cryptographic' can be left out if the rouines from the library
* being used are
not cryptographic related :-).
* 4. If you include any Windows specific code (or a derivative thereof) from
* the apps directory (application code) you must include an acknowledgement:
* "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"
*
* THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND
* ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
* IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
* ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
* FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
* DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
POSSIBILITY OF
* SUCH DAMAGE.
*
* The licence and distribution terms for any publically available version or
* derivative of this code cannot be changed. i.e. this code cannot simply be
* copied and put under another distribution licence
* [including the GNU Public Licence.]
*/

ISC license used for completely new code in BoringSSL:

/* Copyright (c) 2015, Google Inc.
*
* Permission to use, copy, modify, and/or distribute this software for any
* purpose with or without fee is hereby granted, provided that the above
* copyright notice and this permission notice appear in all copies.
*
* THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
* WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
* MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY
* SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
* WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION
* OF CONTRACT, NEGLIGENCE
OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN
* CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE. */

Some files from Intel carry the following license:

Copyright (c) 2012, Intel Corporation

```
#
# All rights reserved.
#
# Redistribution and use in source and binary forms, with or without
# modification, are permitted provided that the following conditions are
# met:
#
# *  Redistributions of source code must retain the above copyright
#    notice, this list of conditions and the following disclaimer.
#
# *  Redistributions in binary form must reproduce the above copyright
#    notice, this list of conditions and the following disclaimer in the
#    documentation and/or other materials provided with the
#    distribution.
#
# *  Neither the name of the Intel Corporation nor the names of its
#    contributors may be used to endorse or promote products derived from
#    this software without specific prior written permission.
#
#
# THIS SOFTWARE IS PROVIDED BY INTEL CORPORATION
 ""AS IS"" AND ANY
# EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
# IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
# PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL CORPORATION OR
# CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
# EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
# PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
# PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
# LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
# NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
# SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
# People who have agreed to one of the CLAs and can contribute patches.
# The AUTHORS file lists the copyright holders; this file
# lists people.  For example, Google employees are listed here
# but not in AUTHORS, because Google holds the copyright.
#
# https://developers.google.com/open-source/cla/individual
# https://developers.google.com/open-source/cla/corporate
#
# Names should be added to this file as:
#     Name <email address>
Raul Silvera <rsilvera@google.com>
Tipp Moseley <tipp@google.com>
Hyoun Kyu Cho <netforce@google.com>
Martin Spier <spiermar@gmail.com>
Taco de Wolff <tacodewolff@gmail.com>
Andrew Hunter <andrewhhunter@gmail.com>
```

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

                    Apache License
                  Version 2.0, January 2004
               http://www.apache.org/licenses/

 TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

 1. Definitions.

    "License" shall mean the terms and conditions for use, reproduction,
    and distribution as defined by Sections 1 through 9 of this document.

    "Licensor" shall mean the copyright owner or entity authorized by
    the copyright owner that is granting the License.

    "Legal Entity" shall mean the union of the acting entity and all
    other entities that control, are controlled by, or are under common
    control with that entity. For the purposes of this definition,
    "control" means (i) the power, direct or indirect, to cause the
    direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one

of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright (c) 2015 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2015 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google LLC nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE

FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2009-2017 Andrea Leofreddi <a.leofreddi@vleo.net>. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY COPYRIGHT HOLDERS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY
AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL COPYRIGHT HOLDERS OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF
ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The views and conclusions contained in the software and documentation are those of the authors and should not be interpreted as representing official policies, either expressed or implied, of Andrea Leofreddi.

1.364 glibc 2.34-125.el9_5.3

1.364.1 Available under license :

@c The GNU Lesser General Public License.
@center Version 2.1, February 1999

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]
@end display

@subheading Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software---to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software---typically
libraries---of the Free
Software Foundation and other authors who decide to use it. You can use
it too, but we suggest you first think carefully about whether this
license or the ordinary General Public License is the better strategy to
use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of it
in new free programs; and that you are informed that you can do these
things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library
or if you modify it.

For example, if you distribute copies of the library, whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide

complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation
will not be affected by problems that might be
introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative
of the original library. The ordinary
General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the @dfn{Lesser} General Public License because it does @emph{Less} to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to

encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the
same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library'' and a ``work that uses the library''. The former
contains code derived from the library, whereas the latter must be combined with the library in order to run.

@subheading TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

@enumerate 0
@item
This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called ``this License''). Each licensee is addressed as ``you''.

A ``library'' means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The ``Library'', below, refers to any such software library or work which has been distributed under these terms. A ``work based on the Library'' means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it,
either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is

included without limitation in the term ``modification".)

``Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

@item
You may copy and distribute
verbatim copies of the Library's
complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

@item
You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

@enumerate a
@item
The modified work must itself be a software library.

@item
You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

@item
You must
cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

@item
If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)
@end enumerate

These requirements apply to the modified work as a whole. If
identifiable sections
 of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this
 License.

@item
You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do
this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify

that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

@item
You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and
2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

@item
A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a ``work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a ``work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because
it
contains portions of the Library), rather than a ``work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a ``work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline

functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

 Otherwise,
 if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

@item
As an exception to the Sections above, you may also combine or
link a ``work that uses the Library'' with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

 You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of
 this License. Also, you must do one
of these things:

@enumerate a
@item
Accompany the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable ``work that
uses the Library'', as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

@item
Use a suitable shared library mechanism for linking with the Library. A
suitable mechanism is one that (1) uses at run time a copy of the
library already present on the user's computer system, rather than
copying library functions into the executable,

and (2) will operate
properly with a modified version of the library, if the user installs
one, as long as the modified version is interface-compatible with the
version that the work was made with.

@item
Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

@item
If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

@item
Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.
@end enumerate

For an executable, the required form of the ``work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies the
executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

@item
You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

@enumerate a
@item
Accompany the combined library with a copy of the same work

based on the Library,
 uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

@item
Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.
@end enumerate

@item
You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

@item
You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited
 by law if you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

@item
Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

@item
If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License,
 they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software
 distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

@item
If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

@item
The Free Software Foundation
 may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
``any later version'', you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by

the Free Software Foundation.

@item
If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
 this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

@center @b{NO WARRANTY}

@item
BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY ``AS IS'' WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item
IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
 BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.
@end enumerate

@subheading END OF TERMS AND CONDITIONS

@page
@subheading How to Apply These Terms to Your New Libraries

 If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting

redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source
file to most effectively
convey the exclusion of warranty; and each file should have at least the
``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the library's name and an idea of what it does.}
Copyright (C) @var{year} @var{name of author}

This library is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301,
USA.
@end
smallexample

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer'' for the library, if
necessary. Here is a sample; alter the names:

@smallexample
Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
@end smallexample

That's all there is to it!
Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users
  ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you

distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the

Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source

code, even though third parties are not
compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing
or modifying
the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For
example, if a patent
license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,

THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you

distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the

Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany

the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally
distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not

excuse
you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software distribution system
which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a

license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is

safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF online code charts under the directory http://www.unicode.org/Public/. Software includes any source code published in the Unicode Standard or under the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES

("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a copy of the Unicode data files and any associated documentation (the "Data Files") or Unicode software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that (a) the above copyright notice(s) and this permission notice appear with all copies of the Data Files or Software, (b) both the above copyright notice(s) and this permission notice appear in associated documentation, and (c) there is clear notice in each modified Data File or in the Software as well as in the documentation associated with the Data File(s) or Software
that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
This file contains the copying permission notices for various files in the GNU C Library distribution that have copyright owners other than the Free Software Foundation. These notices all require that a copy of the notice be included in the accompanying documentation and be distributed with binary distributions of the code, so be sure to include this file along with any binary distributions derived from the GNU C Library.

All code incorporated from 4.4 BSD is distributed under the following
license:

Copyright (C) 1991 Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in
 the
  documentation and/or other materials provided with the distribution.
3. [This condition was removed.]
4. Neither the name of the University nor the names of its contributors
  may be used to endorse or promote products derived from this software
  without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
 OF THE POSSIBILITY OF
SUCH DAMAGE.

The DNS resolver code, taken from BIND 4.9.5, is copyrighted by UC
Berkeley, by Digital Equipment Corporation and by Internet Software
Consortium. The DEC portions are under the following license:

Portions Copyright (C) 1993 by Digital Equipment Corporation.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies, and
that the name of Digital Equipment Corporation not be used in
advertising or publicity pertaining to distribution of the document or
software without specific, written prior permission.

THE SOFTWARE IS PROVIDED ``AS IS'' AND DIGITAL EQUIPMENT CORP.

DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL DIGITAL EQUIPMENT CORPORATION BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES
OR ANY DAMAGES WHATSOEVER RESULTING
FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The ISC portions are under the following license:

Portions Copyright (c) 1996-1999 by Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING
OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The Sun RPC support (from rpcsrc-4.0) is covered by the following license:

Copyright (c) 2010, Oracle America, Inc.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of the "Oracle America, Inc." nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY

EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following CMU license covers some of the support code for Mach,
derived from Mach 3.0:

Mach Operating System
Copyright (C) 1991,1990,1989 Carnegie Mellon University
All Rights Reserved.

Permission to use, copy, modify and distribute this software and its
documentation is hereby granted, provided that
both the copyright
notice and this permission notice appear in all copies of the
software, derivative works or modified versions, and any portions
thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS ``AS IS''
CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR
ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Carnegie Mellon requests users of this software to return to

Software Distribution Coordinator
School of Computer Science
Carnegie Mellon University
Pittsburgh PA 15213-3890

or Software.Distribution@CS.CMU.EDU any improvements or
extensions that they make and grant Carnegie Mellon the rights to
redistribute these changes.

The file if_ppp.h is under the following CMU license:

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the

above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CARNEGIE MELLON UNIVERSITY AND
CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE UNIVERSITY OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license covers the files from Intel's "Highly Optimized
Mathematical Functions for Itanium" collection:

Intel License Agreement

Copyright (c) 2000, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

* The name of Intel Corporation may not be used to endorse
or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The files inet/getnameinfo.c and sysdeps/posix/getaddrinfo.c are copyright (C) by Craig Metz and are distributed under the following license:

/* The Inner Net License,
Version 2.00

The author(s) grant permission for redistribution and use in source and binary forms, with or without modification, of the software and documentation provided that the following conditions are met:

0. If you receive a version of the software that is specifically labelled as not being for redistribution (check the version message and/or README), you are not permitted to redistribute that version of the software in any way or form.
1. All terms of the all other applicable copyrights and licenses must be followed.
2. Redistributions of source code must retain the authors' copyright notice(s), this list of conditions, and the following disclaimer.
3. Redistributions in binary form must reproduce the authors' copyright notice(s), this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.
4. [The copyright holder has authorized the removal of this clause.]
5. Neither the name(s) of the author(s) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ITS AUTHORS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS

SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

If these license terms cause you a real problem, contact the author. */

The file sunrpc/des_impl.c
is copyright Eric Young:

Copyright (C) 1992 Eric Young
Collected from libdes and modified for SECURE RPC by Martin Kuck 1994
This file is distributed under the terms of the GNU Lesser General
Public License, version 2.1 or later - see the file COPYING.LIB for details.
If you did not receive a copy of the license with this program, please
see <https://www.gnu.org/licenses/> to obtain a copy.

The file inet/rcmd.c is under a UCB copyright and the following:

Copyright (C) 1998 WIDE Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with
the distribution.
3. Neither the name of the project nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

The file posix/runtests.c is copyright Tom Lord:

Copyright

1995 by Tom Lord

All Rights Reserved

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of the copyright holder not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission.

Tom Lord DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO
EVENT SHALL TOM LORD BE LIABLE FOR ANY SPECIAL, INDIRECT OR
CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF
USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.

The posix/rxspencer tests
are copyright Henry Spencer:

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users
  ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

The file posix/PCRE.tests
is copyright University of Cambridge:

Copyright (c) 1997-2003 University of Cambridge

Permission is granted to anyone to use this software for any purpose on any
computer system, and to redistribute it freely, subject to the following
restrictions:

1. This software is distributed in the hope that it will be useful,
 but WITHOUT ANY WARRANTY; without even the implied warranty of
 MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2. The origin of this software must not be misrepresented, either by
 explicit claim or by omission. In practice, this means that if you use
 PCRE in software that you distribute to others, commercially or
 otherwise, you must put a sentence like this

  Regular expression support is provided by the PCRE library package,
  which is open source software, written by Philip Hazel, and copyright
  by the University of Cambridge, England.

 somewhere reasonably visible in your documentation and in any relevant
 files or online
help data or similar. A reference to the ftp site for
 the source, that is, to

  ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/

 should also be given in the documentation. However, this condition is not
 intended to apply to whole chains of software. If package A includes PCRE,
 it must acknowledge it, but if package B is software that includes package
 A, the condition is not imposed on package B (unless it uses PCRE
 independently).

3. Altered versions must be plainly marked as such, and must not be
 misrepresented as being the original software.

4. If PCRE is embedded in any software that is released under the GNU
 General Purpose Licence (GPL), or Lesser General Purpose Licence (LGPL),
 then the terms of that licence shall supersede any condition above with
 which it is incompatible.

Files from Sun fdlibm are copyright Sun Microsystems, Inc.:

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems,
 Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice
is preserved.

Various long double libm functions are copyright Stephen L. Moshier:

Copyright 2001 by Stephen L. Moshier <moshier@na-net.ornl.gov>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, see
<https://www.gnu.org/licenses/>. */

1.365 glibc-common 2.34-125.el9_5.3

1.365.1 Available under license :

@c The GNU Lesser General Public License.
@center Version 2.1, February 1999

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]
@end display

@subheading Preamble

 The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software---to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software---typically libraries---of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative
of the original library. The ordinary
General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the @dfn{Lesser} General Public License because it does @emph{Less} to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the
same job as widely used non-free libraries. In this
case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a

``work based on the library" and a ``work that uses the library". The former
 contains code derived from the library, whereas the latter must
be combined with the library in order to run.

@subheading TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

@enumerate 0
@item
This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called ``this License").  Each licensee is addressed as ``you".

 A ``library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

 The ``Library", below, refers to any such software library or work which has been distributed under these terms.  A ``work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it,
 either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term ``modification".)

 ``Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

 Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

@item
You may copy and distribute
 verbatim copies of the Library's
complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact

all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

@item
You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

@enumerate a
@item
The modified work must itself be a software library.

@item
You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

@item
You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

@item
If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)
@end enumerate

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this
License.

@item
You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

@item
You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and
2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to

distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

@item
A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a ``work that uses the Library''. Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a ``work that uses the Library'' with the Library
creates an executable that is a derivative of the Library (because
it
contains portions of the Library), rather than a ``work that uses the
library''. The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a ``work that uses the Library'' uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise,
if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

@item
As an exception to the Sections above, you may also combine or
link a ``work that uses the Library'' with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work

during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of
this License. Also, you must do one
of these things:

@enumerate a
@item
Accompany the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable ``work that
uses the Library'', as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

@item
Use a suitable shared library mechanism for linking with the Library. A
suitable mechanism is one that (1) uses at run time a copy of the
library already present on the user's computer system, rather than
copying library functions into the executable,
and (2) will operate
properly with a modified version of the library, if the user installs
one, as long as the modified version is interface-compatible with the
version that the work was made with.

@item
Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

@item
If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

@item
Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.
@end enumerate

For an executable, the required form of the ``work that uses the
Library'' must include any data and utility programs needed for

reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
 is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies the
executable.

 It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

@item
You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

@enumerate a
@item
Accompany the combined library with a copy of the same work
based on the Library,
 uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

@item
Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.
@end enumerate

@item
You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

@item
You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or

distribute the Library or its derivative works. These actions are
prohibited
 by law if you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

@item
Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

@item
If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License,
 they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software
 distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

@item
If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

@item
The Free Software Foundation
 may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
``any later version'', you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

@item
If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
 this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

@center @b{NO WARRANTY}

@item
BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY ``AS IS'' WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE

LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item
IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
 BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.
@end enumerate

@subheading END OF TERMS AND CONDITIONS

@page
@subheading How to Apply These Terms to Your New Libraries

 If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

 To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source
 file to most effectively
convey the exclusion of warranty; and each file should have at least the
``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the library's name and an idea of what it does.}
Copyright (C) @var{year} @var{name of author}

This library is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301,
USA.
@end
smallexample

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer'' for the library, if
necessary. Here is a sample; alter the names:

@smallexample
Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
@end smallexample

That's all there is to it!
Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users
  ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies

of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that

there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits
such linking only if the
entire combination fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free

programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of

running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy

from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work

during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with

this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest

possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

 To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey
 the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

  <one line to give the library's name and a brief idea of what it does.>
  Copyright (C) <year> <name of author>

  This library is free software; you can redistribute it and/or
  modify it under the terms of the GNU Lesser General Public
  License as published by the Free Software Foundation; either
  version 2.1 of the License, or (at your option) any later version.

  This library is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
  Lesser General Public License for more details.

  You should have received a copy of the GNU Lesser General Public
  License along with this library; if not, write to the Free Software
  Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
                GNU GENERAL PUBLIC LICENSE
                  Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies

of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which
gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the

program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause

any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Program, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Program.

In addition, mere aggregation of another work not based on the Program
with the Program (or with a work based on the Program) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this License.

3. You may copy and distribute the Program (or a work based on it,
under Section 2) in object code or executable form under the terms of
Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable
source code, which must be distributed under the terms of Sections
1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three
years, to give any third party, for a charge no more than your
cost of physically performing source distribution, a complete

machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the

Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if

necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories
http://www.unicode.org/Public/, http://www.unicode.org/reports/, and
http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF
online code charts under the directory http://www.unicode.org/Public/.
Software includes any source code published in the Unicode Standard or under
the directories http://www.unicode.org/Public/,
http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY
DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES
("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND
AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF
YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA
FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a
copy of the Unicode data files and any associated documentation (the "Data
Files") or Unicode software and any associated documentation (the "Software")
to deal in the Data Files or Software without restriction, including without
limitation the rights to use, copy, modify, merge, publish, distribute, and/or
sell copies of the Data Files or Software, and to permit persons to whom the
Data Files or Software are furnished to do so, provided that (a) the above
copyright notice(s) and this permission notice appear with all copies of the
Data Files or Software, (b) both the above copyright notice(s) and this
permission notice appear in associated documentation, and (c) there is clear
notice in each modified Data File or in the Software as well as in the

documentation associated with the Data File(s) or Software
that the data or
software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.
This file contains the copying permission notices for various files in the GNU C Library distribution that have copyright owners other than the Free Software Foundation. These notices all require that a copy of the notice be included in the accompanying documentation and be distributed with binary distributions of the code, so be sure to include this file along with any binary distributions derived from the GNU C Library.

All code incorporated from 4.4 BSD is distributed under the following license:

Copyright (C) 1991 Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. [This condition was removed.]
4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND

ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
OF THE POSSIBILITY OF
SUCH DAMAGE.

The DNS resolver code, taken from BIND 4.9.5, is copyrighted by UC Berkeley, by Digital Equipment Corporation and by Internet Software Consortium. The DEC portions are under the following license:

Portions Copyright (C) 1993 by Digital Equipment Corporation.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies, and that the name of Digital Equipment Corporation not be used in advertising or publicity pertaining to distribution of the document or software without specific, written prior permission.

THE SOFTWARE IS PROVIDED ``AS IS" AND DIGITAL EQUIPMENT CORP. DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL DIGITAL EQUIPMENT CORPORATION BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES
OR ANY DAMAGES WHATSOEVER RESULTING
FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The ISC portions are under the following license:

Portions Copyright (c) 1996-1999 by Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR

PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING
OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The Sun RPC support (from rpcsrc-4.0) is covered by the following license:

Copyright (c) 2010, Oracle America, Inc.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of the "Oracle America, Inc." nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following CMU license covers some of the support code for Mach, derived from Mach 3.0:

Mach Operating System
Copyright (C) 1991,1990,1989 Carnegie Mellon University
All Rights Reserved.

Permission to use, copy, modify and distribute this software and its documentation is hereby granted, provided that

both the copyright
notice and this permission notice appear in all copies of the
software, derivative works or modified versions, and any portions
thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS ``AS IS''
CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR
ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Carnegie Mellon requests users of this software to return to

Software Distribution Coordinator
School of Computer Science
Carnegie Mellon University
Pittsburgh PA 15213-3890

or Software.Distribution@CS.CMU.EDU any improvements or
extensions that they make and grant Carnegie Mellon the rights to
redistribute these changes.

The file if_ppp.h is under the following CMU license:

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the
above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CARNEGIE MELLON UNIVERSITY AND
CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE UNIVERSITY OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license covers the files from Intel's "Highly Optimized Mathematical Functions for Itanium" collection:

Intel License Agreement

Copyright (c) 2000, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* The name of Intel Corporation may not be used to endorse or promote
products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The files inet/getnameinfo.c and sysdeps/posix/getaddrinfo.c are copyright (C) by Craig Metz and are distributed under the following license:

/* The Inner Net License,
Version 2.00

The author(s) grant permission for redistribution and use in source and binary forms, with or without modification, of the software and documentation provided that the following conditions are met:

0. If you receive a version of the software that is specifically labelled
as not being for redistribution (check the version message and/or README),
you are not permitted to redistribute that version of the software in any
way or form.
1. All terms of the all other applicable copyrights and licenses must be
followed.
2. Redistributions of source code must retain the authors' copyright
notice(s), this list of conditions, and the following disclaimer.
3. Redistributions in binary form must reproduce the authors' copyright
notice(s), this list of conditions, and the following disclaimer in the
documentation and/or other materials provided with the distribution.
4. [The copyright holder has authorized the removal of this clause.]
5. Neither the name(s)
of the author(s) nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ITS AUTHORS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

If these license terms cause you a real problem, contact the author. */

The file sunrpc/des_impl.c
is copyright Eric Young:

Copyright (C) 1992 Eric Young
Collected from libdes and modified for SECURE RPC by Martin Kuck 1994
This file is distributed under the terms of the GNU Lesser General
Public License, version 2.1 or later - see the file COPYING.LIB for details.
If you did not receive a copy of the license with this program, please
see <https://www.gnu.org/licenses/> to obtain a copy.

The file inet/rcmd.c is under a UCB copyright and the following:

Copyright (C) 1998 WIDE Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with
the distribution.
3. Neither the name of the project nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

The file posix/runtests.c is copyright Tom Lord:

Copyright
1995 by Tom Lord

All Rights Reserved

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of the copyright holder not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission.

Tom Lord DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO
EVENT SHALL TOM LORD BE LIABLE FOR ANY SPECIAL, INDIRECT OR
CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF
USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.

The posix/rxspencer tests
are copyright Henry Spencer:

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users
  ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

The file posix/PCRE.tests
 is copyright University of Cambridge:

Copyright (c) 1997-2003 University of Cambridge

Permission is granted to anyone to use this software for any purpose on any
computer system, and to redistribute it freely, subject to the following
restrictions:

1. This software is distributed in the hope that it will be useful,
  but WITHOUT ANY WARRANTY; without even the implied warranty of
  MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. In practice, this means that if you use
  PCRE in software that you distribute to others, commercially or
  otherwise, you must put a sentence like this

    Regular expression support is provided by the PCRE library package,
    which is open source software, written by Philip Hazel, and copyright
    by the University of Cambridge, England.

  somewhere reasonably visible in your documentation and in any relevant
  files or online
 help data or similar. A reference to the ftp site for
  the source, that is, to

ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/

should also be given in the documentation. However, this condition is not intended to apply to whole chains of software. If package A includes PCRE, it must acknowledge it, but if package B is software that includes package A, the condition is not imposed on package B (unless it uses PCRE independently).

3. Altered versions must be plainly marked as such, and must not be misrepresented as being the original software.

4. If PCRE is embedded in any software that is released under the GNU General Purpose Licence (GPL), or Lesser General Purpose Licence (LGPL), then the terms of that licence shall supersede any condition above with which it is incompatible.

Files from Sun fdlibm are copyright Sun Microsystems, Inc.:

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems,
Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice
is preserved.

Various long double libm functions are copyright Stephen L. Moshier:

Copyright 2001 by Stephen L. Moshier <moshier@na-net.ornl.gov>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, see
<https://www.gnu.org/licenses/>. */

1.366 glibc-minimal-langpack 2.34-125.el9_5.3

1.366.1 Available under license :

@c The GNU Lesser General Public License.
@center Version 2.1, February 1999

@c This file is intended to be included within another document,
@c hence no sectioning command or @node.

@display
Copyright @copyright{} 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence the
version number 2.1.]
@end display

@subheading Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software---to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software---typically
libraries---of the Free
Software Foundation and other authors who decide to use it. You can use
it too, but we suggest you first think carefully about whether this
license or the ordinary General Public License is the better strategy to
use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of it
in new free programs; and that you are informed that you can do these
things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library
or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation
will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative
of the original library. The ordinary
General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the @dfn{Lesser} General Public License because it does @emph{Less} to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many

libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the
same job as widely used non-free libraries. In this
case, there is little to gain by limiting the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of
free software. For example, permission to use the GNU C Library in
non-free programs enables many more people to use the whole GNU
operating system, as well as its variant, the GNU/Linux operating
system.

Although the Lesser General Public License is Less protective of the
users' freedom, it does ensure that the user of a program that is
linked with the Library has the freedom and the wherewithal to run
that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and
modification follow. Pay close attention to the difference between a
``work based on the library'' and a ``work that uses the library''. The
former
contains code derived from the library, whereas the latter must
be combined with the library in order to run.

@subheading TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

@enumerate 0
@item
This License Agreement applies to any software library or other program
which contains a notice placed by the copyright holder or other
authorized party saying it may be distributed under the terms of this
Lesser General Public License (also called ``this License''). Each
licensee is addressed as ``you''.

A ``library'' means a collection of software functions and/or data
prepared so as to be conveniently linked with application programs
(which use some of those functions and data) to form executables.

The ``Library'', below, refers to any such software library or work
which has been distributed under these terms. A ``work based on the
Library'' means either the Library or any derivative work under

copyright law: that is to say, a work containing the Library or a
portion of it,
either verbatim or with modifications and/or translated
straightforwardly into another language. (Hereinafter, translation is
included without limitation in the term ``modification".)

``Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control compilation
and installation of the library.

Activities other than copying, distribution and modification are not
covered by this License; they are outside its scope. The act of
running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

@item
You may copy and distribute
verbatim copies of the Library's
complete source code as you receive it, in any medium, provided that
you conspicuously and appropriately publish on each copy an
appropriate copyright notice and disclaimer of warranty; keep intact
all the notices that refer to this License and to the absence of any
warranty; and distribute a copy of this License along with the
Library.

You may charge a fee for the physical act of transferring a copy,
and you may at your option offer warranty protection in exchange for a
fee.

@item
You may modify your copy or copies of the Library or any portion
of it, thus forming a work based on the Library, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

@enumerate a
@item
The modified work must itself be a software library.

@item
You must cause the files modified to carry prominent notices
stating that you changed the files and the date of any change.

@item
You must
 cause the whole of the work to be licensed at no
charge to all third parties under the terms of this License.

@item
If a facility in the modified Library refers to a function or a
table of data to be supplied by an application program that uses
the facility, other than as an argument passed when the facility
is invoked, then you must make a good faith effort to ensure that,
in the event an application does not supply such function or
table, the facility still operates, and performs whatever part of
its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)
@end enumerate

These requirements apply to the modified work as a whole. If
identifiable sections
 of that work are not derived from the Library,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based
on the Library, the distribution of the whole must be on the terms of
this License, whose permissions for other licensees extend to the
entire whole, and thus to each and every part regardless of who wrote
it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of
a storage or distribution medium does not bring the other work under
the scope of this
 License.

@item
You may opt to apply the terms of the ordinary GNU General Public
License instead of this License to a given copy of the Library. To do

this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

 Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

 This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

@item
You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and
 2 above provided that you accompany
it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

 If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

@item
A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a ``work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

 However, linking a ``work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because
 it
contains portions of the Library), rather than a ``work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

 When a ``work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The

threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
file is unrestricted, regardless of whether it is legally a derivative
work. (Executables containing this object code plus portions of the
Library will still fall under Section 6.)

Otherwise,
if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

@item
As an exception to the Sections above, you may also combine or
link a ``work that uses the Library'' with the Library to produce a
work containing portions of the Library, and distribute that work
under terms of your choice, provided that the terms permit
modification of the work for the customer's own use and reverse
engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the
Library is used in it and that the Library and its use are covered by
this License. You must supply a copy of this License. If the work
during execution displays copyright notices, you must include the
copyright notice for the Library among them, as well as a reference
directing the user to the copy of
this License. Also, you must do one
of these things:

@enumerate a
@item
Accompany the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable ``work that
uses the Library'', as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

@item
Use a suitable shared library mechanism for linking with the Library. A

suitable mechanism is one that (1) uses at run time a copy of the
library already present on the user's computer system, rather than
copying library functions into the executable,
 and (2) will operate
properly with a modified version of the library, if the user installs
one, as long as the modified version is interface-compatible with the
version that the work was made with.

@item
Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

@item
If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

@item
Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.
@end enumerate

 For an executable, the required form of the ``work that uses the
Library'' must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that
 is
normally distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies the
executable.

 It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

@item
You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

@enumerate a
@item
Accompany the combined library with a copy of the same work
based on the Library,
 uncombined with any other library
facilities. This must be distributed under the terms of the
Sections above.

@item
Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.
@end enumerate

@item
You may not copy, modify, sublicense, link with, or distribute
the Library except as expressly provided under this License. Any
attempt otherwise to copy, modify, sublicense, link with, or
distribute the Library is void, and will automatically terminate your
rights under this License. However, parties who have received copies,
or rights, from you under this License will not have their licenses
terminated so long as such parties remain in full compliance.

@item
You are not required to accept this License, since you have not
signed it. However, nothing else grants you permission to modify or
distribute the Library or its derivative works. These actions are
prohibited
 by law if you do not accept this License. Therefore, by
modifying or distributing the Library (or any work based on the
Library), you indicate your acceptance of this License to do so, and
all its terms and conditions for copying, distributing or modifying
the Library or works based on it.

@item
Each time you redistribute the Library (or any work based on the
Library), the recipient automatically receives a license from the
original licensor to copy, distribute, link with or modify the Library
subject to these terms and conditions. You may not impose any further
restrictions on the recipients' exercise of the rights granted herein.
You are not responsible for enforcing compliance by third parties with
this License.

@item
If, as a consequence of a court judgment or allegation of patent
infringement or for any other reason (not limited to patent issues),
conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License,

they do not
excuse you from the conditions of this License. If you cannot
distribute so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you
may not distribute the Library at all. For example, if a patent
license would not permit royalty-free redistribution of the Library by
all those who receive copies directly or indirectly through you, then
the only way you could satisfy both it and this License would be to
refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any
particular circumstance, the balance of the section is intended to apply,
and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any
patents or other property right claims or to contest validity of any
such claims; this section has the sole purpose of protecting the
integrity of the free software
distribution system which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

@item
If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

@item
The Free Software Foundation
may publish revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
``any later version'', you have the option of following the terms and

conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

@item
If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for
 this. Our
decision will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

@center @b{NO WARRANTY}

@item
BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR
OTHER PARTIES PROVIDE THE LIBRARY ``AS IS'' WITHOUT WARRANTY OF ANY
KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE
LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME
THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

@item
IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN
WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY
AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
 BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR
CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE
LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING
RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A
FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF
SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH
DAMAGES.
@end enumerate

@subheading END OF TERMS AND CONDITIONS

@page
@subheading How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source
file to most effectively
convey the exclusion of warranty; and each file should have at least the
``copyright'' line and a pointer to where the full notice is found.

@smallexample
@var{one line to give the library's name and an idea of what it does.}
Copyright (C) @var{year} @var{name of author}

This library is free software; you can redistribute it and/or modify it
under the terms of the GNU Lesser General Public License as published by
the Free Software Foundation; either version 2.1 of the License, or (at
your option) any later version.

This library is distributed in the hope that it will be useful, but
WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301,
USA.
@end
smallexample

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer'' for the library, if
necessary. Here is a sample; alter the names:

@smallexample
Yoyodyne, Inc., hereby disclaims all copyright interest in the library
`Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
@end smallexample

That's all there is to it!

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
explicit claim or by omission. Since few users ever read sources,
credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
misrepresented as being the original software. Since few users
ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not
price.
Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program

is covered only if its contents constitute a work based on the
Program (independent of having been made by running the Program).
Whether that is true depends on what the
Program does.

1. You may copy and distribute verbatim copies of the Program's
source code as you receive it, in any medium, provided that you
conspicuously and appropriately publish on each copy an appropriate
copyright notice and disclaimer of warranty; keep intact all the
notices that refer to this License and to the absence of any warranty;
and give any other recipients of the Program a copy of this License
along with the Program.

You may charge a fee for the physical act of transferring a copy, and
you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion
of it, thus forming a work based on the Program, and copy and
distribute such modifications or work under the terms of Section 1
above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices
stating that you changed the files and the date of any change.

b) You must cause
any work that you distribute or publish, that in
whole or in part contains or is derived from the Program or any
part thereof, to be licensed as a whole at no charge to all third
parties under the terms of this License.

c) If the modified program normally reads commands interactively
when run, you must cause it, when started running for such
interactive use in the most ordinary way, to print or display an
announcement including an appropriate copyright notice and a
notice that there is no warranty (or else, saying that you provide
a warranty) and that users may redistribute the program under
these conditions, and telling the user how to view a copy of this
License. (Exception: if the Program itself is interactive but
does not normally print such an announcement, your work based on
the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If
identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based

on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering

access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to

apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE,
THERE IS NO WARRANTY
FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR
THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU
General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library, you may
consider it more useful to permit linking proprietary applications with the
library. If this
is what you want to do, use the GNU Lesser General
Public License instead of this License.

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts

as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get
it if you want it; that you can change the software and use pieces of
it in new free programs; and that you are informed that you can do
these things.

To protect your rights, we need to make restrictions that forbid
distributors to deny you these rights or to ask you to surrender these
rights. These restrictions translate to certain responsibilities for
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave
you. You must make sure that they, too, receive or can get the source
code. If you link other code with the library, you must provide
complete object files to the recipients, so that they can relink them
with the library after making changes to the library and recompiling
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the
library, and (2) we offer you this license, which gives you legal
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that
there is no warranty for the free library. Also, if the library is
modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original

author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU

operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for

writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be

reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not

compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one

of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever
changes were used in the work (which must be distributed under
Sections 1 and 2 above); and, if the work is an executable linked
with the Library, with the complete machine-readable "work that
uses the Library", as object code and/or source code, so that the
user can modify the Library and then relink to produce a modified
executable containing the modified Library. (It is understood
that the user who changes the contents of definitions files in the
Library will not necessarily be able to recompile the application
to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is
interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally

accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent

infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse
you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system
which is
implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and

"any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision
will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the

ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
UNICODE, INC. LICENSE AGREEMENT - DATA FILES AND SOFTWARE

Unicode Data Files include all data files under the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/. Unicode Data Files do not include PDF online code charts under the directory http://www.unicode.org/Public/. Software includes any source code published in the Unicode Standard or under the directories http://www.unicode.org/Public/, http://www.unicode.org/reports/, and http://www.unicode.org/cldr/data/.

NOTICE TO USER: Carefully read the following legal agreement. BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING UNICODE INC.'S DATA FILES ("DATA FILES"), AND/OR SOFTWARE ("SOFTWARE"), YOU UNEQUIVOCALLY ACCEPT, AND AGREE TO BE BOUND BY, ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT DOWNLOAD, INSTALL, COPY, DISTRIBUTE OR USE THE DATA FILES OR SOFTWARE.

COPYRIGHT AND PERMISSION NOTICE

Copyright 1991-2013 Unicode,
Inc. All rights reserved. Distributed under
the Terms of Use in http://www.unicode.org/copyright.html.

Permission is hereby granted, free of charge, to any person obtaining a copy of the Unicode data files and any associated documentation (the "Data Files") or Unicode software and any associated documentation (the "Software") to deal in the Data Files or Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Data Files or Software, and to permit persons to whom the Data Files or Software are furnished to do so, provided that (a) the above copyright notice(s) and this permission notice appear with all copies of the Data Files or Software, (b) both the above copyright notice(s) and this permission notice appear in associated documentation, and (c) there is clear notice in each modified Data File or in the Software as well as in the documentation associated with the Data File(s) or Software that the data or software has been modified.

THE DATA FILES AND SOFTWARE ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE DATA FILES OR SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in these Data Files or Software without prior written authorization of the copyright holder.

This file contains the copying permission notices for various files in the GNU C Library distribution that have copyright owners other than the Free Software Foundation. These notices all require that a copy of the notice be included in the accompanying documentation and be distributed with binary distributions of the code, so be sure to include this file along

with any binary distributions derived from the GNU C Library.

All code incorporated from 4.4 BSD is distributed under the following
license:

Copyright (C) 1991 Regents of the University of California.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in
 the
  documentation and/or other materials provided with the distribution.
3. [This condition was removed.]
4. Neither the name of the University nor the names of its contributors
  may be used to endorse or promote products derived from this software
  without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED
 OF THE POSSIBILITY OF
SUCH DAMAGE.

The DNS resolver code, taken from BIND 4.9.5, is copyrighted by UC
Berkeley, by Digital Equipment Corporation and by Internet Software
Consortium. The DEC portions are under the following license:

Portions Copyright (C) 1993 by Digital Equipment Corporation.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies, and
that the name of Digital Equipment Corporation not be used in
advertising or publicity pertaining to distribution of the document or

software without specific, written prior permission.

THE SOFTWARE IS PROVIDED ``AS IS" AND DIGITAL EQUIPMENT CORP.
DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL
DIGITAL EQUIPMENT CORPORATION BE LIABLE FOR ANY SPECIAL, DIRECT,
INDIRECT, OR CONSEQUENTIAL DAMAGES
OR ANY DAMAGES WHATSOEVER RESULTING
FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION
WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The ISC portions are under the following license:

Portions Copyright (c) 1996-1999 by Internet Software Consortium.

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND INTERNET SOFTWARE CONSORTIUM DISCLAIMS
ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES
OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL INTERNET SOFTWARE
CONSORTIUM BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL
DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR
PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS
ACTION, ARISING
OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS
SOFTWARE.

The Sun RPC support (from rpcsrc-4.0) is covered by the following
license:

Copyright (c) 2010, Oracle America, Inc.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
  copyright notice, this list of conditions and the following
  disclaimer in the documentation and/or other materials
  provided with the distribution.
* Neither the name of the "Oracle America, Inc." nor the names of its
  contributors may be used to endorse or promote products derived
  from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT,
INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following CMU license covers some of the support code for Mach,
derived from Mach 3.0:

Mach Operating System
Copyright (C) 1991,1990,1989 Carnegie Mellon University
All Rights Reserved.

Permission to use, copy, modify and distribute this software and its
documentation is hereby granted, provided that
both the copyright
notice and this permission notice appear in all copies of the
software, derivative works or modified versions, and any portions
thereof, and that both notices appear in supporting documentation.

CARNEGIE MELLON ALLOWS FREE USE OF THIS SOFTWARE IN ITS ``AS IS''
CONDITION. CARNEGIE MELLON DISCLAIMS ANY LIABILITY OF ANY KIND FOR
ANY DAMAGES WHATSOEVER RESULTING FROM THE USE OF THIS SOFTWARE.

Carnegie Mellon requests users of this software to return to

Software Distribution Coordinator
School of Computer Science
Carnegie Mellon University
Pittsburgh PA 15213-3890

or Software.Distribution@CS.CMU.EDU any improvements or
extensions that they make and grant Carnegie Mellon the rights to
redistribute these changes.

The file if_ppp.h is under the following CMU license:

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the
 above copyright
   notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
   notice, this list of conditions and the following disclaimer in the
   documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors
   may be used to endorse or promote products derived from this software
   without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY CARNEGIE MELLON UNIVERSITY AND
CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE UNIVERSITY OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR
 BUSINESS
INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER
IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN
IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The following license covers the files from Intel's "Highly Optimized
Mathematical Functions for Itanium" collection:

Intel License Agreement

Copyright (c) 2000, Intel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

* The name of Intel Corporation may not be used to endorse

or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The files inet/getnameinfo.c and sysdeps/posix/getaddrinfo.c are copyright
(C) by Craig Metz and are distributed under the following license:

/* The Inner Net License,
Version 2.00

The author(s) grant permission for redistribution and use in source and
binary forms, with or without modification, of the software and documentation
provided that the following conditions are met:

0. If you receive a version of the software that is specifically labelled
as not being for redistribution (check the version message and/or README),
you are not permitted to redistribute that version of the software in any
way or form.
1. All terms of the all other applicable copyrights and licenses must be
followed.
2. Redistributions of source code must retain the authors' copyright
notice(s), this list of conditions, and the following disclaimer.
3. Redistributions in binary form must reproduce the authors' copyright
notice(s), this list of conditions, and the following disclaimer in the
documentation and/or other materials provided with the distribution.
4. [The copyright holder has authorized the removal of this clause.]
5. Neither the name(s)
of the author(s) nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY ITS AUTHORS AND CONTRIBUTORS ``AS IS'' AND ANY
EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES

(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

If these license terms cause you a real problem, contact the author. */

The file sunrpc/des_impl.c
is copyright Eric Young:

Copyright (C) 1992 Eric Young
Collected from libdes and modified for SECURE RPC by Martin Kuck 1994
This file is distributed under the terms of the GNU Lesser General
Public License, version 2.1 or later - see the file COPYING.LIB for details.
If you did not receive a copy of the license with this program, please
see <https://www.gnu.org/licenses/> to obtain a copy.

The file inet/rcmd.c is under a UCB copyright and the following:

Copyright (C) 1998 WIDE Project.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with
the distribution.
3. Neither the name of the project nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE PROJECT AND CONTRIBUTORS ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE PROJECT OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

The file posix/runtests.c is copyright Tom Lord:

Copyright
1995 by Tom Lord

All Rights Reserved

Permission to use, copy, modify, and distribute this software and its
documentation for any purpose and without fee is hereby granted,
provided that the above copyright notice appear in all copies and that
both that copyright notice and this permission notice appear in
supporting documentation, and that the name of the copyright holder not be
used in advertising or publicity pertaining to distribution of the
software without specific, written prior permission.

Tom Lord DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE,
INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO
EVENT SHALL TOM LORD BE LIABLE FOR ANY SPECIAL, INDIRECT OR
CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF
USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR
OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR
PERFORMANCE OF THIS SOFTWARE.

The posix/rxspencer tests
are copyright Henry Spencer:

Copyright 1992, 1993, 1994, 1997 Henry Spencer. All rights reserved.
This software is not subject to any license of the American Telephone
and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on
any computer system, and to alter it and redistribute it, subject
to the following restrictions:

1. The author is not responsible for the consequences of use of this
  software, no matter how awful, even if they arise from flaws in it.

2. The origin of this software must not be misrepresented, either by
  explicit claim or by omission. Since few users ever read sources,
  credits must appear in the documentation.

3. Altered versions must be plainly marked as such, and must not be
  misrepresented as being the original software. Since few users
  ever read sources, credits must appear in the documentation.

4. This notice may not be removed or altered.

The file posix/PCRE.tests

is copyright University of Cambridge:

Copyright (c) 1997-2003 University of Cambridge

Permission is granted to anyone to use this software for any purpose on any computer system, and to redistribute it freely, subject to the following restrictions:

1. This software is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

2. The origin of this software must not be misrepresented, either by explicit claim or by omission. In practice, this means that if you use PCRE in software that you distribute to others, commercially or otherwise, you must put a sentence like this

Regular expression support is provided by the PCRE library package, which is open source software, written by Philip Hazel, and copyright by the University of Cambridge, England.

somewhere reasonably visible in your documentation and in any relevant files or online
help data or similar. A reference to the ftp site for the source, that is, to

ftp://ftp.csx.cam.ac.uk/pub/software/programming/pcre/

should also be given in the documentation. However, this condition is not intended to apply to whole chains of software. If package A includes PCRE, it must acknowledge it, but if package B is software that includes package A, the condition is not imposed on package B (unless it uses PCRE independently).

3. Altered versions must be plainly marked as such, and must not be misrepresented as being the original software.

4. If PCRE is embedded in any software that is released under the GNU General Purpose Licence (GPL), or Lesser General Purpose Licence (LGPL), then the terms of that licence shall supersede any condition above with which it is incompatible.

Files from Sun fdlibm are copyright Sun Microsystems, Inc.:

Copyright (C) 1993 by Sun Microsystems, Inc. All rights reserved.

Developed at SunPro, a Sun Microsystems,

Inc. business.
Permission to use, copy, modify, and distribute this
software is freely granted, provided that this notice
is preserved.

Various long double libm functions are copyright Stephen L. Moshier:

Copyright 2001 by Stephen L. Moshier <moshier@na-net.ornl.gov>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, see
<https://www.gnu.org/licenses/>. */

1.367 x-net 0.37.0

1.367.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE

FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.368 term 0.30.0

1.368.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google LLC nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.369 x-text 0.23.0

1.369.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
 FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.370 x-term 0.30.0

1.370.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.371 openshift-api 0.0.0-20250305225826-b8da3bfeaf77

1.371.1 Available under license :

The MIT License (MIT)

Copyright (c) 2015 Andrew Gallant

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012 Alex Ogier. All rights reserved.
Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Timon Wong

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2022 Iskander (Alex) Sharipov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal

in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 Alif Rachmawadi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012-2016 The go-diff Authors. All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a
copy of this software and associated documentation files (the "Software"),
to deal in the Software without restriction, including without limitation
the rights to use, copy, modify, merge, publish, distribute, sublicense,
and/or sell copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included

in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2024 Gabriel Augendre

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Data model artifacts for Prometheus.
Copyright 2012-2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).
MIT License

Copyright (c) 2020 Denis Krivak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a

copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with

the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2021 Fernandez Ludovic

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the
creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a
Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the
notice in Exhibit A, the Executable Form of such Source Code Form, and
Modifications of such Source Code Form, in each case including portions
thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in
Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version
1.1 or earlier of the License, but
not also under the terms of a
Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion
from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable
by such Contributor that
would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b)
ownership of more than fifty percent (50%) of the
outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3.
Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how

they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any

liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses

If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain one at http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible With Secondary Licenses, as defined by

the Mozilla Public License, v. 2.0.

The MIT License (MIT)

Copyright (c) 2015 Jonathan Gautheron

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This is free and unencumbered software released into the public domain.

Anyone is free to copy, modify, publish, use, compile, sell, or
distribute this software, either in source code form or as a compiled
binary, for any purpose, commercial or non-commercial, and by any
means.

In jurisdictions that recognize copyright laws, the author or authors
of this software dedicate any and all copyright interest in the
software to the public domain. We make this dedication for the benefit
of the public at large and to the detriment of our heirs and
successors. We intend this dedication to be an overt act of
relinquishment in perpetuity of all present and future rights to this
software under copyright law.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS BE LIABLE FOR ANY CLAIM, DAMAGES OR
OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

For more information, please refer to <http://unlicense.org/>

The MIT License (MIT)

Copyright (c) 2017, Adrian Stoewer <adrian.stoewer@rz.ifi.lmu.de>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2018 Takuya Ueda

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 Fatih Arslan

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Steve Francia

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent

to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works

that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS,

WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

The MIT License (MIT)

Copyright (c) 2019 polyfloyd

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 Mitchell Hashimoto

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2012 Pter Surnyi. Portions Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2021 Florian Bosdorff

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Files other than internal/golang/* licensed under:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition,

"control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and

subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.
Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices
contained
within such NOTICE file, excluding those notices that do not

pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional
or different license terms and conditions
for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing
the
origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly

negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and

limitations under the License.

---

internal/golang/* files licensed under:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2020 Kunwardeep Bedi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2015, Gengo, Inc.
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of Gengo, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO
EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2021 Lucas Bremgartner

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2016-2017 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
MIT License

Copyright (c) 2019 Seiji Takahashi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2011 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2017 Mike Farah

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR

IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2012-2020 Mat Ryer, Tyler Bunnell and contributors.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Ryan Currah

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Yusuke Inuzuka

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership

of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,

worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or

documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2020 Red Hat, Inc.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) Nathan Button

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,

EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE
OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object

form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate

as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work

by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) Yasuhiro MATSUMOTO <mattn.jp@gmail.com>

MIT License (Expat)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

Copyright (c) 2017 Alex Kohler

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Prometheus instrumentation library for Go applications
Copyright 2012-2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).

The following components are included in this product:

perks - a fork of https://github.com/bmizerany/perks
https://github.com/beorn7/perks
Copyright 2013-2015 Blake Mizerany, Bjrn Rabenstein
See https://github.com/beorn7/perks/blob/master/README.md for license details.

Go support for Protocol Buffers - Google's data interchange format
http://github.com/golang/protobuf/
Copyright 2010 The Go Authors
See source code for license details.

Support for streaming Protocol Buffer messages for the Go language (golang).
https://github.com/matttproud/golang_protobuf_extensions
Copyright 2013 Matt T. Proud
Licensed under the Apache License, Version 2.0
The MIT License (MIT)

Copyright (c) 2015 Jinzhu

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of

the Software, and to permit persons to whom the Software is furnished to do so,
subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2015 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. "Contributor"

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. "Contributor Version"

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution"

means Covered Software of a particular Contributor.

1.4. "Covered Software"

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of

version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. "Executable Form"

means any form of the work other than Source Code Form.

1.7. "Larger Work"

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"

means this document.

1.9. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"

means the form of the work preferred for making modifications.

1.14. "You" (or "Your")

means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or
management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution
on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third party's

modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code

Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms,
provided that the
license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright
notices, patent notices, disclaimers of warranty, or
limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any

liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4.
Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and
until such Contributor
explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under
Section
2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an "as is" basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward.
Except as provided in Section
10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses If You choose to distribute Source
Code Form that is
Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the
terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

    This Source Code Form is "Incompatible
    With Secondary Licenses", as defined by
    the Mozilla Public License, v. 2.0.

Copyright (c) 2013 rjan Persson. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

  * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
  * Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2019 Cloudflare. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

  * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
  * Neither the name of Cloudflare nor the names of its

contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

==========

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following
disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY
OF SUCH DAMAGE.

MIT License

Copyright (c) 2024 Ryosei Karaki

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution

notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor

has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2022 Alan Shreve (@inconshreveable)

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright 2024 Skeema LLC and the Skeema Knownhosts authors

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software

distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2018 Grigory Zubankov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2017 envsubst contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

MIT License

Copyright (c) 2023 Vladislav Fursov (GhostIAm)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Masaaki Goshima

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2012,2013 Ernest Micklei

MIT License

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
BSD 3-Clause License

Copyright (c) 2021, Iskander (Alex) Sharipov

Originally based on the Daniel Mart code | Copyright (c) 2017, Daniel Mart. All rights reserved.
See https://github.com/mvdan/gogrep

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS
OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL

DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Sasha Melentyev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Leigh McCulloch

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

BSD 2-Clause License

Copyright (c) 2020, Nishanth Shanmugham
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

MIT License

Copyright (c) 2019 Marat Reymers

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The MIT License (MIT)

Copyright (c) 2014 Cenk Alt

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright 2019 Andrew Shannon Brown

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright 2011-2016 Canonical Ltd.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and

limitations under the License.
Copyright 2016, Google Inc.
All rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS
 BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2016 json-iterator

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2023 Roman Chaliy

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
This license applies to simplelru/list.go

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Dario Casta. All rights reserved.
Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2019, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the

distribution.
  * Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2014 Alex Saskevich

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
 IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2016 Felix Geisendrfer (felix@debuggable.com)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a

copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a

cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with

the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Copyright 2024 Fernandez Ludovic

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This project is dual-licensed under the Unlicense and MIT licenses.

You may use this code under the terms of either license.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,

including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of

this License,
each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside

or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2018 Sourced Technologies, S.L.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2015, Emir Pasic
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,

this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

AVL Tree:

Copyright (c) 2017 Benjamin Scher Purcell <benjapurcell@gmail.com>

Permission to use, copy, modify, and distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR
ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES
WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER
IN AN
ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF
OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Common libraries shared by Prometheus Go components.
Copyright 2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).
Copyright (c) 2017, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer

in the documentation and/or other materials provided with the
distribution.
  * Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (C) 2014-2019, Matt Butcher and Matt Farina

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
 CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
ISC License

Copyright (c) 2012-2016 Dave Collins <dave@davec.name>

Permission to use, copy, modify, and/or distribute this software for any
purpose with or without fee is hereby granted, provided that the above
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES
WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
Copyright (c) 2014, Evan Phoenix
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.
* Neither the name of the Evan Phoenix nor the names of its contributors
 may be used to endorse or promote products derived from this software
 without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
 OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The bulk of github.com/pelletier/go-toml is distributed under the MIT license
(see below), with the exception of localtime.go and localtime.test.go.
Those two files have been copied over from Google's civil library at revision
ed46f5086358513cf8c25f8e3f022cb838a49d66, and are distributed under the Apache
2.0 license (see below).

github.com/pelletier/go-toml:

The MIT License (MIT)

Copyright (c) 2013 - 2021 Thomas Pelletier, Eric Anderton

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE
SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

localtime.go, localtime_test.go:

Originals:
https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/civil/civil.go
https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/civil/civil_test.go
Changes:
* Renamed files from civil* to localtime*.
* Package changed from civil to toml.
* 'Local' prefix added to all structs.
License:
https://raw.githubusercontent.com/googleapis/google-cloud-go/ed46f5086358513cf8c25f8e3f022cb838a49d66/LICENSE

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all

other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares,
or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and
for which the
editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing
lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
copyright license to reproduce, prepare Derivative Works of,
publicly display, publicly perform, sublicense, and distribute the
Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms
and conditions of
this License, each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution.
You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its

distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You
for damages, including any direct, indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor
harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the
License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This source code was written by the Go contributors.
The master list of contributors is in the main Go distribution,
visible at http://tip.golang.org/CONTRIBUTORS.
The MIT License (MIT)

Copyright (c) 2014 Simon Eskildsen

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
MIT License

Copyright (c) 2020 Kensei Nakada

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 alingse

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 sonatard

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

MIT License

Copyright (c) 2015 Dmitri Shuralyov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for
software and other kinds of works.

The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to
share and change all versions of a program--to make sure it remains free
software for all its users. We, the Free Software Foundation, use the
GNU General Public License for most of our software; it applies also to
any other work released this way by its authors. You can apply it to
your programs, too.

When we speak of free software, we are referring to
freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
them if you wish), that you receive source code or can get it if you

want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1)
assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand
ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not
convey, without conditions so long as your license otherwise remains
in force. You may convey covered works to others for the sole purpose
of having them make modifications exclusively for you, or provide you
with facilities for running those works, provided that you comply with
the terms of this License in conveying all material for which you do
not control copyright. Those thus making or running the covered works
for you must do so exclusively on your behalf, under your direction
and control, on terms that prohibit them from making any copies of
your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under
the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological
measure under any applicable law fulfilling obligations under article
11 of the WIPO copyright treaty adopted on 20 December 1996, or
similar laws prohibiting or restricting circumvention of such
measures.

When you convey a covered work, you waive any legal power to forbid
circumvention of technological measures to the extent such circumvention
is effected by exercising rights under this License with respect to
the covered work, and you disclaim any intention to limit operation or
modification of the work as a means of enforcing, against the work's
users, your or third parties' legal rights to forbid circumvention of
technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you
receive it, in any medium, provided that you conspicuously and
appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium

customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation

into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization
keys, or other information required to install
and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in
ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this

License by making exceptions from one or more of its conditions.
Additional permissions that are applicable to the
entire Program shall
be treated as though they were included in this License, to the extent
that they are valid under applicable law. If additional permissions
apply only to part of the Program, that part may be used separately
under those permissions, but the entire Program remains governed by
this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option
remove any additional permissions from that copy, or from any part of
it. (Additional permissions may be written to require their own
removal in certain cases when you modify the work.) You may place
additional permissions on material, added by you to a covered work,
for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you
add to a covered work, you may (if authorized by the copyright holders of
that material) supplement the terms of this License with terms:

a) Disclaiming warranty
or limiting liability differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or
author attributions in that material or in the Appropriate Legal
Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or
requiring that modified versions of such material be marked in
reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or
authors of the material; or

e) Declining to grant rights under trademark law for use of some
trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that
material by anyone who conveys the material (or modified versions of
it) with contractual assumptions of liability to the recipient, for
any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further
restrictions" within the meaning of section 10. If the Program as you
received it, or any part of it, contains a notice stating that it is

governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor

version. For
purposes of this definition, "control" includes the right to grant
patent sublicenses in a manner consistent with the requirements of
this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free
patent license under the contributor's essential patent claims, to
make, use, sell, offer for sale, import and otherwise run, modify and
propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express
agreement or commitment, however denominated, not to enforce a patent
(such as an express permission to practice a patent or covenant not to
sue for patent infringement). To "grant" such a patent license to a
party means to make such an agreement or commitment not to enforce a
patent against the party.

If you convey a covered work, knowingly relying on a patent license,
and the Corresponding Source of the work is not available for anyone
to copy, free of charge and under the terms of this
License, through a
publicly available network server or other readily accessible means,
then you must either (1) cause the Corresponding Source to be so
available, or (2) arrange to deprive yourself of the benefit of the
patent license for this particular work, or (3) arrange, in a manner
consistent with the requirements of this License, to extend the patent
license to downstream recipients. "Knowingly relying" means you have
actual knowledge that, but for the patent license, your conveying the
covered work in a country, or your recipient's use of the covered work
in a country, would infringe one or more identifiable patents in that
country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or
arrangement, you convey, or propagate by procuring conveyance of, a
covered work, and grant a patent license to some of the parties
receiving the covered work authorizing them to use, propagate, modify
or convey a specific copy of the covered
work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying

the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public
License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of
the GNU General Public License from time to time. Such new versions will
be similar in spirit to the present version, but may differ in detail to
address new problems or concerns.

Each version is given a distinguishing version number. If the
Program specifies that a certain numbered version of the GNU General
Public License "or any later version" applies to it, you

have the
option of following the terms and conditions either of that numbered
version or of any later version published by the Free Software
Foundation. If the Program does not specify a version number of the
GNU General Public License, you may choose any version ever published
by the Free Software Foundation.

If the Program specifies that a proxy can decide which future
versions of the GNU General Public License can be used, that proxy's
public statement of acceptance of a version permanently authorizes you
to choose that version for the Program.

Later license versions may give you additional or different
permissions. However, no additional obligations are imposed on any
author or copyright holder as a result of your choosing to follow a
later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY
APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT
HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS"
WITHOUT WARRANTY
OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO,
THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM
IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF
ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS
THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY
GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE
USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF
DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD
PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),
EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF
SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided
above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the

Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it
free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
state the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where
the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,

if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want
to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
MIT License

Copyright (c) 2016 Gordon Klaus and contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (C) 2014-2015 Docker Inc & Go Authors. All rights reserved.
Copyright (C) 2017 SUSE LLC. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from

this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2018 Simon Sawert

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2017 Iskander Sharipov / Quasilyte

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions

of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright 2021 sylvia.wang

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

MIT License

Copyright (c) 2021 sivchari

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2014 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. Contributor

means each individual or legal entity that creates, contributes to the
creation of, or owns Covered Software.

1.2. Contributor Version

means the combination of the Contributions of others (if any) used by a
Contributor and that particular Contributors Contribution.

1.3. Contribution

means Covered Software of a particular Contributor.

1.4. Covered Software

means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. Incompatible With Secondary Licenses
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version

1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. Executable Form

means any form of the work other than Source Code Form.

1.7. Larger Work

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. License

means this document.

1.9. Licensable

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. Modifications

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. Patent Claims of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus
claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. Secondary License

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. Source Code Form

means the form of the work preferred for making modifications.

1.14. You (or Your)

means an individual or a legal entity exercising rights under this License. For legal entities, You includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, control means (a) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third partys modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that
You create or to which You contribute, must be under the
terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable
Form does not attempt to limit or alter the recipients
rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty,

or limitations
of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates
Your grants, and (b) on an ongoing basis,
if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims,

and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an as is basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such partys negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing in this Section shall prevent a partys ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses

If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, You can obtain one at

http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then
You may include the notice in a location (such as a LICENSE file in a relevant
directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - Incompatible With Secondary Licenses Notice

This Source Code Form is Incompatible
With Secondary Licenses, as defined by
the Mozilla Public License, v. 2.0.

Mozilla Public License Version 2.0
==================================

1. Definitions

1.1. "Contributor"
means each individual or legal entity that creates, contributes to
the creation of, or owns Covered Software.

1.2. "Contributor Version"
means the combination of the Contributions of others (if any) used
by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution"
means Covered Software of a particular Contributor.

1.4. "Covered Software"
means Source Code Form to which the initial Contributor has attached
the notice in Exhibit A, the Executable Form of such Source Code
Form, and Modifications of such Source Code Form, in each case
including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

(a) that the initial Contributor has attached the notice described
in Exhibit B to the Covered Software; or

(b) that the Covered Software was made available under the terms of

version 1.1 or earlier of the License, but not also under the
terms of a Secondary License.

1.6. "Executable Form"

means any form of the work other than Source Code Form.

1.7. "Larger Work"
means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"
means this document.

1.9. "Licensable"
means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"
means any of the following:

(a) any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

(b) any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor
means any patent claim(s), including without limitation, method,

process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import, or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"
means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"
means the form of the work preferred for making modifications.

1.14. "You" (or "Your")
means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or management of such entity,

whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

(a) under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

(b) under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution on the date the Contributor first distributes
such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

(a) for any code that a Contributor has removed from Covered Software; or

(b) for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

(c) under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

(a) such Covered Software must also be made available in Source Code

Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

(b) You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute
a Larger Work under terms of Your choice,
provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional
Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4. Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum
extent possible; and (b)
describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and until such Contributor explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing
basis if such Contributor
notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions, counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

****
*
*
* 6. Disclaimer of Warranty *
* ---------- *
*

* Covered Software is provided under this License on an "as is" *
* basis, without warranty of any kind, either expressed, implied, or *
* statutory, including, without limitation, warranties that the *
* Covered Software is free of defects, merchantable, fit for a *
* particular purpose or non-infringing. The entire risk as to the *
* quality and performance of the Covered Software is with You. *
* Should any Covered Software prove defective in any respect, You *
* (not any Contributor) assume the cost of any necessary servicing, *
* repair, or correction. This disclaimer of warranty constitutes an *
* essential part of this License. No use of any Covered
Software is *
* authorized under this License except under this disclaimer. *
* *
****

****
* *
* 7. Limitation of Liability *
* ---------- *
* *
* Under no circumstances and under no legal theory, whether tort *
* (including negligence), contract, or otherwise, shall any *
* Contributor, or anyone who distributes Covered Software as *
* permitted above, be liable to You for any direct, indirect, *
* special, incidental, or consequential damages of any character *
* including, without limitation,
damages for lost profits, loss of *
* goodwill, work stoppage, computer failure or malfunction, or any *
* and all other commercial damages or losses, even if such party *
* shall have been informed of the possibility of such damages. This *
* limitation of liability shall not apply to liability for death or *
* personal injury resulting from such party's negligence to the *
* extent applicable law prohibits such limitation. Some *
* jurisdictions do not allow the exclusion or limitation of *
* incidental or consequential damages, so this exclusion and *
* limitation may not apply to You. *
* *
****

8. Litigation

Any litigation relating to this License may be brought only in the
courts of a jurisdiction where the defendant maintains its principal
place
of business and such litigation shall be governed by laws of that
jurisdiction, without reference to its conflict-of-law provisions.
Nothing in this Section shall prevent a party's ability to bring

cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward. Except as provided in Section 10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2.
Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses

If You choose to distribute Source Code Form that is Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source
Code Form is subject to the terms of the Mozilla Public
License, v. 2.0. If a copy of the MPL was not distributed with this
file, You can obtain one at http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular
file, then You may include the notice in a location (such as a LICENSE
file in a relevant directory) where a recipient would be likely to look
for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

This Source Code Form is "Incompatible With Secondary Licenses", as
defined by the Mozilla Public License, v. 2.0.
Copyright 2021-2022 Maik Schreiber

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS
FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR
COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER
IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Matheus Macabu

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all

copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015-2017 Nick Galbreath

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and
distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright
owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities
that control, are controlled by, or are under common control with that entity.

For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that

You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or
redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall
any Contributor be
liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or

any and all other commercial damages or losses), even if such Contributor has
been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to
offer, and charge a fee for, acceptance of support, warranty, indemnity, or
other liability obligations and/or rights consistent with this License. However,
in accepting such obligations, You may act only on Your own behalf and on Your
sole responsibility, not on behalf of any other Contributor, and only if You
agree to indemnify, defend, and hold each Contributor harmless for any liability
incurred by, or
claims asserted against, such Contributor by reason of your
accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate
notice, with the fields enclosed by brackets "[]" replaced with your own
identifying information. (Don't include the brackets!) The text should be
enclosed in the appropriate comment syntax for the file format. We also
recommend that a file or class name and description of purpose be included on
the same "printed page" as the copyright notice for easier identification within
third-party archives.

Copyright 2014 Unknwon

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright (c) 2013 Frederik Zipp. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright owner nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

go-toml v2
Copyright (c) 2021 - 2023 Thomas Pelletier

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2012-2023 The ANTLR Project. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.

3. Neither name of copyright holders nor the names of its contributors
may be used to endorse or promote products derived from this software
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS
 OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright 2012 The Go Authors. All rights reserved.
Copyright fsnotify Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this
 list of conditions and the following disclaimer in the documentation and/or
 other materials provided with the distribution.
* Neither the name of Google Inc. nor the names of its contributors may be used
 to endorse or promote products derived from this software without specific
 prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT

(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
BSD 3-Clause License

Copyright (c) 2017, Nishanth Shanmugham
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

* Neither the name of the copyright holder nor the names of its
 contributors may be used to endorse or promote products derived from
 this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
 IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
BSD 3-Clause License

Copyright (c) 2020, Xiang Dai
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its

contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer

in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
 FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The forked go-yaml.v3 library under this project is covered by two
different licenses (MIT and Apache):

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

  apic.go emitterc.go parserc.go readerc.go scannerc.go
  writerc.go yamlh.go yamlprivateh.go

Copyright (c)
 2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

The forked go-yaml.v2 library under the project is covered by an
Apache license:

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND
CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall
mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative
Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding
communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section)
patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet
the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution
of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each

Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special,

incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "{}" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright {yyyy} {name of copyright owner}

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS"
BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2020 Djarvur

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 Abirdcfly

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2019 Tommy Muehle

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 Matous Dzivjak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,

and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work,

excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions

of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the
preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works

shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License.

Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by
combination
of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution.

You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and
You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark,
and attribution notices from the Source form
of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed as
modifying the License.
You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions.

Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks.

This License does not grant permission to use the trade names, trademarks, service marks,
or product names of the Licensor, except as required for
reasonable and customary use in describing the origin of the Work and

reproducing the content of the NOTICE file.

7. Disclaimer of Warranty.

Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability.

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability.

While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within

third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to
in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2023 Yifei Liu

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <https://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for

software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price.
Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:
(1) assert copyright
on the software, and (2) offer you this License
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those

products. If such problems arise substantially in other domains, we stand ready to
extend this provision to those domains in future versions
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients"
may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries"
of an executable work include anything, other
than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs
which are used unmodified in performing those activities but
which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding

Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on
each copy an appropriate copyright notice;
keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep
intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is
called an
"aggregate" if the compilation and its resulting copyright are not

used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms
of sections 4 and 5, provided that you also convey the
machine-readable Corresponding Source under the terms of this License,
in one of these ways:

a) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by the
Corresponding Source fixed on a durable physical medium
customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product
(including a physical distribution medium), accompanied by a
written offer, valid for at least three years and valid for
as
long as you offer spare parts or customer support for that product
model, to give anyone who possesses the object code either (1) a
copy of the Corresponding Source for all the software in the
product that is covered by this License, on a durable physical
medium customarily used for software interchange, for a price no
more than your reasonable cost of physically performing this
conveying of source, or (2) access to copy the
Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the
written offer to provide the Corresponding Source. This
alternative is allowed only occasionally and noncommercially, and
only if you received the object code with such an offer, in accord
with subsection 6b.

d) Convey the object code by offering access from a designated
place (gratis or for a charge), and offer equivalent access to the
Corresponding Source in the same way through
the same place at no
further charge. You need not require recipients to copy the
Corresponding Source along with the object code. If the place to
copy the object code is a network server, the Corresponding Source
may be on a different server (operated by you or a third party)
that supports equivalent copying facilities, provided you maintain
clear directions next to the object code saying where to find the
Corresponding Source. Regardless of what server hosts the
Corresponding Source, you remain obligated to ensure that it is

available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates

for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be
treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability
differently from the
terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or

authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors
and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions;
the above requirements apply
either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is

reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and
you cure the violation prior to 30 days after
your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing
of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed
under this License. For example, you may
not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that

any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or

arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work,

but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option
of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF
ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY

GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation
of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <https://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short
notice like this when it starts in an interactive mode:

<program> Copyright
(C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<https://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU
Lesser General
Public License instead of this License. But first, please read
<https://www.gnu.org/licenses/why-not-lgpl.html>.
MIT License

Copyright (c) 2022 Stephen Benjamin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright 2014 gRPC authors.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2016 go-xmlfmt

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Elliot Chance

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2016 Caleb Spare

MIT License

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2019 Oliver Kuederle

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
 WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
// Copyright 2015 go-swagger maintainers
//
// Licensed under the Apache License, Version 2.0 (the "License");
// you may not use this file except in compliance with the License.
// You may obtain a copy of the License at
//
//   http://www.apache.org/licenses/LICENSE-2.0
//
// Unless required by applicable law or agreed to in writing, software
// distributed under the License is distributed on an "AS IS" BASIS,
// WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
// See the License for the specific language governing permissions and
// limitations under the License.

package spec

// License information for the exposed API.
//
// For more information: http://goo.gl/8us55a#licenseObject
type License struct {
 Name string `json:"name,omitempty"`
 URL string `json:"url,omitempty"`
}
Copyright (c) 2017-2021 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION

WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Blackfriday is distributed under the Simplified BSD License:

> Copyright 2011 Russ Ross
> All rights reserved.
>
> Redistribution and use in source and binary forms, with or without
> modification, are permitted provided that the following conditions
> are met:
>
> 1. Redistributions of source code must retain the above copyright
>   notice, this list of conditions and the following disclaimer.
>
> 2. Redistributions in binary form must reproduce the above
>   copyright notice, this list of conditions and the following
>   disclaimer in the documentation and/or other materials provided with
>   the distribution.
>
> THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
> "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
> LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
> FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE
> COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
> INCIDENTAL, SPECIAL, EXEMPLARY,
OR CONSEQUENTIAL DAMAGES (INCLUDING,
> BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
> LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
> CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
> LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN
> ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
> POSSIBILITY OF SUCH DAMAGE.
This source code was written by the Go contributors.
The master list of contributors is in the main Go distribution,
visible at https://tip.golang.org/CONTRIBUTORS.
Copyright (c) 2014 Sourcegraph, Inc.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

Portions adapted from python-unidiff:

Copyright (c) 2012 Matias Bordese

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE
OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2020 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its

contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,

and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable

by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only

on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright (c) 2018-2020, Dmitrij Koniajev (dimchansky@gmail.com)

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License
at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
MIT License

Copyright (c) 2024 Golangci-lint authors
Copyright (c) 2020 Isaev Denis

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE,
ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (C) 2013 Blake Mizerany

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2024 alingse

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2021 Hiroyuki Yagihashi

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2016 Mail.Ru Group

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2016 Dominik Honnef

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (C) 2014 by Oleku Konko

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights

to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
People who have agreed to one of the CLAs and can contribute patches.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#
https://developers.google.com/open-source/cla/individual
https://developers.google.com/open-source/cla/corporate
#
Names should be added to this file as:
Name <email address>
Raul Silvera <rsilvera@google.com>
Tipp Moseley <tipp@google.com>
Hyoun Kyu Cho <netforce@google.com>
Martin Spier <spiermar@gmail.com>
Taco de Wolff <tacodewolff@gmail.com>
Andrew Hunter <andrewhhunter@gmail.com>
MIT License

Copyright (c) 2019 Lucas Bremgartner

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE

AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Apache License

Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean
the preferred form for making modifications, including
but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works

shall not include works that remain separable from, or merely link (or bind by name)
to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual
or Legal Entity on behalf
of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by
combination of their Contribution(s) with the Work
to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and You must cause any modified files to carry prominent notices stating that You changed the files; and You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution
notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that
such
additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License. 5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or
product names of the Licensor, except as required
for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any
Contributor be liable to You for damages, including any
direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims
asserted against, such Contributor by reason of your accepting any
such warranty or additional liability.

END OF TERMS AND CONDITIONS
MIT License

Copyright (c) 2019 GoStaticAnalysis

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 Aleksey Bakin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Tom Arrell

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner

or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices

stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2014 The Kubernetes Authors.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

MIT License

Copyright (c) 2019 Masaaki Goshima

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

MIT License

Copyright (c) 2020 moricho

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 go-toolsmith

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
BSD 3-Clause License

Copyright (c) 2022, Iskander (Alex) Sharipov / quasilyte
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2017, Fatih Arslan
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

* Neither the name of structtag nor the names of its
 contributors may be used to endorse or promote products derived from
 this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER
 OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This software includes some portions from Go. Go is used under the terms of the
BSD like license.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are

met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of
conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE,
EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The Go gopher was designed by Renee French. http://reneefrench.blogspot.com/ The design is licensed under the Creative Commons 3.0 Attributions license. Read this article for more details: https://blog.golang.org/gopher
Copyright (c) 2013-2014 Onsi Fakhouri

Permission is hereby granted, free of charge, to any person obtaining
a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including
without limitation the rights to use, copy, modify, merge, publish,
distribute, sublicense, and/or sell copies of the Software, and to
permit persons to whom the Software is furnished to do so, subject to
the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE
LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION
OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH

THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2019 Nuruddin Ashr

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright 2010 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2018 Minko Gechev

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2014 HashiCorp, Inc.

Mozilla Public License, version 2.0

1. Definitions

1.1. "Contributor"

means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software.

1.2. "Contributor Version"

means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution.

1.3. "Contribution"

means Covered Software of a particular Contributor.

1.4. "Covered Software"

means Source Code Form to which the initial Contributor has attached the

notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof.

1.5. "Incompatible With Secondary Licenses"
means

a. that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or

b. that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License.

1.6. "Executable Form"

means any form of the work other than Source Code Form.

1.7. "Larger Work"

means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software.

1.8. "License"

means this document.

1.9. "Licensable"

means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License.

1.10. "Modifications"

means any of the following:

a. any file in Source Code Form that results from an addition to, deletion from, or modification of the contents of Covered Software; or

b. any new file in Source Code Form that contains any Covered Software.

1.11. "Patent Claims" of a Contributor

means any patent claim(s), including without limitation, method, process, and apparatus claims, in any patent Licensable by such Contributor that would be infringed, but for the grant of the License, by the making, using, selling, offering for sale, having made, import,

or transfer of either its Contributions or its Contributor Version.

1.12. "Secondary License"

means either the GNU General Public License, Version 2.0, the GNU Lesser General Public License, Version 2.1, the GNU Affero General Public License, Version 3.0, or any later versions of those licenses.

1.13. "Source Code Form"

means the form of the work preferred for making modifications.

1.14. "You" (or "Your")

means an individual or a legal entity exercising rights under this License. For legal entities, "You" includes any entity that controls, is controlled by, or is under common control with You. For purposes of this definition, "control" means (a) the power, direct or indirect, to cause the direction or
management of such entity, whether by contract or otherwise, or (b) ownership of more than fifty percent (50%) of the outstanding shares or beneficial ownership of such entity.

2. License Grants and Conditions

2.1. Grants

Each Contributor hereby grants You a world-wide, royalty-free, non-exclusive license:

a. under intellectual property rights (other than patent or trademark) Licensable by such Contributor to use, reproduce, make available, modify, display, perform, distribute, and otherwise exploit its Contributions, either on an unmodified basis, with Modifications, or as part of a Larger Work; and

b. under Patent Claims of such Contributor to make, use, sell, offer for sale, have made, import, and otherwise transfer either its Contributions or its Contributor Version.

2.2. Effective Date

The licenses granted in Section 2.1 with respect to any Contribution become effective for each Contribution
on the date the Contributor first distributes such Contribution.

2.3. Limitations on Grant Scope

The licenses granted in this Section 2 are the only rights granted under this License. No additional rights or licenses will be implied from the distribution or licensing of Covered Software under this License. Notwithstanding Section 2.1(b) above, no patent license is granted by a Contributor:

a. for any code that a Contributor has removed from Covered Software; or

b. for infringements caused by: (i) Your and any other third party's modifications of Covered Software, or (ii) the combination of its Contributions with other software (except as part of its Contributor Version); or

c. under Patent Claims infringed by Covered Software in the absence of its Contributions.

This License does not grant any rights in the trademarks, service marks, or logos of any Contributor (except as may be necessary to comply with the notice requirements in Section 3.4).

2.4. Subsequent Licenses

No Contributor makes additional grants as a result of Your choice to distribute the Covered Software under a subsequent version of this License (see Section 10.2) or under the terms of a Secondary License (if permitted under the terms of Section 3.3).

2.5. Representation

Each Contributor represents that the Contributor believes its Contributions are its original creation(s) or it has sufficient rights to grant the rights to its Contributions conveyed by this License.

2.6. Fair Use

This License is not intended to limit any rights You have under applicable copyright doctrines of fair use, fair dealing, or other equivalents.

2.7. Conditions

Sections 3.1, 3.2, 3.3, and 3.4 are conditions of the licenses granted in Section 2.1.

3. Responsibilities

3.1. Distribution of Source Form

All distribution of Covered Software in Source Code Form, including any Modifications that You create or to which You contribute, must be under the terms of this License. You must inform recipients that the Source Code Form of the Covered Software is governed by the terms of this License, and how they can obtain a copy of this License. You may not attempt to alter or restrict the recipients' rights in the Source Code Form.

3.2. Distribution of Executable Form

If You distribute Covered Software in Executable Form then:

a. such Covered Software must also be made available in Source Code Form, as described in Section 3.1, and You must inform recipients of the Executable Form how they can obtain a copy of such Source Code Form by reasonable means in a timely manner, at a charge no more than the cost of distribution to the recipient; and

b. You may distribute such Executable Form under the terms of this License, or sublicense it under different terms, provided that the license for the Executable Form does not attempt to limit or alter the recipients' rights in the Source Code Form under this License.

3.3. Distribution of a Larger Work

You may create and distribute a Larger Work under terms of Your choice, provided that You also comply with the requirements of this License for the Covered Software. If the Larger Work is a combination of Covered Software with a work governed by one or more Secondary Licenses, and the Covered Software is not Incompatible With Secondary Licenses, this License permits You to additionally distribute such Covered Software under the terms of such Secondary License(s), so that the recipient of the Larger Work may, at their option, further distribute the Covered Software under the terms of either this License or such Secondary License(s).

3.4. Notices

You may not remove or alter the substance of any license notices (including copyright notices, patent notices, disclaimers of warranty, or limitations of liability) contained within the Source Code Form of the

Covered Software, except that You may alter any license notices to the extent required to remedy known factual inaccuracies.

3.5. Application of Additional Terms

You may choose to offer, and to charge a fee for, warranty, support, indemnity or liability obligations to one or more recipients of Covered Software. However, You may do so only on Your own behalf, and not on behalf of any Contributor. You must make it absolutely clear that any such warranty, support, indemnity, or liability obligation is offered by You alone, and You hereby agree to indemnify every Contributor for any liability incurred by such Contributor as a result of warranty, support, indemnity or liability terms You offer. You may include additional disclaimers of warranty and limitations of liability specific to any jurisdiction.

4.
Inability to Comply Due to Statute or Regulation

If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Covered Software due to statute, judicial order, or regulation then You must: (a) comply with the terms of this License to the maximum extent possible; and (b) describe the limitations and the code they affect. Such description must be placed in a text file included with all distributions of the Covered Software under this License. Except to the extent prohibited by statute or regulation, such description must be sufficiently detailed for a recipient of ordinary skill to be able to understand it.

5. Termination

5.1. The rights granted under this License will terminate automatically if You fail to comply with any of its terms. However, if You become compliant, then the rights granted under this License from a particular Contributor are reinstated (a) provisionally, unless and
until such Contributor
explicitly and finally terminates Your grants, and (b) on an ongoing basis, if such Contributor fails to notify You of the non-compliance by some reasonable means prior to 60 days after You have come back into compliance. Moreover, Your grants from a particular Contributor are reinstated on an ongoing basis if such Contributor notifies You of the non-compliance by some reasonable means, this is the first time You have received notice of non-compliance with this License from such Contributor, and You become compliant prior to 30 days after Your receipt of the notice.

5.2. If You initiate litigation against any entity by asserting a patent infringement claim (excluding declaratory judgment actions,

counter-claims, and cross-claims) alleging that a Contributor Version directly or indirectly infringes any patent, then the rights granted to You by any and all Contributors for the Covered Software under Section 2.1 of this License shall terminate.

5.3. In the event of termination under Sections 5.1 or 5.2 above, all end user license agreements (excluding distributors and resellers) which have been validly granted by You or Your distributors under this License prior to termination shall survive termination.

6. Disclaimer of Warranty

Covered Software is provided under this License on an "as is" basis, without warranty of any kind, either expressed, implied, or statutory, including, without limitation, warranties that the Covered Software is free of defects, merchantable, fit for a particular purpose or non-infringing. The entire risk as to the quality and performance of the Covered Software is with You. Should any Covered Software prove defective in any respect, You (not any Contributor) assume the cost of any necessary servicing, repair, or correction. This disclaimer of warranty constitutes an essential part of this License. No use of any Covered Software is authorized under this License except under this disclaimer.

7. Limitation of Liability

Under no circumstances and under no legal theory, whether tort (including negligence), contract, or otherwise, shall any Contributor, or anyone who distributes Covered Software as permitted above, be liable to You for any direct, indirect, special, incidental, or consequential damages of any character including, without limitation, damages for lost profits, loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses, even if such party shall have been informed of the possibility of such damages. This limitation of liability shall not apply to liability for death or personal injury resulting from such party's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

8. Litigation

Any litigation relating to this License may be brought only in the courts of a jurisdiction where the defendant maintains its principal place of business and such litigation shall be governed by laws of that jurisdiction, without reference to its conflict-of-law provisions. Nothing

in this Section shall prevent a party's ability to bring cross-claims or counter-claims.

9. Miscellaneous

This License represents the complete agreement concerning the subject matter hereof. If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable. Any law or regulation which provides that the language of a contract shall be construed against the drafter shall not be used to construe this License against a Contributor.

10. Versions of the License

10.1. New Versions

Mozilla Foundation is the license steward.
Except as provided in Section
10.3, no one other than the license steward has the right to modify or publish new versions of this License. Each version will be given a distinguishing version number.

10.2. Effect of New Versions

You may distribute the Covered Software under the terms of the version of the License under which You originally received the Covered Software, or under the terms of any subsequent version published by the license steward.

10.3. Modified Versions

If you create software not governed by this License, and you want to create a new license for such software, you may create and use a modified version of this License if you rename the license and remove any references to the name of the license steward (except to note that such modified license differs from this License).

10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses If You choose to distribute Source
Code Form that is
Incompatible With Secondary Licenses under the terms of this version of the License, the notice described in Exhibit B of this License must be attached.

Exhibit A - Source Code Form License Notice

This Source Code Form is subject to the

terms of the Mozilla Public License, v.
2.0. If a copy of the MPL was not
distributed with this file, You can
obtain one at
http://mozilla.org/MPL/2.0/.

If it is not possible or desirable to put the notice in a particular file, then You may include the notice in a location (such as a LICENSE file in a relevant directory) where a recipient would be likely to look for such a notice.

You may add additional accurate notices of copyright ownership.

Exhibit B - "Incompatible With Secondary Licenses" Notice

This Source Code Form is "Incompatible
With Secondary Licenses", as defined by
the Mozilla Public License, v. 2.0.

The MIT License (MIT)

Copyright (c) 2016 Yasuhiro Matsumoto

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The MIT License (MIT)

Copyright (c) 2019 Mark Bates

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell

copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 David Brophy

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This package was forked from https://github.com/golang/go/tree/master/src/go/ast - original license:

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above

copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES,
 INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Paul Borman <borman@google.com>
bmatsuo
shawnps
theory
jboverfelt
dsymonds
cd1
wallclockbuilder
dansouza

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or

otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one

of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be

liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
Copyright (c) 2013, The GoGo Authors. All rights reserved.

Protocol Buffers for Go with Gadgets

Go support for Protocol Buffers - Google's data interchange format

Copyright 2010 The Go Authors. All rights reserved.
https://github.com/golang/protobuf

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

   * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
   * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
   * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS"
 AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
                GNU GENERAL PUBLIC LICENSE
                 Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <http://fsf.org/>
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

                     Preamble

 The GNU General Public License is a free, copyleft license for
software and other kinds of works.

 The licenses for most software and other practical works are designed
to take away your freedom to share and change the works. By contrast,
the GNU General Public License is intended to guarantee your freedom to

share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the

extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered
by this License only if the output, given its
content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed;
section 10
makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and

appropriately
publish on each copy an appropriate copyright notice;
keep intact all notices stating that this License and any
non-permissive terms added in accord with section 7 apply to the code;
keep intact all notices of the absence of any warranty; and give all
recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey,
and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to
produce it from the Program, in the form of source code under the
terms of section 4, provided that you also meet all of these conditions:

a) The work must carry prominent notices stating that you modified
it, and giving a relevant date.

b) The work must carry prominent notices stating that it is
released under this License and any conditions added under section
7. This requirement modifies the requirement in section
4 to
"keep intact all notices".

c) You must license the entire work, as a whole, under this
License to anyone who comes into possession of a copy. This
License will therefore apply, along with any applicable section 7
additional terms, to the whole of the work, and all its parts,
regardless of how they are packaged. This License gives no
permission to license the work in any other way, but it does not
invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display
Appropriate Legal Notices; however, if the Program has interactive
interfaces that do not display Appropriate Legal Notices, your
work need not make them do so.

A compilation of a covered work with other separate and independent
works, which are not by their nature extensions of the covered work,
and which are not combined with it such as to form a larger program,
in or on a volume of a storage or distribution
medium, is called an
"aggregate" if the compilation and its resulting copyright are not
used to limit the access or legal rights of the compilation's users
beyond what the individual works permit. Inclusion of a covered work
in an aggregate does not cause this License to apply to the other
parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding

Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and

protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or

b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or

c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

d) Limiting the use for publicity purposes of names of licensors or authors of the material; or

e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or

f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on

those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above
requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright

holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights
granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered

work, then the patent license
you grant is automatically extended to all recipients of the covered
work and works based on it.

A patent license is "discriminatory" if it does not include within
the scope of its coverage, prohibits the exercise of, or is
conditioned on the non-exercise of one or more of the rights that are
specifically granted under this License. You may not convey a covered
work if you are a party to an arrangement with a third party that is
in the business of distributing software, under which you make payment
to the third party based on the extent of your activity of conveying
the work, and under which the third party grants, to any of the
parties who would receive the covered work from you, a discriminatory
patent license (a) in connection with copies of the covered work
conveyed by you (or copies made from those copies), or (b) primarily
for and in connection with specific products or compilations that
contain the covered work, unless you entered into that arrangement,
or
that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting
any implied license or other defenses to infringement that may
otherwise be available to you under applicable patent law.

12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or
otherwise) that contradict the conditions of this License, they do not
excuse you from the conditions of this License. If you cannot convey a
covered work so as to satisfy simultaneously your obligations under this
License and any other pertinent obligations, then as a consequence you may
not convey it at all. For example, if you agree to terms that obligate you
to collect a royalty for further conveying from those to whom you convey
the Program, the only way you could satisfy both those terms and this
License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have
permission to link or combine any covered work with a work licensed
under version 3 of the GNU Affero General Public License into a single
combined work, and to convey the resulting work. The terms of this
License will continue to apply to the part which is the covered work,
but the special requirements of the GNU Affero General Public License,
section 13, concerning interaction through a network will apply to the
combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF

SUCH DAMAGES.

17.
Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,
if any, to sign a "copyright disclaimer" for the program, if necessary.
For more information on this, and how to apply and follow the GNU GPL, see
<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program
into proprietary programs. If your program is a subroutine library, you
may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to
do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
MIT License

Copyright (c) 2018-2021 go-critic team

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2021 Oleg Butuzov

Permission is hereby granted, free of charge, to any person obtaining a copy

of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2019 Montgomery Edwards and Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
This is the official list of people who can contribute
(and typically have contributed) code to the go-diff
repository.
#
The AUTHORS file lists the copyright holders; this file
lists people. For example, ACME Inc. employees would be listed here
but not in AUTHORS, because ACME Inc. would hold the copyright.
#
When adding J Random Contributor's name to this file,

either J's name or J's organization's name should be
added to the AUTHORS file.
#
Names should be added to this file like so:
Name <email address>
#
Please keep the list sorted.

Danny Yoo <dannyyoo@google.com>
James Kolb <jkolb@google.com>
Jonathan Amsterdam <jba@google.com>
Markus Zimmermann <markus.zimmermann@nethead.at> <markus.zimmermann@symflower.com>
<zimmski@gmail.com>
Matt Kovars <akaskik@gmail.com>
rjan Persson <orjan@spotify.com>
Osman Masood <oamasood@gmail.com>
Robert Carlsen <rwcarlsen@gmail.com>
Rory Flynn <roryflynn@users.noreply.github.com>
Sergi Mansilla <sergi.mansilla@gmail.com>
Shatrugna
 Sadhu <ssadhu@apcera.com>
Shawn Smith <shawnpsmith@gmail.com>
Stas Maksimov <maksimov@gmail.com>
Tor Arvid Lund <torarvid@gmail.com>
Zac Bergquist <zbergquist99@gmail.com>
MIT License

Copyright (c) 2022 Anton Telyshev

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
 WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

The MIT License (MIT)

Copyright (c) 2014 Juan Batiz-Benet

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
 OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2013 TOML authors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR
 IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
Copyright (c) 2015, Dave Cheney <dave@cheney.net>
All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
 list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
 this list of conditions and the following disclaimer in the documentation
 and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
 GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2019-present Faye Amacker

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
 CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2011, Open Knowledge Foundation Ltd.
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in
the documentation and/or other materials provided with the
distribution.

Neither the name of the Open Knowledge Foundation Ltd. nor the
names of its contributors may be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2020 Liyan David Chang

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2020 Ryan R. Olds

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
procfs provides functions to retrieve system, kernel and process
metrics from the pseudo-filesystem proc.

Copyright 2014-2015 The Prometheus Authors

This product includes software developed at
SoundCloud Ltd. (http://soundcloud.com/).

This project is covered by two different licenses: MIT and Apache.

MIT License

The following files were ported to Go from C files of libyaml, and thus
are still covered by their original MIT license, with the additional
copyright staring in 2011 when the project was ported over:

apic.go emitterc.go parserc.go readerc.go scannerc.go
writerc.go yamlh.go yamlprivateh.go

Copyright (c) 2006-2010 Kirill Simonov
Copyright (c) 2006-2011 Kirill Simonov

Permission is hereby granted, free of charge, to any person obtaining a copy of
this software and associated documentation files (the "Software"), to deal in
the Software without restriction, including without limitation the rights to
use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is furnished to do
so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial
portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License

All the remaining project files are covered by the Apache license:

Copyright (c) 2011-2019 Canonical Ltd

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR
CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
This is the official list of people who can contribute
(and typically have contributed) code to the repository.
The AUTHORS file lists the copyright holders; this file
lists people. For example, Google employees are listed here
but not in AUTHORS, because Google holds the copyright.
#
The submission process automatically checks to make sure
that people submitting code are listed in this file (by email address).
#
Names should be added to this file only after verifying that
the individual or the individual's organization has agreed to
the appropriate Contributor License Agreement, found here:
#
https://cla.developers.google.com/about/google-individual
https://cla.developers.google.com/about/google-corporate
#
The CLA can be filled out on the web:

#
https://cla.developers.google.com/
#
When adding J Random Contributor's name to this file,
either J's name or J's organization's name should be
added to the AUTHORS file, depending on whether the
#
 individual or corporate CLA was used.

Names should be added to this file like so:
Name <email address>
#
An entry with two email addresses specifies that the
first address should be used in the submit logs and
that the second address should be recognized as the
same person when interacting with Rietveld.

Please keep the list sorted.

Alain Vongsouvanhalainv <alainv@google.com>
Andrew Gerrand <adg@golang.org>
Brad Fitzpatrick <bradfitz@golang.org>
Eric Koleda <ekoleda+devrel@googlers.com>
Francesc Campoy <campoy@golang.org>
Garrick Evans <garrick@google.com>
Glenn Lewis <gmlewis@google.com>
Ivan Krasin <krasin@golang.org>
Jason Hall <jasonhall@google.com>
Johan Euphrosine <proppy@google.com>
Kostik Shtoyk <kostik@google.com>
Kunpei Sakai <namusyaka@gmail.com>
Matthew Dolan <dolan@lightstep.com>
Matthew Whisenhunt <matt.whisenhunt@gmail.com>
Michael McGreevy <mcgreevy@golang.org>
Nick Craig-Wood <nickcw@gmail.com>
Robbie Trencheny <me@robbiet.us>
Ross Light <light@google.com>
Sarah
 Adams <shadams@google.com>
Scott Van Woudenberg <scottvw@google.com>
Takashi Matsuo <tmatsuo@google.com>
Copyright 2018 Ultraware Consultancy and Development B.V.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2020 kyoh86

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM,
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE
OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2013, Patrick Mezard
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
Redistributions in binary form must reproduce the above copyright
notice, this list of conditions and the following disclaimer in the
documentation and/or other materials provided with the distribution.
The names of its contributors may not be used to endorse or promote
products derived from this software without specific prior written
permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS

IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Anton Povarov <anton.povarov@gmail.com>
Brian Goff <cpuguy83@gmail.com>
Clayton Coleman <ccoleman@redhat.com>
Denis Smirnov <denis.smirnov.91@gmail.com>
DongYun Kang <ceram1000@gmail.com>
Dwayne Schultz <dschultz@pivotal.io>
Georg Apitz <gapitz@pivotal.io>
Gustav Paul <gustav.paul@gmail.com>
Johan Brandhorst <johan.brandhorst@gmail.com>
John Shahid <jvshahid@gmail.com>
John Tuley <john@tuley.org>
Laurent <laurent@adyoulike.com>
Patrick Lee <patrick@dropbox.com>
Peter Edge <peter.edge@gmail.com>
Roger Johansson <rogeralsing@gmail.com>
Sam Nguyen <sam.nguyen@sendgrid.com>
Sergio Arbeo <serabe@gmail.com>
Stephen J Day <stephen.day@docker.com>
Tamir Duberstein <tamird@gmail.com>
Todd Eisenberger <teisenberger@dropbox.com>
Tormod Erevik Lea <tormodlea@gmail.com>
Vyacheslav Kim <kane@sendgrid.com>
Walter Schulze <awalterschulze@gmail.com>
Copyright (C) 2013-2020 Masterminds

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Andrey Petrov

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2013-2020, Frank Schroeder

All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
  list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
  this list of conditions and the following disclaimer in the documentation
  and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS

OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2017 Kevin Burke.

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.

==========

The lexer and parser borrow heavily from github.com/pelletier/go-toml. The
license for that project is copied below.

The MIT License (MIT)

Copyright (c) 2013 - 2017 Thomas Pelletier, Eric Anderton

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A
PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2023 Yusuke Kadowaki

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2024 raeperd

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER

LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2021 Salvador Cavadini

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) Choko (choko@curioswitch.org)

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR
IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

MIT License

Copyright (c) 2020 tdakkota

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
BSD 2-Clause License

Copyright (c) 2020, Ryo Nakao
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE
GOODS OR
SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER
CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY,
OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Names should be added to this file like so:
Name <email address>

Please keep the list sorted.

Frederik Zipp <fzipp@gmx.de>
Harshavardhana <harsha@harshavardhana.net>
MIT License

Copyright (c) 2019 Josh Bleecher Snyder

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
 CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
The MIT License (MIT)

Copyright (c) 2015 Michal Bohuslvek

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2009 The Go Authors. All rights reserved.
Copyright (c) 2016 Dominik Honnef. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2023 Joshua Timmons

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,

FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2021 Anton Telyshev

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the

outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but
not limited to compiled object code, generated documentation,
and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or
Object form, made available under the License, as indicated by a
copyright notice that is included in or attached to the work
(an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object
form, that is based on (or derived from) the Work and for which the
editorial
revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes
of this License, Derivative Works shall not include works that remain
separable from, or merely link (or bind by name) to the interfaces of,
the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including
the original version of the Work and any modifications or additions
to that Work or Derivative Works thereof, that is intentionally
submitted to Licensor for inclusion in the Work by the copyright owner
or by an individual or Legal Entity authorized to submit on behalf of
the copyright owner. For the purposes of this definition, "submitted"
means any form of electronic, verbal, or written communication sent
to the Licensor or its representatives, including but not limited to
communication on electronic mailing lists, source code control systems,
and issue tracking systems that are managed by, or on behalf of, the
Licensor for the purpose of discussing and improving the Work, but
excluding communication that is conspicuously marked or otherwise
designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity
on behalf of whom a Contribution has been received by Licensor and
subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,
each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed

as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,

indirect, special,
incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability

incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

Copyright (c) 2017 Uber Technologies, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above

copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Alec Thomas <alec@swapoff.org>
Guilhem Lettron <guilhem.lettron@optiflows.com>
Ivan Daniluk <ivan.daniluk@gmail.com>
Nimi Wariboko Jr <nimi@channelmeter.com>
Rbert Selvek <robert.selvek@gmail.com>
Staticcheck and its related tools make use of third party projects,
either by reusing their code, or by statically linking them into
resulting binaries. These projects are:

* The Go Programming Language - https://golang.org/
 golang.org/x/mod - https://github.com/golang/mod
 golang.org/x/tools - https://github.com/golang/tools
 golang.org/x/sys - https://github.com/golang/sys
 golang.org/x/xerrors - https://github.com/golang/xerrors

  Copyright (c) 2009 The Go Authors. All rights reserved.

  Redistribution and use in source and binary forms, with or without
  modification, are permitted provided that the following conditions are
  met:

    * Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
    * Redistributions in binary form must reproduce the above
  copyright notice, this list of conditions and the following disclaimer
  in the documentation and/or other materials provided with the
   distribution.
    * Neither the name of Google Inc. nor the names of its
  contributors may be used to endorse or promote products derived from

this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY
OF SUCH DAMAGE.

* github.com/BurntSushi/toml - https://github.com/BurntSushi/toml

The MIT License (MIT)

Copyright (c) 2013 TOML authors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

* gogrep - https://github.com/mvdan/gogrep

Copyright (c) 2017, Daniel Mart. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of the copyright holder nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

* gosmith - https://github.com/dvyukov/gosmith

Copyright (c) 2014 Dmitry Vyukov. All rights reserved.

Redistribution and use in source
and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* The name of Dmitry Vyukov may be used to endorse or promote
products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,

DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The MIT License (MIT)

Copyright (c) 2015 Microsoft

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (C) 2017-2022 Alec Thomas

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH
THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The MIT License (MIT)

Copyright (c) 2024 Clifton Kaznocha

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation

source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License,

each Contributor hereby grants to You a perpetual,
worldwide, non-exclusive, no-charge, royalty-free, irrevocable
(except as stated in this section) patent license to make, have made,
use, offer to sell, sell, import, and otherwise transfer the Work,
where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided

that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "{}"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright 2017 Sourced Technologies S.L.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the

distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2016 Pter Surnyi.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR
 PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Joshua Tacoma. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2017 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT

(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
// Package misspell corrects commonly misspelled English words in source files.
package misspell

// Legal provides licensing info.
const Legal = `
Except where noted below, the source code for misspell is
copyright Nick Galbreath and distribution is allowed under a
MIT license. See the following for details:

* https://github.com/client9/misspell/blob/master/LICENSE
* https://tldrlegal.com/license/mit-license

Misspell makes uses of the Golang standard library and
contains a modified version of Golang's strings.Replacer
which are covered under a BSD License.

* https://golang.org/pkg/strings/#Replacer
* https://golang.org/src/strings/replace.go
* https://github.com/golang/go/blob/master/LICENSE

Copyright (c) 2009 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions
 and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY,

WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.`
MIT License

Copyright (c) 2023 Catena cyber

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2018-2024, The Gofrs
Copyright (c) 2015-2020, Tim Heckman
All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.

* Neither the name of gofrs nor the names of its contributors may be used
to endorse or promote products derived from this software without
specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN

NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Gaijin Entertainment

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
The MIT License

Copyright (c) 2014 Benedikt Lang <github at benediktlang.de>

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in
all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING

FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial

revisions, annotations, elaborations, or other modifications
represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.

Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

==========

The common/types/pb/equal.go modification of proto.Equal logic

==========

Copyright (c) 2018 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions
and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,

SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
MIT License

Copyright (c) 2022 Nahshon Unna Tsameret

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2022 Marat Reymers

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Iskander (Alex) Sharipov / quasilyte

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT
OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
MIT License

Copyright (c) 2020 Bartomiej Klimczak

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

The MIT License

Copyright (c) 2014 Stretchr, Inc.
Copyright (c) 2017-2018 objx contributors

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT
OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
Copyright (c) 2012 Jesse van den Kieboom. All rights reserved.
Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT

(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
Copyright (c) 2013 Kamil Kisiel

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use,
copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the
Software is furnished to do so, subject to the following
conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES
OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING
FROM, OUT OF OR IN CONNECTION WITH THE
SOFTWARE OR THE USE OR
OTHER DEALINGS IN THE SOFTWARE.
The MIT License (MIT)

Copyright (c) 2014 Sam Ghods

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.

Copyright (c) 2012 The Go Authors. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
 FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
The MIT License (MIT)

Copyright (c) 2016 Sergey Kamardin

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR
IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,
FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE
AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER
LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,

OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
MIT License

Copyright (c) 2018 Leigh McCulloch

Permission is hereby granted, free of charge, to any person obtaining a copy
of this software and associated documentation files (the "Software"), to deal
in the Software without restriction, including without limitation the rights
to use, copy, modify, merge, publish, distribute, sublicense, and/or sell
copies of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all
copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION
WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
Copyright (c) 2009,2014 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER
OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT

LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.372 x-oauth2 0.28.0

1.372.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
* Neither the name of Google LLC nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.373 grpc-go 2.4.0

1.373.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally

submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the
Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

(a) You must give any other recipients of the Work or Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and
may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the

content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this
License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

Copyright 2014 gRPC authors.

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.374 x-crypto v0.36.0

1.374.1 Available under license :

Copyright 2009 The Go Authors.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

* Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
* Neither the name of Google LLC nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

1.375 systemd-python 234

1.375.1 Available under license :

GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who
decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,
not price. Our General Public Licenses are designed to make sure that
you have the freedom to distribute copies of free software (and charge
for this service if you wish); that you receive source code or can get

it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library,
whether gratis
or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software
patents pose a constant threat to the existence of
any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits

such linking only if the
entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting
the free library to free
software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order
to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License").

Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the
terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be
reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary
GNU General Public
License instead of this License to a given copy of the Library. To do

this, you must alter all the notices that refer to this License, so
that they refer to the ordinary GNU General Public License, version 2,
instead of to this License. (If a newer version than version 2 of the
ordinary GNU General Public License has appeared, then you can specify
that version instead if you wish.) Do not make any other change in
these notices.

Once this change is made in a given copy, it is irreversible for
that copy, so the ordinary GNU General Public License applies to all
subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of
the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or
derivative of it, under Section 2) in object code or executable form
under the terms of Sections 1 and 2 above provided that you accompany
it with the complete corresponding
machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
Library, but is designed to work with the Library by being compiled or
linked with it, is called a "work that uses the Library". Such a
work, in isolation, is not a derivative work of the Library, and
therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that
uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the
object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany
the work with the complete corresponding
machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate
properly with a modified version of the library, if
the user installs one, as long as the modified version is

interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at
least three years, to give the same user the materials
specified in Subsection 6a, above, for a charge no more
than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy
from a designated place, offer equivalent access to copy the above
specified materials from the same place.

e) Verify that the user has already received a copy of these
materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the
Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
the materials to be distributed need not include anything that is
normally
distributed (in either source or binary form) with the major
components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
distribute.

7. You may place library facilities that are a work based on the
Library side-by-side in a single library together with other library
facilities not covered by this License, and distribute such a combined
library, provided that the separate distribution of the work based on
the Library and of the other library facilities is otherwise
permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work
based on the Library, uncombined with any
other library
facilities. This must be distributed under the terms of the
Sections above.

b) Give prominent notice with the combined library of the fact
that part of it is a work based on the Library, and explaining
where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute

the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system

which is
implemented by public license practices. Many people have made
generous contributions to the wide range of software distributed
through that system in reliance on consistent application of that
system; it is up to the author/donor to decide if he or she is willing
to distribute software through any other system and a licensee cannot
impose that choice.

This section is intended to make thoroughly clear what is believed to
be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in
certain countries either by patents or by copyrighted interfaces, the
original copyright holder who places the Library under this License may add
an explicit geographical distribution limitation excluding those countries,
so that distribution is permitted only in or among countries not thus
excluded. In such case, this License incorporates the limitation as if
written in the body of this License.

13. The Free Software Foundation may publish
revised and/or new
versions of the Lesser General Public License from time to time.
Such new versions will be similar in spirit to the present version,
but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library
specifies a version number of this License which applies to it and
"any later version", you have the option of following the terms and
conditions either of that version or of any later version published by
the Free Software Foundation. If the Library does not specify a
license version number, you may choose any version ever published by
the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free
programs whose distribution conditions are incompatible with these,
write to the author to ask for permission. For software which is
copyrighted by the Free Software Foundation, write to the Free
Software Foundation; we sometimes make exceptions for this. Our
decision
will be guided by the two goals of preserving the free status
of all derivatives of our free software and of promoting the sharing
and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO
WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW.
EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR

OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE,
BE LIABLE TO YOU
FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey
the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301
USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
UNRECOGNIZED LICENSE; MD5 sum: dbdc60c038e85df6e6dc5410c174471d

1.376 dbus-python 1.2.18

1.376.1 Available under license :

As of version 0.82.4, dbus-python itself is released under the following
permissive non-copyleft license (the same one that was proposed for
D-Bus core but wasn't achieved):

Permission is hereby granted, free of charge, to any person
obtaining a copy of this software and associated documentation
files (the "Software"), to deal in the Software without
restriction, including without limitation the rights to use, copy,
modify, merge, publish, distribute, sublicense, and/or sell copies
of the Software, and to permit persons to whom the Software is
furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT
HOLDERS
BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,
WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER
DEALINGS IN THE SOFTWARE.

Copyright holders and licensing are indicated in the source files.

The dbus-gmain/ subdirectory is under a different license: see
dbus-gmain/COPYING for details.
MIT
The D-Bus GLib main loop bindings are licensed to you under your choice
of the Academic Free License version 2.1, or the GNU General Public
License version 2. Both licenses are included here.

In SPDX terms, this is:

SPDX-License-Identifier: AFL-2.1 OR GPL-2.0-or-later

The Academic Free License
v. 2.1

This Academic Free License (the "License") applies to any original work of authorship (the "Original Work") whose owner (the "Licensor") has placed the following notice immediately following the copyright notice for the Original Work:

Licensed under the Academic Free License version 2.1

1) Grant of Copyright License. Licensor hereby grants You a
world-wide, royalty-free, non-exclusive, perpetual, sublicenseable
license to do the following:

a) to reproduce the Original Work in copies;

b) to prepare derivative works ("Derivative Works") based upon the Original Work;

c) to distribute copies of the Original Work
and Derivative Works to the public;

d) to perform the Original Work publicly; and

e) to display the Original Work publicly.

2) Grant of Patent License. Licensor hereby grants You a world-wide,
royalty-free, non-exclusive, perpetual, sublicenseable license, under
patent claims owned or controlled by the Licensor that are embodied in
the Original Work as furnished by the Licensor, to make, use, sell and
offer for sale the Original Work and Derivative Works.

3) Grant of Source Code License. The term "Source Code" means the
preferred form of the Original Work for making modifications to it and

all available documentation describing how to modify the Original Work. Licensor hereby agrees to provide a machine-readable copy of the Source Code of the Original Work along with each copy of the Original Work that Licensor distributes. Licensor reserves the right to satisfy this obligation by placing a machine-readable copy of the Source Code in an information repository reasonably calculated to permit inexpensive and convenient access by You for as long as Licensor continues to distribute the Original Work, and by publishing the address of that information repository in a notice immediately following the copyright notice that applies to the Original Work.

4) Exclusions From License Grant. Neither the names of Licensor, nor the names of any contributors to the Original Work, nor any of their trademarks or service marks, may be used to endorse or promote products derived from this Original Work without express prior written permission of the Licensor. Nothing in this License shall be deemed to grant any rights to trademarks, copyrights, patents, trade secrets or any other intellectual property of Licensor except as expressly stated herein. No patent license is granted to make, use, sell or offer to sell embodiments of any patent claims other than the licensed claims defined in Section 2. No right is granted to the trademarks of Licensor even if such marks are included in the Original Work. Nothing in this License shall be interpreted to prohibit Licensor from licensing under different terms from this License any Original Work that Licensor otherwise would have a right to license.

5) This section intentionally omitted.

6) Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.

7) Warranty of Provenance and Disclaimer of Warranty. Licensor warrants that the copyright in and to the Original Work and the patent rights granted herein by Licensor are owned by the Licensor or are sublicensed to You under the terms of this License with the permission of the contributor(s) of those copyrights and patent rights. Except as expressly stated in the immediately proceeding sentence, the Original Work is provided under this License on an "AS IS" BASIS and WITHOUT WARRANTY, either express or implied, including, without limitation,

the warranties of NON-INFRINGEMENT, MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY OF THE ORIGINAL WORK IS WITH YOU. This DISCLAIMER OF WARRANTY constitutes an essential part of this License. No license to Original Work is granted hereunder except under this disclaimer.

8) Limitation of Liability. Under no circumstances and under no legal theory, whether in tort (including negligence), contract, or otherwise, shall the Licensor be liable to any person for any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or the use of the Original Work including, without limitation, damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all other commercial damages or losses. This limitation of liability shall not apply to liability for death or personal injury resulting from Licensor's negligence to the extent applicable law prohibits such limitation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this exclusion and limitation may not apply to You.

9) Acceptance and Termination. If You distribute copies of the Original Work or a Derivative Work, You must make a reasonable effort under the circumstances to obtain the express assent of recipients to the terms of this License. Nothing else but this License (or another written agreement between Licensor and You) grants You permission to create Derivative Works based upon the Original Work or to exercise any of the rights granted in Section 1 herein, and any attempt to do so except under the terms of this License (or another written agreement between
Licensor and You) is expressly prohibited by
U.S. copyright law, the equivalent laws of other countries, and by international treaty. Therefore, by exercising any of the rights granted to You in Section 1 herein, You indicate Your acceptance of this License and all of its terms and conditions.

10) Termination for Patent Action. This License shall terminate automatically and You may no longer exercise any of the rights granted to You by this License as of the date You commence an action, including a cross-claim or counterclaim, against Licensor or any licensee alleging that the Original Work infringes a patent. This termination provision shall not apply for an action alleging patent infringement by combinations of the Original Work with other software or hardware.

11) Jurisdiction, Venue and Governing Law. Any action or suit relating to this License may be brought only in the courts of a jurisdiction wherein the Licensor resides or in which Licensor conducts its primary

business, and
under the laws of that jurisdiction excluding its
conflict-of-law provisions. The application of the United Nations
Convention on Contracts for the International Sale of Goods is
expressly excluded. Any use of the Original Work outside the scope of
this License or after its termination shall be subject to the
requirements and penalties of the U.S. Copyright Act, 17 U.S.C. 101
et seq., the equivalent laws of other countries, and international
treaty. This section shall survive the termination of this License.

12) Attorneys Fees. In any action to enforce the terms of this License
or seeking damages relating thereto, the prevailing party shall be
entitled to recover its costs and expenses, including, without
limitation, reasonable attorneys' fees and costs incurred in
connection with such action, including any appeal of such action. This
section shall survive the termination of this License.

13) Miscellaneous. This License represents the complete agreement
concerning the subject matter
hereof. If any provision of this License
is held to be unenforceable, such provision shall be reformed only to
the extent necessary to make it enforceable.

14) Definition of "You" in This License. "You" throughout this
License, whether in upper or lower case, means an individual or a
legal entity exercising rights under, and complying with all of the
terms of, this License. For legal entities, "You" includes any entity
that controls, is controlled by, or is under common control with
you. For purposes of this definition, "control" means (i) the power,
direct or indirect, to cause the direction or management of such
entity, whether by contract or otherwise, or (ii) ownership of fifty
percent (50%) or more of the outstanding shares, or (iii) beneficial
ownership of such entity.

15) Right to Use. You may use the Original Work in all ways not
otherwise restricted or conditioned by this License or by law, and
Licensor promises not to interfere with or be responsible for such
uses by You.

This
license is Copyright (C) 2003-2004 Lawrence E. Rosen. All rights
reserved. Permission is hereby granted to copy and distribute this
license without modification. This license may not be modified without
the express written permission of its copyright owner.

--
END OF ACADEMIC FREE LICENSE. The following is intended to describe the essential

differences between the Academic Free License (AFL) version 1.0 and other
open source licenses:

The Academic Free License is similar to the BSD, MIT, UoI/NCSA and Apache
licenses in many respects but it is intended to solve a few problems with
those licenses.

* The AFL is written so as to make it clear what software is being
licensed (by the inclusion of a statement following the copyright notice
in the software). This way, the license functions better than a template
license. The BSD, MIT and UoI/NCSA licenses apply to unidentified software.

* The AFL contains a complete copyright grant to the software. The BSD
and Apache
licenses are vague and incomplete in that respect.

* The AFL contains a complete patent grant to the software. The BSD, MIT,
UoI/NCSA and Apache licenses rely on an implied patent license and contain
no explicit patent grant.

* The AFL makes it clear that no trademark rights are granted to the
licensor's trademarks. The Apache license contains such a provision, but the
BSD, MIT and UoI/NCSA licenses do not.

* The AFL includes the warranty by the licensor that it either owns the
copyright or that it is distributing the software under a license. None of
the other licenses contain that warranty. All other warranties are disclaimed,
as is the case for the other licenses.

* The AFL is itself copyrighted (with the right granted to copy and distribute
without modification). This ensures that the owner of the copyright to the
license will control changes. The Apache license contains a copyright notice,
but the BSD, MIT and UoI/NCSA licenses do not.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users. This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it. (Some other Free Software Foundation software is covered by
the GNU Library General Public License instead.) You can apply it to
your programs, too.

When we speak of free software, we are referring
to freedom, not
price. Our General Public Licenses are designed to make sure that you
have the freedom to distribute copies of free software (and charge for
this service if you wish), that you receive source code or can get it
if you want it, that you can change the software or use pieces of it
in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid
anyone to deny you these rights or to ask you to surrender the rights.
These restrictions translate to certain responsibilities for you if you
distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether
gratis or for a fee, you must give the recipients all the rights that
you have. You must make sure that they, too, receive or can get the
source code. And you must show them these terms so they know their
rights.

We protect your rights with two steps: (1) copyright the software, and
(2) offer you
this license which gives you legal permission to copy,
distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain
that everyone understands that there is no warranty for this free
software. If the software is modified by someone else and passed on, we
want its recipients to know that what they have is not the original, so
that any problems introduced by others will not reflect on the original
authors' reputations.

Finally, any free program is threatened constantly by software
patents. We wish to avoid the danger that redistributors of a free
program will individually obtain patent licenses, in effect making the
program proprietary. To prevent this, we have made it clear that any
patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and

modification follow.

GNU GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work
are not derived from the Program,
and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer

to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to

this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing
version number. If the Program
specifies a version number of this License which applies to it and "any
later version", you have the option of following the terms and conditions
either of that version or of any later version published by the Free
Software Foundation. If the Program does not specify a version number of
this License, you may choose any version ever published by the Free Software
Foundation.

10. If you wish to incorporate parts of the Program into other free
programs whose distribution conditions are different, write to the author
to ask for permission. For software which is copyrighted by the Free
Software Foundation, write to the Free Software Foundation; we sometimes
make exceptions for this. Our decision will be guided by the two goals
of preserving the free status of all derivatives of our free software and
of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY
FOR
THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN
OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES
PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED
OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS
TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE
PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING,
REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING
WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR
REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES,
INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING
OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED
TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY
YOU OR THIRD PARTIES OR A
FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER
PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE
POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest
possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest
to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least
the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 2 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions;
type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General
Public License instead of this License.

1.377 spew 1.1.2-0.20180830191138-d8f796af33cc

1.377.1 Available under license :

ISC License

Copyright (c) 2012-2016 Dave Collins <dave@davec.name>

Permission to use, copy, modify, and/or distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

1.378 logrus 1.9.3

1.378.1 Available under license :

The MIT License (MIT)

Copyright (c) 2014 Simon Eskildsen

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in

all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF
OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN
THE SOFTWARE.

1.379 gofuzz 1.2.0

1.379.1 Available under license :

Apache License
Version 2.0, January 2004
http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction,
and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by
the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all
other entities that control, are controlled by, or are under common
control with that entity. For the purposes of this definition,
"control" means (i) the power, direct or indirect, to cause the
direction or management of such entity, whether by contract or
otherwise, or (ii) ownership of fifty percent (50%) or more of the
outstanding shares, or (iii) beneficial ownership
of such entity.

"You" (or "Your") shall mean an individual or Legal Entity
exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications,
including but not limited to software source code, documentation
source, and configuration files.

"Object" form shall mean any form resulting from mechanical
transformation or translation of a Source form, including but

not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial
revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this
License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work,

where such license applies only to those patent claims licensable
by such Contributor that are necessarily infringed by their
Contribution(s) alone or by combination of their Contribution(s)
with the Work to which such Contribution(s) was submitted. If You
institute patent litigation against any entity (including a
cross-claim or counterclaim in a lawsuit) alleging that the Work
or a Contribution incorporated within the Work constitutes direct
or contributory patent infringement, then any patent licenses
granted to You under this License for that Work shall terminate
as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute
copies of the
Work or Derivative Works thereof in any medium, with or without
modifications, and in Source or Object form, provided that You
meet the following conditions:

(a) You must give any other recipients of the Work or
Derivative Works a copy of this License; and

(b) You must cause any modified files to carry prominent notices
stating that You changed the files; and

(c) You must retain, in the Source form of any Derivative Works
that You distribute, all copyright, patent, trademark, and
attribution notices from the Source form of the Work,
excluding those notices that do not pertain to any part of
the Derivative Works; and

(d) If the Work includes a "NOTICE" text file as part of its
distribution, then any Derivative Works that You distribute must
include a readable copy of the attribution notices contained
within such NOTICE file, excluding
those notices that do not
pertain to any part of the Derivative Works, in at least one
of the following places: within a NOTICE text file distributed
as part of the Derivative Works; within the Source form or
documentation, if provided along with the Derivative Works; or,
within a display generated by the Derivative Works, if and
wherever such third-party notices normally appear. The contents
of the NOTICE file are for informational purposes only and
do not modify the License. You may add Your own attribution
notices within Derivative Works that You distribute, alongside
or as an addendum to the NOTICE text from the Work, provided
that such additional attribution notices cannot be construed
as modifying the License.

You may add Your own copyright statement to Your modifications and

may provide additional or different license terms and conditions

for use, reproduction, or distribution of Your modifications, or
for any such Derivative Works as a whole, provided Your use,
reproduction, and distribution of the Work otherwise complies with
the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise,
any Contribution intentionally submitted for inclusion in the Work
by You to the Licensor shall be under the terms and conditions of
this License, without any additional terms or conditions.
Notwithstanding the above, nothing herein shall supersede or modify
the terms of any separate license agreement you may have executed
with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade
names, trademarks, service marks, or product names of the Licensor,
except as required for reasonable and customary use in describing the
origin of the Work and reproducing the
content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or
agreed to in writing, Licensor provides the Work (and each
Contributor provides its Contributions) on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied, including, without limitation, any warranties or conditions
of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A
PARTICULAR PURPOSE. You are solely responsible for determining the
appropriateness of using or redistributing the Work and assume any
risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory,
whether in tort (including negligence), contract, or otherwise,
unless required by applicable law (such as deliberate and grossly
negligent acts) or agreed to in writing, shall any Contributor be
liable to You for damages, including any direct,
indirect, special,
incidental, or consequential damages of any character arising as a
result of this License or out of the use or inability to use the
Work (including but not limited to damages for loss of goodwill,
work stoppage, computer failure or malfunction, or any and all
other commercial damages or losses), even if such Contributor
has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing
the Work or Derivative Works thereof, You may choose to offer,
and charge a fee for, acceptance of support, warranty, indemnity,
or other liability obligations and/or rights consistent with this

License. However, in accepting such obligations, You may act only
on Your own behalf and on Your sole responsibility, not on behalf
of any other Contributor, and only if You agree to indemnify,
defend, and hold each Contributor harmless for any liability
incurred by, or claims asserted against, such Contributor by reason
of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following
boilerplate notice, with the fields enclosed by brackets "[]"
replaced with your own identifying information. (Don't include
the brackets!) The text should be enclosed in the appropriate
comment syntax for the file format. We also recommend that a
file or class name and description of purpose be included on the
same "printed page" as the copyright notice for easier
identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License");
you may not use this file except in compliance with the License.
You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software
distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.

1.380 pygobject 3.40.1

1.380.1 Available under license :

pygobject.svg and pygobject-small.svg are based on the GTK logo, created by
Andreas Nilsson, licensed under CC BY-SA 3.0. For more info see
https://commons.wikimedia.org/wiki/File:GTK%2B_logo.svg
GNU LESSER GENERAL PUBLIC LICENSE
Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is

modified by someone else and passed on, the recipients should know
that what they have is not the original version, so that the original
author's reputation will not be affected by problems that might be
introduced by others.

Finally, software patents pose a constant threat to the existence
of
any free program. We wish to make sure that a company cannot
effectively restrict the users of a free program by obtaining a
restrictive license from a patent holder. Therefore, we insist that
any patent license obtained for a version of the library must be
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the
ordinary GNU General Public License. This license, the GNU Lesser
General Public License, applies to certain designated libraries, and
is quite different from the ordinary General Public License. We use
this license for certain libraries in order to permit linking those
libraries into non-free programs.

When a program is linked with a library, whether statically or using
a shared library, the combination of the two is legally speaking a
combined work, a derivative of the original library. The ordinary
General Public License therefore permits such linking only if the
entire combination
fits its criteria of freedom. The Lesser General
Public License permits more lax criteria for linking other code with
the library.

We call this license the "Lesser" General Public License because it
does Less to protect the user's freedom than the ordinary General
Public License. It also provides other free software developers Less
of an advantage over competing non-free programs. These disadvantages
are the reason we use the ordinary General Public License for many
libraries. However, the Lesser license provides advantages in certain
special circumstances.

For example, on rare occasions, there may be a special need to
encourage the widest possible use of a certain library, so that it becomes
a de-facto standard. To achieve this, non-free programs must be
allowed to use the library. A more frequent case is that a free
library does the same job as widely used non-free libraries. In this
case, there is little to gain by limiting the free library to free
software only, so we
use the Lesser General Public License.

In other cases, permission to use a particular library in non-free
programs enables a greater number of people to use a large body of

free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without
limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based

on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library,

and can be reasonably considered independent and separate works in themselves,
then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License
to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be
distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to

distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference

directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license

restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute
so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many
people have made
generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public
License from time to time.
Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library

specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting

redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the
"copyright" line
and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or
modify it under the terms of the GNU Lesser General Public
License as published by the Free Software Foundation; either
version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You
should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.381 github.com/google/uuid 1.6.0

1.381.1 Available under license :

Paul Borman <borman@google.com>
bmatsuo
shawnps

theory
jboverfelt
dsymonds
cd1
wallclockbuilder
dansouza
Copyright (c) 2009,2014 Google Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are
met:

  * Redistributions of source code must retain the above copyright
notice, this list of conditions and the following disclaimer.
  * Redistributions in binary form must reproduce the above
copyright notice, this list of conditions and the following disclaimer
in the documentation and/or other materials provided with the
distribution.
  * Neither the name of Google Inc. nor the names of its
contributors may be used to endorse or promote products derived from
this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT
OWNER
 OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries.To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

©2025 Cisco Systems, Inc. All rights reserved.